

*Faculty, Adjunct professors, Research scientists,
Visiting scientists, Lecturers, PhD students, Post-doc
and Staff
at the Pescara Center
December 2019*

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ICRANet Faculty Staff

Barres de Almeida, Ulisses	CBPF, Rio de Janeiro, Brazil
Belinski, Vladimir	ICRANet
Bianco, Carlo Luciano	ICRANet and Università di Roma "Sapienza"
Bini, Donato	CNR, Italy
Chardonnet, Pascal	ICRANet and Université de la Savoie, France
Cherubini, Christian	ICRANet and Campus Biomedico, Italy
Filippi, Simonetta	ICRANet and Campus Biomedico, Italy
Jantzen, Robert	Abraham Taub-ICRANet Chair and Villanova University, USA
Kerr, Roy P.	Yevgeny Mikhajlovic Lifshitz - ICRANet University of Canterbury, New Zeland
Muccino, Marco	ICRANet and Università di Roma "Sapienza"
Ohanian, Hans	Rensselaer Polytechnic Institute, New York, USA
Pisani, Giovanni Battista	ICRANet and Università di Roma "Sapienza"
Punsly, Brian Mathew	Mathew California University, Los Angeles USA
Rueda, Jorge A.	ICRANet and Università di Roma "Sapienza"
Ruffini, Remo	ICRANet and Università di Roma "Sapienza"
Sahakyan, Narek	ICRANet-Yerevan, Armenia
Vereshchagin, Gregory	ICRANet
Xue, She Sheng	ICRANet

Adjunct Professors of the Faculty

Amati, Lorenzo	Istituto di Astrofisica Spaziale e Fisica Cosmica, Italy
Arnett, David	Subramanyan Chandrasekhar - ICRANet Chair, University of Arizona, Tucson, AZ, USA
Belvedere, Riccardo	Centro Brasileiro de Pesquisas Físicas
Bini, Donato	CNR, Italy
Buchert, Thomas	Centre de Recherche Astrophysique de Lyon, UCBL1, ENS-L, CNRS, France
Camargo Rodrigues de Lima, Rafael	Universidade do Estado de Santa Catarina, Brazil
Chakrabarti, Sandip Kumar	Indian Centre for Space Physics, Kolkata, India
Chardonnet, Pascal	ICRANet and Université de la Savoie, France
Cherubini, Christian	ICRANet and Campus Biomedico, Italy
Damour, Thibault	<i>Joseph-Louis Lagrange - ICRANet Chair</i> , IHES, Bures sur Yvette, France
Della Valle, Massimo	Osservatorio di CapodiMonte, Italy
Einasto, Jaan	Tartu Observatory, Tõravere, Estonia
Everitt, Francis	<i>William Fairbank - ICRANet Chair</i> , Stanford University, USA
Filippi, Simonetta	ICRANet and Campus Biomedico, Italy
Fisher, Robert	University of Massachusetts Dartmouth
Frontera, Filippo	University of Ferrara, Italy
Fryer, Chris L.	University of Arizona, Tucson, Arizona, USA
Giommi, Paolo	ASI, Italian Space Agency
Gionti, Gabriele	Vatican Observatory
Harutyunian, Haik	Byurakan Astrophysical Observatory
Jantzen, Robert	<i>Abraham Taub-ICRANet Chair</i> , Villanova University, USA

Jetzer, Philippe	Institute of Theoretical Physics - University of Zürich, Switzerland
Khalatnikov Isaak M.	Lev Davidovich Landau - <i>ICRANet Chair</i>
Kleinert, Hagen	Richard Feynmann - ICRANet Chair, Freie Universität Berlin
Kerr, Roy	Yevgeny Mikhajlovic Lifshitz - ICRANet Chair and University of Canterbury, New Zealand
Lee, Hyung Won	Inje University, Korea
Mansouri, Reza	Sharif University of Technology
Mathews, Grant	University of Notre Dame
Merafina, Marco	University of Rome La Sapienza, Italy
Mirabel, Felix	CEA
Mo, Houjun	University of Massachusetts
Muccino, Marco	ICRANet and Università di Roma "Sapienza"
Nicolai, Hermann	Albert Einstein Institute – Potsdam, Germany
Pelster Axel	Hanse Institute of Advanced Study, Germany
Pian, Elena	INAF - Osservatorio Astronomico Trieste, Italy
Piran, Tsvi	Yuval Neeman-ICRANet Chair and the Hebrew University, Israel
Pisani, Giovanni Battista	ICRANet and Università di Roma "Sapienza"
Punsly, Brian Mathew	Mathew California University, Los Angeles USA
Quevedo, Hernando	Institute of Nuclear Science, UNAM
Rosati, Piero	European Southern Observatory, Germany
Sahakyan, Narek	ICRANet-Yerevan, Armenia
Sobouti, Yousef	Institute for Advanced Studies in Basic Sciences, IASBS, Iran
Titarchuk, Lev	<i>Victor Sobolev – ICRANet Chair</i> , US Naval Laboratory, USA
Zen Vasconcellos, Cesar Augusto	UFRGS, Porto Alegre, RS, Brazil

Lecturers

Aksenov, Alexei	Institute for Theoretical and Experimental Physics
Alekseev, Georgy	Steklov Mathematical Inst- Russian Acad of Sciences
Bini, Donato	CNR and ICRANet, Italy
Chen, Pisin	National Taiwan University, Kavli Instit. Particle Astrophysics and Cosmology
Cherubini, Christian	Campus Biomedico, Rome, Italy
Chieffi, Alessandro	INAF, Rome, Italy
Coullet, Pierre	Université de Nice - Sophia Antipolis, France
Di Castro, Carlo	Università di Roma "Sapienza", Italy
Jing, Yi-Peng	Shangai Astronomy Observatory
Lanz, Thierry	Observatoire de la Côte d'Azur, Nice, France
Lee, Chul Hoon	Hanyang University, Seoul, Korea
Lee, Hyun Kyu	Department of Physics, Hanyang University, Korea
Limongi, Marco	INAF, Rome, Italy
Lou, You Qing	Tsinghua University, Beijing
Mester, John	Stanford University, USA
Ohanian, Hans	Rensselaer Polytechnic Institute, New York, USA
Pacheco, José	Observatoire de la Côte d'Azur, Nice, France
Perez Bergliaffa, Santiago	Univesidade do Estado de Rio de Janeiro, Brasil
Pucacco Giuseppe	Università di Tor Vergata, Rome, Italy
Sang Pyo Kim	Kunsan National University, Korea
Sepulveda, Alonso	University of Antioquia, Columbia
Song Doo Jong	Korea Astronomy and Space Science Institute, South Korea
Starobinsky, Alexei	Landau Institute for Theoretical Physics, Russia
Sung-Won Kim	Institute of Theoretical Physics for Asia-Pacific, Korea

Wiltshire David

University of Canterbury, New Zealand

Research Scientists

Arguelles, Carlos	ICRANet
Benetti, Micol	ICRANet
Bernardini, Maria Grazia	ICRANet and Università di Roma "Sapienza", Italy
Boshkayev, Kuantay	ICRANet
Geralico, Andrea	ICRANet and Università di Roma "Sapienza", Italy
Lattanzi, Massimiliano	University of Oxford and ICRANet
Muccino, Marco	ICRANet
Patricelli, Barbara	ICRANet and Università di Roma "Sapienza", Italy
Rotondo, Michael	ICRANet and Università di Roma "Sapienza", Italy
Sahakyan, Narek	ICRANet
Sigismondi, Costantino	ICRANet
Siutsou, Ivan	ICRANet-Minsk

Visiting Scientists

Abishev, Medeu	Al-Farabi Kazakh National University, Kazakhstan
Ahmedov, Bobomurat	Uzbekistan Academy of Sciences
Al-Jaf, Muhsin Burhan Mohammed Rashid	University of Science and Technology of China
Alfonso Pardo, Wilmer Daniel	Universidad de Antioquia Medellín, Antioquia, Colombia
Ansoldi, Stefano	University of Udine
Arkhangelskaya, Irene	Moscow Engineering Physics Institute, Russia
Bakytzhan, Zhami	Al-Farabi Kazakh National University, Kazakhstan
Batebi, Saghar	Isfahan University of Technology, Iran
Bavarsad, Ehsan	Isfahan University of Technology, Pakistan
Belczynski, Chris	Nicolaus Copernicus Astronomical Center, Poland
Berezhiani, Zurab	Università degli studi dell'Aquila, Italy
Bernal, Cristian Giovanni	Universidad Nacional Autónoma de México (UNAM), Mexico
Blinne, Alexander	University Jenna, Germany
Boçi, Sonila	University of Tirana, Albania
Cadez, Andrej	University of Ljubljana, Slovenia
Cho, Yongmin	UNIST
Corvino, Giovanni	University of Rome La Sapienza, Italy
Da Cunha, Bruno Carneiro	UFPE, Brazil
Davis, Stanley	Université Bordeaux, France
De Lorenci, Vitorio	Federal University Of Itajuba - Brazil
Ewald, Denise Grüne	Universidade Federal do Rio Grande do Sul, Brazil
Fimin, Nicolaj	Keldish Institute for Applied Mathematics, Russia
Gadri, Mohamed	University of Tripoli, Libya

Gallego Cadavid, Alexander	Universidad de Antioquia Medellín, Antioquia, Colombia
Goulart, Erico	Centro Brasileiro de Pesquisas Físicas, Brazil
Guzzo, Marcelo Moraes	Universidade Estadual de Campinas, Brazil
Haghighat, Mansour	Isfahan University of Technology, Iran
Hoang, Ngoc-Long	IPE, Hanoi, Vietnam
Hütsi, Gert	Tartu Observatory, Estonia
Kenesbek, Zhadyra	Al-Farabi Kazakh National University, Kazakhstan
Kilin, Sergei	National Academy of Sciences of Belarus
Kim, Hongso	KASI
Kim, Hyeong-Chan	Chungju National University
Kim, Hyuong Yee	INJE, South Korea
Kim, Jim Young	Kunsan National University
Lee, Chang-Hwan	Pusan National University
Lee, Hyung Won	Inje University
Lee, Wonwoo	Cquest, Sogang University
Lin, Wenbin	Southwest Jiaotong University, Chengdu, China
Mahmoudikooshkeqazi, Somayyeh	Shiraz University, Iran
Malheiro, Manuel	ITA, Brazil
Mansouri, Reza	Sharif University of Technology, Iran
Mathews, Grant	University of Notre Dame, USA
Modaresvamegh, Saeidehalsadat	Shiraz University, Iran
Mohammadi, Rohollah	Isfahan University of Tecnology, Iran
Moliné, Maria de los Angeles	Instituto de Astrofísica e Ciências do Espaço, Lisboa
Mosquera Cuesta, Herman	Instituto Federal de Educação, Ciência e Tecnologia do Ceará, Brazil

Motie, Iman	Isfahan University of Tecnology, Pakistan
Nagataki, Shigehiro	Yukawa Institute for Theoretical Physics, Kyoto University
Nessipbay, Aizhan	Al-Farabi Kazakh National University, Kazakhstan
Pak-Hin, Tam	Sun Yat-sen University, China
Pakhshan, Espoukeh	Azad University
Park, Ilhung	Ieu, Ewha Womans University
Park, Myeong-Gu	Kyungpook National University
Passiltay, Ainur	Al-Farabi Kazakh National University, Kazakhstan
Paudel, Rishiram	Tribhuvan University, Central Department of Physics
Peqini, Klaudio	University of Tirana, Albania
Peres Menezes, Débora	Universidade Federal de Santa Catarina, Brazil
Peresano, Michele	University of Udine, Italy
Perez Bergliaffa, Santiago	Universidade do Estado do Rio de Janeiro, Brazil
Perez Martinez, Aurora	Instituto de Cibernetica Matematica Y Fisica, Cuba
Piechocki, Wlodzimierz	Institute for Nuclear Studies - Poland
Picanço Negreiros, Rodrigo	Universidade Federal Fluminense, Brazil
Prakapenia, Mikalai	B.I. Stepanov Institute of Physics, NASB, ICRANet-Minsk
Qadir, Ashgar	National University of Sciences and Technology - Pakistan
Rafelski, Johann	University of Arizona, USA
Raffaelli, Bernard	Université de Corse, France
Riahi, Rashid	Isfahan University of Technology, Iran
Romano, Antonio Enea	Universidad de Antioquia Medellín, Antioquia, Colombia
Romero, Gustavo E.	Instituto Argentino de Radioastronomia IAR-CONICET, Argentina

Sasaki, Misao	Kyoto University, Japan
Shakeri, Soroush	Isfahan University of Technology, Iran
Soares Maia, Clovis Achy	Universidade de Brasília, DF, Brazil
S. O. Kepler	Universidade Federal do Rio Grande do Sul, Brazil
Tahvildarzadeh, Abdolreza	Rutgers, the State Univeristy of New Jersey, USA
Tarasenko, Aleksander	Belarusian State University
Teixeira Coelho, Hélio	Universidade Federal de Pernambuco, Brazil
Tkachenko, Alessya	Al-Farabi Kazakh National University, Kazakhstan
Torres, Sergio	Centro Internacional de Fisica, Bogotá, Colombia
Torrieri, Donato Giorgio	Universidade Estadual de Campinas, Brazil
Tizchang, Seddigheh	Isfahan University of Technology, Iran
Vallejo Peña, Sergio Andrés	Universidad de Antioquia Medellín, Antioquia, Colombia
Van Putten, Maurice	Korean Institute for Advanced Study, South Korea
Yang, Jongmann	Ieu, Ewha Womans University
Yeom, Dong-Han	Cquest, Sogang University
Zalaletdinov, Roustam	Dept. of Theoretical Physisc, Institute of Nuclear Physics, Uzbek Academy of Sciences, Uzbekistan
Zheng, Yunlong	University of Science and Technology of China
Zhumabayeva, Symbat	Al-Farabi Kazakh National University, Kazakhstan

International Relativistic Astrophysics Ph. D

<i>First Cycle</i>	2002-2005
Peirani, Sebastien	France
<i>Second Cycle</i>	2003-2006
Bernardini, Maria Grazia	Italy
Mattei, Alvisè	Italy
Mercuri, Simone	Italy
<i>Third Cycle</i>	2004-2007
Chiappinelli, Anna	France
Cianfrani, Francesco	Italy
Guida, Roberto	Italy
Rotondo, Michael	Italy
Yegorian, Gegham	Armenia
Vereshchagin, Gregory	Belarus
<i>Fourth Cycle</i>	2005-2008
Battisti, Marco Valerio	Italy
Dainotti, Maria Giovanna	Italy
Khachatryan, Harutyun	Armenia
Lecian, Orchidea Maria	Italy
Pizzi, Marco	Italy
Pompi, Francesca	Italy
<i>Fifth Cycle</i>	2006-2009
Caito, Letizia	Italy
De Barros, Gustavo	Brazil
Minazzoli, Olivier	Switzerland
Patricelli, Barbara	Italy
Rangel Lemos, Luis Juracy	Brazil
Rueda Hernandez, Jorge Armando	Colombia
<i>Sixth Cycle</i>	2007-2010
Ferroni, Valerio	Italy
Izzo, Luca	Italy
Kanaan, Chadia	
Pugliese, Daniela	Italy
Sigismondi, Costantino	Italy
Siutsou, Ivan	Belarus
<i>Seventh Cycle</i>	2008-2011
Belvedere, Riccardo	Italy
Ceccobello, Chiara	
Ferrara, Walter	Italy
Han, Wen-Biao	China
Luongo, Orlando	Italy
Pandolfi, Stefania	Italy
Taj, Safia	Pakistan
<i>Eighth Cycle</i>	2009-2012

Boshkayev, Kuantay	Kazakhstan
Bravetti, Alessandro	Italy
Haney, Maria	Germany
Lombardi, Caterina Antonietta	Italy
Menegoni, Eloisa	Italy
Sahakyan, Narek	Armenia
Sahini, Sahil	India

<i>Ninth Cycle</i>	<i>2010-2013</i>
Arguelles, Carlos	Argentina
Benetti, Micol	Italy
Muccino, Marco	Italy

<i>Tenth Cycle</i>	<i>2011-2014</i>
Cáceres Uribe, Diego Leonardo	Colombia
Wang, Yu	China

<i>Eleventh Cycle</i>	<i>2012-2015</i>
Barbarino, Cristina	Italy
Cipolletta, Federico	Italy
Dichiara, Simone	Italy

<i>Twelfth Cycle</i>	<i>2013-2016</i>
Becerra, Laura	Colombia
Harutyunyan, Vahagn	Armenia

<i>Thirteenth Cycle</i>	<i>2014-2017</i>
Moradi, Rahim	Iran
Rodriguez Ruiz, Jose Fernando	Colombia

<i>Fourteenth Cycle</i>	<i>2015-2018</i>
Melon Fuksman, J. David	Argentina
Primorac, Daria	Croatia
Uribe S., Juan D.	Colombia

<i>Fifteenth Cycle</i>	<i>2016-2019</i>
Baghmanyanyan, Vardan	Armenia
Bedić, Suzana	Croatia
Campion, Stefano	Italy
Chen, Yen-Chen	Taiwan
Gasparyan, Sargis	Armenia
Marongiu, Marco	Italy
Martone, Renato	Italy
Vieira Lobato, Ronaldo	Brazil
Zargaryan, Davit	Armenia

<i>Sixteenth Cycle</i>	<i>2017-2020</i>
Carinci, Massimo Luca Emiliano	Italy
Yunis, Rafael Ignacio	Argentina
Becerra Vergara, Eduar Antonio	Colombia

IRAP Ph. D. Erasmus Mundus Students

<i>First Cycle</i>	<i>2010-2013</i>
Baranov, Andrey	Russia
Benedetti, Alberto	Italy
Dutta, Parikishit	India
Fleig, Philipp	Germany
Gruber, Christine	Austria
Liccardo, Vincenzo	Italy
Machado De Oliveira Fraga, Bernardo	Brazil
Martins De Carvalho, Sheyes	Brazil
Penacchioni, Ana Virginia	Argentina
Valsan, Vineeth	India
<i>Second Cycle</i>	<i>2011-2014</i>
Begue, Damien	France
Dereli, Husne	Turkey
Gregoris, Daniele	Italy
Iyyani, Shabnam Syamsunder	India
Pereira, Jonas Pedro	Brazil
Pisani, Giovanni	Italy
Rakshit, Suvendu	India
Sversut Arsoli, Bruno	Brazil
Wu, Yuanbin	China
<i>Third Cycle</i>	<i>2012-2015</i>
Bardho, Onelda	Albania
Enderli, Maxime	France
Filina, Anastasia	Russia
Galstyan, Irina	Armenia
Gomes De Oliveira, Fernanda	Brazil
Khorrami, Zeinab	Iran
Ludwig, Hendrik	Germany
Sawant, Disha	India
Strobel, Eckhard	Germany
<i>Fourth Cycle</i>	<i>2013-2016</i>
Ahlén, Olof	Sweden
Gómez Diaz, Gabriel	Colombia
Kovacevic, Milos	Serbia
Li, Liang	China
Lisakov, Sergey	Russia
Maiolino, Tais	Brazil
Sridhar, Srivatsan	India
Stahl, Clément	France
Yang, Xiaofeng	China
<i>Fifth Cycle</i>	<i>2014-2017</i>
Aimuratov, Yerlan	Kazakhstan
Chang, Yu-Ling	Taiwan

Delgado, Camilo
Efremov, Pavel
Karilca, Mile
Krut, Andreas
Martinez Aviles, Gerardo

Colombia
Russia
Croatia
Germany
Mexico

CAPES Students

First Cycle

Brandt Carlos Henrique

Guimarães Carvalho Gabriel

Pereira Lobo Iarley

2013-2016

Brazil

Brazil

Brazil

Administrative and Secretarial Staff

ICRANet - Pescara

Adamo, Cristina
Brandolini, Gabriele
Di Niccolo, Cinzia
Latorre, Silvia
Natale, Elisabetta
Verzulli, Damiano

Administrative Office
System Manager
Secretariat
Administrative Office
Secretariat
System Manager

ICRANet – Armenia

Kostandjan Susanna

ICRANet – Minsk

Vlad Stefanov

ICRANet Faculty Staff

Belinski Vladimir

Position: ICRANet, Co.Co.Co contract

Period covered: December 2018 -December 2019



I. Scientific Work

· We define the physical conditions for stationary equilibrium of binary systems containing rotating black holes and naked singularities and prove that the system made up of a Kerr--Newman black hole and a Kerr--Newman naked singularity indeed can stay in equilibrium state. The similar question about the system of two charged rotating black holes or two rotating over-extreme charged sources still remains open. Reference [1].

· It was shown that black hole inserted into Melvin magnetic universe can be interpreted as state of interaction of two solitons, one of which represents the Melvin geon corresponding to the pole at infinity in the complex plane of the spectral parameter and another is the standard black hole solitonic configuration having the pole in the finite region of this plane. The procedure how to construct such exact solution is described in details. Reference [2].

II. Publications

- [1] G.A. Alekseev and V.A. Belinski "Superposition of fields of two rotating charged masses in general relativity and existence of equilibrium configurations", GRG, **51**, 68 (2019); [arXiv:1905.05317].
[2] V.A. Belinski "On the black holes in external electromagnetic fields.", arXiv:1912.03964.

III. Conferences

16th Italy-Korea Meeting, Pescara July 2019. Talk "On the equilibrium states in General Relativity".

Bianco Carlo Luciano

Position: ICRANet Faculty staff
Member of ICRANet Scientific Committee
Member of IRAP-PhD Faculty

Period covered: 2005 – 2019



I Scientific Work

Research on: Gamma-Ray Bursts, Relativistic astrophysics, Cosmology.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Gave the following invited lectures:

- C.L. Bianco, M.G. Bernardini, P. Chardonnet, F. Fraschetti, R. Ruffini, S.-S. Xue; Our model for Gamma-Ray Bursts; *1st Bego scientific rencontre*, Université de Nice Sophia-Antipolis, Nice, France, 14 February 2006.
- C.L. Bianco; Equations of motion and beaming in Gamma – Ray Bursts; *1st Cesare Lattes Meeting*, Mangaratiba (RJ), Brazil, 1 March 2007.
- C.L. Bianco, M.G. Bernardini, L. Caito, M.G. Dainotti, R. Guida, R. Ruffini; Theoretical interpretation of GRB060614; *2007 April Meeting of the American Physical Society*; Jacksonville, Florida (USA), 14 April 2007.
- C.L. Bianco; The fireshell model and the canonical GRB scenario; *Scuola Nazionale di Astrofisica (National School of Astrophysics)* (II course, IX cycle); Venice (Italy), 18 September 2007.
- C.L. Bianco, M.G. Bernardini, L. Caito, M.G. Dainotti, R. Guida, R. Ruffini, G. Vereshchagin, S.-S. Xue; Equations of motion of the fireshell; *3rd Stueckelberg Workshop*; Pescara (Italy), 10 July 2008.
- C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, F.A. Massucci, B. Patricelli, R. Ruffini, G. Vereshchagin, S.-S. Xue; The fireshell equations of motion and equitemporal surfaces; *6th Italian-Sino Workshop*; Pescara (Italy), 29 June 2009.
- C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, B. Patricelli, R. Ruffini; The canonical GRB scenario within the fireshell model: “long”, “genuine short” and “disguised

short” GRBs; *GRB 2010: Dall’eV al TeV tutti i colori dei GRB – Secondo congresso italiano sui GRB*; Cefalù (Italy), 15 June 2010.

- A.G. Aksenov, M.G. Bernardini, C.L. Bianco, L. Caito, C. Cherubini, G. De Barros, A. Gericco, L. Izzo, F.A. Massucci, B. Patricelli, M. Rotondo, J.A. Rueda Hernandez, R. Ruffini, G. Vereshchagin, S.-S. Xue; New developments of the Fireshell scenario; *The Shocking Universe Meeting*, San Servolo, Venice (Italy), September 2009.
- C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, B. Patricelli, R. Ruffini; The fireshell equations of motion and the P-GRB observational properties; *2nd Galileo – Xu GuangQi meeting*, Ventimiglia (Italy), July 2010.
- C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, B. Patricelli, R. Ruffini; The fireshell model for GRBs: toward a canonical GRB scenario; *3rd Galileo – Xu GuangQi meeting*, Beijing (China), October 2011.

II b Work With Students

- Students of the IRAP-PhD program at University “La Sapienza”, Rome, Italy: Yerlan Aimuratov, Maria Grazia Bernardini, Letizia Caito, Maria Giovanna Dainotti, Gustavo De Barros, Maxime Enderli, Roberto Guida, Luca Izzo, Mile Karlika, Milos Kovacevic, J. David Melon Fuksman, Marco Muccino, Barbara Patricelli, Ana Virginia Penacchioni, Giovanni Battista Pisani, Daria Primorac, Luis Juracy Rangel Lemos, Yu Wang.
- Students of the First three years degree Thesis (“Tesi di Laurea triennale”) in Physics at University “La Sapienza”, Rome, Italy: Giulia De Rosi, Eliana La Francesca, Francesco Alessandro Massucci, Federica Volpi.
- Students of the Final Degree Thesis (“Tesi di Laurea Vecchio Ordinamento”) in Physics at University “La Sapienza”, Rome, Italy: Letizia Caito, Walter Ferrara, Laura Rosano.

II c Diploma thesis supervision

- 2005. External supervisor of the First three years degree thesis (“Tesi di laurea triennale”) in Physics by Francesco Alessandro Massucci at University “La Sapienza”, Rome, Italy.
- 2006. External supervisor of the Degree thesis in Physics by Letizia Caito at University “La Sapienza”, Rome, Italy.
- 2007. Thesis advisor of the IRAP-PhD Degree Thesis by Maria Grazia Bernardini at University “La Sapienza”, Rome, Italy.
- 2008. External supervisor of the First three years degree thesis (“Tesi di laurea triennale”) in Physics by Eliana La Francesca at University “La Sapienza”, Rome, Italy.

- 2008. Thesis advisor of the IRAP-PhD Degree Thesis by Roberto Guida at University “La Sapienza”, Rome, Italy.
- 2009. External supervisor of the Degree thesis in Physics by Laura Rosano at University “La Sapienza”, Rome, Italy.
- 2010. Thesis advisor of the IRAP-PhD Degree Thesis by Letizia Caito at University “La Sapienza”, Rome, Italy.
- 2010. External supervisor of the First three years degree thesis (“Tesi di laurea triennale”) in Physics by Giulia De Rosi at University “La Sapienza”, Rome, Italy.

II d Other Teaching Duties

- Assistant teacher in the course of “Laboratory of Electromagnetism and Circuits” by Prof. Giulio D’Agostini at Physics Department of the University “La Sapienza”, Rome, Italy, academical year 2005/2006.
- Assistant teacher in the course of “Laboratory of Systems and Signals” by Prof. Mario Mattioli at Physics Department of the University “La Sapienza”, Rome, Italy, academical years 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012, 2012/2013.
- Assistant teacher in the course of “Laboratory of Systems and Signals” by Prof. Andrea Nigro at Physics Department of the University “La Sapienza”, Rome, Italy, academical years 2013/2014, 2014/2015, 2015/2016, 2016/2017.
- Assistant teacher in the course of “Laboratory of Systems and Signals” by Prof. Mauro Raggi at Physics Department of the University “La Sapienza”, Rome, Italy, academical years 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017/2018, 2018/2019.

III. Service activities

III a. Within ICRA Net

- Administrator of the two servers used for numerical computations at ICRA Net – Rome.
- Secretariat of the IRAP PhD.
- Member of the ICRA Net Scientific Committee.
- Member of the IRAP PhD Faculty

III b. Outside ICRANet

- “Cultore della Materia” (“Expert of the subject”) for the “FIS/01 – Experimental Physics”, “FIS/02 – Theoretical Physics, Models and Mathematical Methods”, “FIS/05 – Astronomy and Astrophysics” scientific sectors in the Mathematical, Physical and Natural Sciences Faculty of the University of Rome “La Sapienza”.

IV. Other

2019 List of Publication

Y. Wang, J.A. Rueda, R. Ruffini, C.L. Bianco, L.M. Becerra, L. Li, M. Karlica; Two Predictions of Supernova: “GRB 130427A/SN 2013cq and GRB 180728A/SN 2018fip”; *The Astrophysical Journal*, 874, 39 (2019)

J.A. Rueda, R. Ruffini, Y. Wang, C.L. Bianco, J.M. Blanco-Iglesias, M. Karlica, P. Lorén-Aguilar, R. Moradi, N. Sahakyan; “Electromagnetic emission of white dwarf binary mergers”; *Journal of Cosmology and Astroparticle Physics*, 03, 044 (2019).

R. Ruffini, R. Moradi, J.A. Rueda, L.M. Becerra, C.L. Bianco, C. Cherubini, S. Filippi, Y.C. Chen, M. Karlica, N. Sahakyan, Y. Wang, S.-S. Xue; “On the GeV Emission of the Type I BdHN GRB 130427A”; *The Astrophysical Journal*, 886, 82 (2019).

Bini Donato



Position: November 30, 2018 -today

Senior Researcher (permanent position) at

Istituto per le Applicazioni del Calcolo “M. Picone,” CNR

Via dei Taurini, 19 I-00185 Roma

[Previous position from October 1, 1995 -November 29, 2018: Researcher (permanent) at the same CNR institute]

I Scientific Work

The main topic of my interest is General Relativity with special attention to several classical aspects.

In particular, I'm interested in: analysis and interpretation of exact solutions of Einstein's field equations, spacetime splitting techniques, measurement process and the role of the observer in General Relativity, particle dynamics in certain fixed gravitational backgrounds (either test particles with scalar structure: the mass, or particles with internal structure: spinning test particles and particles with multipolar structure, quadrupolar and beyond), gravitational perturbations, gravitational waves. Currently, the main topics of interest for my research activities involve the PN approximation of General Relativity, gravitational self-force, effective-one-body model, with applications to binary systems.

I'm an expert user of MAPLE™ tensor calculus package.

II Conferences and educational activities

Conferences and Other External Scientific Work

Since 1988 I have participated in all the international meetings of the Marcel Grossmann series as well as all the conferences of the ICRA- ICRANet series.

Diploma thesis supervision

I've been supervisor of the Diploma thesis of several students at the University of Rome "La Sapienza", since 1995:

G. Spoliti, A. Merloni, C. Germani, C. Cherubini, G. Miniutti, G. Cruciani, A. Geralico, A. Lunari, M. De Mattia, D. Gregoris.

Ph.D thesis supervision

Dr. V. Montaquila, Physics departments of the University of Naples "Federico II.," year 2011.

Dr. M. Haney, IRAP Ph.D, University of Rome "Sapienza," year 2013.

Gabriel G. Carvalho (CAPES, Brazil and ICRANet)

Teaching experiences

I'm Contract Professor of Physics since 2004 at the faculty of Medicine of the University Campus Biomedico, in Rome. From 2007-2009 I have also been Contract Professor of Physics at the Nursery School of the same university.

Work With Postdocs

A Geralico (Istituto per le Applicazioni del Calcolo "M. Picone," CNR, Rome, Italy)

III Service activities

Scientific collaboration with:

Prof. R.T. Jantzen (Villanova University, USA and ICRANet);

Outside ICRANet

Scientific collaboration with:

Prof. T. Damour (IHES, Paris, France).

Dr. A. Ortolan (INFN Legnaro, Padova, Italy);

Dr. G. Esposito (INFN, Napoli, Italy)

Other

I'm currently doing referee activity for a large number of international journals in the field of General Relativity and I'm a reviewer for Mathreview.

For the years 2002-2004 I have been the leader of a collaboration project between the Italian Research Council (CNR) and the analogous institution in Venezuela. Title of the project: *Construction of 3d numerical models for the study of magnetohydrodynamics in gravitational physics and astrophysics.*

For the years 2007-2008 I have been the leader of young researchers projects of INDAM (Istituto Nazionale di Alta Matematica). Title of the project: *Light coordinates and spacetime topography.*

For the years 2008-2009 I have been the leader of young researchers projects of INDAM (Istituto Nazionale di Alta Matematica). Title of the project: *Sistemi di Posizionamento Globale relativistici*

2019 List of publications

- 1) Bini D., Geralico A., Jantzen R.T.
Black hole geodesic parallel transport and the Marck reduction procedure
Phys. Rev. D, **99**, 064041 (2019).
e-print arXiv:1807.10085
DOI:10.1103/PhysRevD.99.064041
- 2) Bini D., Geralico A., Plastino W.,
Cylindrical gravitational waves: C-energy, super-energy and associated dynamical effects
Class. Quantum Grav., **36**, 095012 (2019).
e-print arXiv:1812.07938 [gr-qc]
DOI: 10.1088/1361-6382/ab10ec
- 3) Nagar A., Messina F., Rettegno P., Bini D., Damour T., Geralico A., Akcay S., Bernuzzi S.,
Nonlinear-in-spin effects in effective-one-body waveform models of spin-aligned, inspiralling, neutron star binaries
Phys. Rev. D **99**, 044007 (2019)
DOI:10.1103/PhysRevD.99.044007
[arXiv:1812.07923 [gr-qc]].
- 4) Bini D., Geralico A., Jantzen R.T., Plastino W.,
Godel spacetime: elliptic-like geodesics and gyroscope precession
Phys. Rev. D, **100**, 084051, (2019)
DOI:10.1103/PhysRevD.100.084051
e-print arXiv:1905.04917 [gr-qc]
- 5) Bini D., Geralico A., Gionti G., Plastino W., Velandia N.
Scattering of uncharged particles in the field of two extremely charged black holes
Gen. Rel. Gravitation, **51**, 153, (2019)
e-print arXiv:1906.01991 [gr-qc]
DOI:doi.org/10.1007/s10714-019-2642-y
- 6) Bini D. and Geralico A.
New gravitational self-force analytical results for eccentric equatorial orbits around a Kerr black hole: redshift invariant
Phys. Rev. D, **100**, 104002, (2019)

DOI:10.1103/PhysRevD.100.104002
e-print arXiv:1907.11080 [gr-qc]

7) Bini D. and Geralico A.
New gravitational self-force analytical results for eccentric equatorial orbits around a Kerr black hole: gyroscope precession
Phys. Rev. D, **100**, 104003, (2019)
DOI:10.1103/PhysRevD.100.104003
e-print arXiv:1907.11082 [gr-qc]

8) Bini D. and Geralico A.
Analytical determination of the periastron advance in spinning binaries from self-force computations
Phys. Rev. D, to appear, (2019)
e-print arXiv:1907.11083 [gr-qc]

9) Bini D. and Geralico A.
Gauge-fixing for the completion problem of reconstructed metric perturbations of a Kerr spacetime
Phys. Rev. D., submitted, (2019)
e-print arXiv:1908.03191 [gr-qc]

10) Bini D., Damour T. and Geralico A.
Novel approach to binary dynamics: application to the fifth post-Newtonian level
Phys. Rev. Lett., **123**, 231104, (2019)
DOI:10.1103/PhysRevLett.123.231104
e-print arXiv:1909.02375 [gr-qc]

11) Rettegno P., Martinetti F., Nagar A., Bini D., Riemenschneider G., and Damour T.
Comparing effective One Body Hamiltonians for spin-aligned coalescing binaries
preprint 2019
e-Print: arXiv:1911.10818 [gr-qc]

12) Bini D. and Esposito G.
New solutions of the Ermakov-Pinney equation in curved spacetime
preprint 2019
e-Print: arXiv:1912.01869 [gr-qc]



Cherubini Christian

Position: Associate Professor in Mathematical Physics (MAT/07).
Department of Science and Technology for Humans and the Environment
Laboratory of Nonlinear Physics and Mathematical Modeling
University "Campus Bio-Medico di Roma",
Via A. del Portillo 21, I-00128 Rome, Italy
and
Adjunct Professor in ICRANet Faculty.

Period covered: position at ICRANet started on September 11th, 2017

I Scientific Work

- Electrodynamics and magnetohydrodynamics around black holes.
- Mathematical Biology.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Maths from the body II: Venice, June 6-8, 2019

II b Work With Students

Prof. Cherubini has published in 2019 a work in collaboration with Prof. S. Filippi, Prof. R. Ruffini, and several ICRANet scientists and PhD students concerning the GeV Emission of the Type I BdHN GRB 130427A.

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

- Participation to the "Collegio di Dottorato" of the INTERNATIONAL RELATIVISTIC ASTROPHYSICS PH.D."

III b. Outside ICRANet

- Lecturer “Electromagnetism” (Departmental Faculty of Engineering, University Campus Bio-Medico of Rome).
- Lecturer “Mathematical Physics Models for Engineering” (Departmental Faculty of Engineering, University Campus Bio-Medico of Rome).

IV. Other

Prof. Cherubini has a longstanding collaboration with other ICRANET scientists. In particular, in collaboration with Dr D. Bini, Prof. R. T Jantzen, Prof. R. Ruffini and Dr. J.A. Rueda, he has written several articles in various areas of General Relativity. With Prof. S. Filippi he is involved in research activities in the fields of Stellar and Galactic Structures, Effective Geometries and Complex Systems in Nature with a specific focus in biophysics.

2019 List of Publications

- R. Ruffini, R. Moradi, J. A. Rueda, L. Becerra, C. L. Bianco, C. Cherubini, S. Filippi, Y. C. Chen, M. Karlica, N. Sahakyan, Y. Wang, and S. S. Xue, ApJ 886, 82 (2019).
- Loppini A., Gizzi A., Cherubini C., Cherry E.M., Fenton F.H., Filippi S., Phys. Rev. E, vol. 100 , 020201(R) 5 pages (2019).



Filippi Simonetta

Position: Full Professor in Theoretical Physics (FIS/02)
Departmental Faculty of Engineering
University Campus Bio-Medico of Rome,
Head, Laboratory of Nonlinear Physics and Mathematical Modeling
Pro-Rector for Education
Via A. del Portillo 21, I-001285 Rome, Italy,
Tel. +39-06-225419611
and
Adjunct Professor in ICRANet Faculty.

Period covered: position at ICRANet started on September 12th 2017

I Scientific Work

- Electrodynamics around black holes.
- Theoretical biophysics.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Maths from the body II: Venice, June 6-8, 2019

II b Work With Students

Prof. Filippi has published in 2019 an article in collaboration with Prof. C. Cherubini, Prof. R. Ruffini, and several ICRANet scientists and PhD students. The work in particular concerns black holes electrodynamicism focused on the GeV Emission of the Type I BdHN GRB 130427A. At the moment she is still involved in research activities on black hole electrodynamicism and selected theoretical studies on biophysics.

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Prof. Filippi serves as supervisor for IRAP PhD students.

III b. Outside ICRANet

- Lecturer “Dynamics of Complex Systems” (Engineering Departmental Faculty, University Campus Bio-Medico of Rome).
- Faculty of the “Science and Engineering for Humans and the Environment PH.D “ by University Campus Bio-Medico of Rome.

- IV. Other

Prof. Filippi has a longstanding collaboration with ICRANET scientists. In particular in collaboration with Prof. Remo Ruffini she has written several articles on various aspects of Gravitational Physics. With Prof. Christian Cherubini, Dr Jorge Rueda, Dr Andrea Geralico and Dr Donato Bini she has been involved in research activities in the fields of Stellar and Galactic Structures, Effective Geometries and Complex Systems in Nature.

2019 List of Publications

- R. Ruffini, R. Moradi, J. A. Rueda, L. Becerra, C. L. Bianco, C. Cherubini, S. Filippi, Y. C. Chen, M. Karlica, N. Sahakyan, Y. Wang, and S. S. Xue, *ApJ* 886, 82 (2019).
- Loppini A., Gizzi A., Cherubini C., Cherry E.M., Fenton F.H., Filippi S., *Phys. Rev. E*, vol. 100, 020201(R) 5 pages (2019).
- Loppini A., Filippi S. and H.E. Stanley, *Phys. Rev. E*, vol. 99, 040301(R) 5 pages (2019).



Punsly

Position: Research Scientist
Period covered: 10/2019 – 10/2019

I Scientific Work

Black Holes and Quasars

Black Holes and Quasars

1. Introduction

This report describes the research performed by Brian Punsly and collaborators in cooperation with ICRANet in 2019. The research was directed at finding environmental factors that are related to the switch-on of the general relativistic engine responsible for the few percent of accreting black holes that drive powerful relativistic jets. This is important since this will relate directly to constraints on the initial state and boundary conditions on numerical models of black hole driven jets.

2. The Origin of the Event Horizon Scale Jet in M87 and EHT

Global millimeter wavelength Very Long Baseline Interferometry (VLBI) is an ambitious program to study the event horizon scale physics of nearby active galactic nuclei (AGN). The shortest wavelength receivers have been designated as the Event Horizon Telescope (EHT). It has been widely advertised that the experiment will reveal how astrophysical black holes can drive powerful jets near the event horizon – possibly proving the Blandford-Znajek mechanism that drives jets from the event horizon itself. There is only one powerful relativistic jet source that can be explored by the EHT with resolution on the order of the event horizon dimension, the jet in the enormous radio galaxy M87. Thus, M87 is the most studied object in radio jet research.

However, I show in a recent ApJ Letter, “Constraints on Black Hole Jet Models Used As Diagnostic Tools of Event Horizon Telescope Observations of M87” (B. Punsly 2019 ApJL 879 11) that the EHT observations do not show a Blandford-Znajek jet based on 60,000 attempts at numerical simulations made by the EHT collaboration. They fail grossly at the most basic level.

Abstract:

Jet models of Event Horizon Telescope (EHT) data should also conform to the observed jet profiles just downstream. This study evaluates conformance of models of black hole jets to images of the innermost jet of M87. This is a basic test that should be passed before using them to perform a physical interpretation of EHT data. Recent 86 GHz Very Long Baseline Interferometry observations of M87 have revealed the morphology and size of the jet near its source ($<65 M$, or 0.06 lt-yrs after correcting for line of sight to the jet, where M is the black

hole mass in geometrized units) for the first time. Current transverse resolution indicates that this region is dominated by flux emanating from the edge of the jet.

The observed inner jet profiles are compared to all existing published synthetic radio images constructed from “state of the art” 3-D numerical simulations of the

black hole accretion system in M87. Despite efforts to produce the characteristic wide, edge dominated jet, these models are too narrow (by a factor of ~ 2) in the region 0.06 – 0.32 lt-yrs from the source, even though the jets (spine and/or sheath) in the image plane might appear conformant farther downstream. Furthermore, the synthetic radio images are not edge dominated 0.06 – 0.32 lt-yrs from the source, but spine dominated. Analyses that implement these models as physical diagnostics of EHT visibility amplitudes are therefore suspect. Thus, these inner jet characteristics are important considerations before applying simulations to the EHT data.

3. Discrete and Continuous Ejection Models of the Radio Source Associated with GW170817

From the paper of the same name (B. Punjly 2019 ApJL 871 34)

ABSTRACT:

The gravity wave source, GW170817, and associated gamma ray burst (GRB), GRB 170817A, produced radio emission that was detected in multiple epochs of Very Long Baseline Interferometry (VLBI) and with broadband radio photometry. Three unique pieces of observational evidence were determined: a discrete radio emitting region that moves with an apparent velocity of $\approx 4c$, the discrete region includes all of the radio flux, and there is likely a synchrotron self absorption (SSA) spectral turnover on day ~ 110 and day ~ 160 after ejection. This unprecedented wealth of data for a GRB provides a unique opportunity to understand the radio emitting plasma that was ejected by the putative merger event. The velocity can constrain the kinematics and the SSA turnover has been used to constrain the size to much smaller than can be done with an unresolved VLBI image, allowing one to estimate the associated plasmoid size directly from the data and improve estimates of the energetics. Models of the radio emission for both a turbulent, protonic, discrete ballistic ejection and a high dissipation region within an otherwise invisible Poynting flux dominated positron-electron jet are considered. On days ~ 110 and ~ 160 post-merger, for the range of models presented, the jet power is $2 \times 10^{39} \lesssim 8 \times 10^{40}$ ergs/s and the ballistic plasmoid kinetic energy is $3 \times 10^{45} \lesssim 1.5 \times 10^{47}$ ergs. Even though only valid after day 110, this independent analysis augments traditional GRB light curve studies, providing additional constraints on the merger event.

II Conferences and educational activities

N/A

III. Service activities*N/A*

IV. Other

2019List of Publication

2019 List of Publication

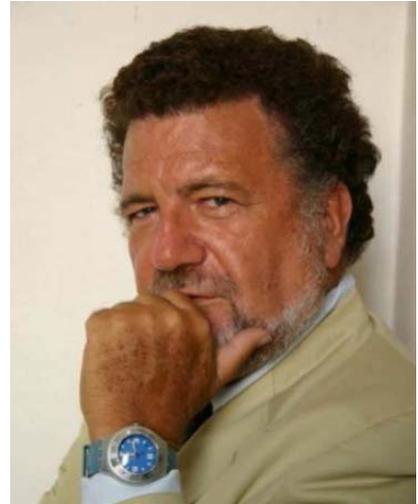
Punsly, B. Discrete and Continuous Ejection Models of the Radio Source Associated with GW170817 2019 ApJL 871 34

Punsly, B. Constraints on Black Hole Jet Models Used As Diagnostic Toolsof Event Horizon Telescope Observations of M87 2019 ApJL 879 11

PROFESSOR REMO RUFFINI

Short CV of Professor Remo Ruffini

Director of ICRANet, coauthor of more than 800 scientific publications and 13 books, Remo Ruffini received his doctorate at Sapienza in Rome in 1967. He taught in Hamburg, at Princeton University and the Institute for Advanced Study, in Japan, Australia and CBPF (Brazil). Some of his major results: boson stars, “Introducing the Black Hole” with J.A. Wheeler, and the limiting critical mass of neutron stars. He identified the first black hole in our Galaxy using UHURU satellite data with Giacconi (Nobel recipient 2002), and received the Cressy Morrison Award (1973). Returning to Sapienza (1978), he promoted a Rome-Stanford collaboration on gravitational wave detectors. With European, US and Chinese institutions he established the International Center for Relativistic Astrophysics (ICRA) and later ICRANet in Italy, Armenia, France and Brazil (2005). He developed an understanding of gamma ray bursts, confirmed by the largest telescopes on Earth and from space: from their discovery in 1973, to their cosmological origin in 1997, to determining seven different GRBs families and their conceptual understanding, in 2018. This has enabled GRBs, the largest explosions in the Universe, to be used to enlighten our comprehension of our Universe.



Prof. Remo Ruffini is coauthor, among others, of the following books (<http://www.icranet.org/RuffiniBooks>):

1. (with J. Bardeen, B. Carter, H. Gursky, S. Hawking, I. Novikov and K. Thorne) “Black holes”, Ed. B. and C. de Witt, Gordon and Breach, New York, 1973;
2. (with M. Rees and J.A. Wheeler) “Black Holes, Gravitational Waves and Cosmology”, Gordon and Breach N.Y. 1974, also translated in Russian as “Cernie Dirigratazionnie Volni I Kosmologia”, Mir, Moscow 1974;
3. (with H.Gursky) “Neutron Stars, Black Holes and Binaries Sources”, D. Reidel, Dordrecht, 1975;
4. (with R. Giacconi et al.) “Physics and Astrophysics of Neutron Stars Black Holes”, North Holland Pub. Co. Amsterdam 1978;
5. (with Humitaka Sato) “Black Holes”, in japanese, Chuo Koron-Sha, Tokyo 1976;
6. (with Fang Li Zhi) “Basic Concepts in Relativistic Astrophysics”, in chinese, Science Press, Beijing 1981, also translated into english,, World Scientific, Singapore 1983;
7. (with Francesco Melchiorri) “Gamow Cosmology”, North Holland Pub. Co., Amsterdam,1986;
8. (with H. Ohanian) “Gravitation and Spacetime” W.W. Norton and Co., New York 1976;
9. (with H. Ohanian) “Gravitazione e Spazio-Tempo” Zanichelli, Bologna 1997;
10. (with H. Ohanian) “Gravitation and Spacetime” W.W. Norton and Shin Won Agency Co., Seoul, 2001.

Scientific selected publications of Remo Ruffini, from SAO/NASA Astrophysics Data System (ADS)

More than 800 publications: <https://tinyurl.com/yczc7bov>

Awards received

- Cressy Morrison award of the New York Academy of Sciences , 1972.
- Fellow of the American Physical Society 1974-
- Fellow of Alfred P. Sloan Foundation, 1974-76.
- Space Scientist of the Year Award, 1992.
- Honorary Professor of University of Kirghizia, 1998-
- Commander of the Order of Merit of the Italian Republic, 2019 -
- Delfino d'Oro of Pescara Award, 2019.
- Rosone d'oro of Pianella Award, 2019.

Surname Name

Vereshchagin Gregory

Position: professor
Period covered: 2019

Photo



I Scientific Work

The work is focused on the following aspects:

- Thermalization of relativistic plasma with quantum degeneracy (with I.A. Siutsou and N.O. Prakapenia)

We developed an efficient method to compute Uehling–Uhlenbeck collision integral for all two-particle and three-particle interactions in relativistic plasma with drastic improvement in computation time with respect to existing methods. The set of reactions consists of binary processes (Moeller, Bhabha and Compton scattering, two-photon pair production and annihilation) and triple processes (relativistic bremsstrahlung, double Compton scattering, radiative pair production and three-photon annihilation), which are computed from first principles, i.e. from the QED matrix elements. In our method exact energy and particle number conservation laws are fulfilled. Reaction rates are compared, where possible, with the corresponding analytical expressions and convergence of numerical rates is demonstrated. Thermalization timescales are computed as function of temperature reached in thermal equilibrium.

- Bose-Einstein condensation in relativistic plasma (with N.O. Prakapenia)

We consider the possibility of Bose-Einstein condensation of photons in relativistic plasma. The phenomenon of Bose-Einstein condensation is traditionally associated with and experimentally verified for low temperatures: either of nano-Kelvin scale for alkali atoms or room temperatures for quasi-particles or photons in two dimensions. In this work we demonstrate out of first principles that for certain initial conditions non-equilibrium plasma at relativistic temperatures of billions of Kelvin undergoes condensation, predicted by Zeldovich and Levich in their seminal work. It is found that necessary condition for the development of BEC is an excess of photon number over the equilibrium number, as well as initial distribution of photons not broader than Wien spectrum with the peak of the distribution located above the critical energy below which triple interactions

dominate over the binary ones. Broader initial distributions, even the Planck spectrum, contain too many photons at low energies, and triple interactions such as bremsstrahlung quickly eliminate excess photons, preventing the condensation. This is the reason why the cooling of photons by electrons proposed by Zeldovich and Levich does not lead to photon condensation.

- Inflationary measure in loop quantum cosmology (with S. Bedic)

We study the measure on the set of initial conditions in remote past for Loop Quantum Cosmology with massive scalar field motivated by various choices of the measure present in the literature. The main finding of the analysis is existence of an attractor at contracting phase of the universe, which, in addition to the well known attractor at expanding phase, predicts a very specific duration of inflationary stage with the number of e-foldings about 140.

- On the Role of a Cavity in the Hypernova Ejecta of GRB 190114C (with R. Ruffini and J.D. Melon Fuksman)

The binary-driven hypernova I (BdHN I) scenario considers a binary system composed of a massive carbon-oxygen core (CO_{core}), and a binary neutron star (NS) companion with a typical binary period of few minutes. It is assumed that at a certain moment the CO_{core} undergoes a supernova explosion with the creation of a new neutron star (vNS). At the same time hypercritical accretion onto the companion binary neutron star initiates and proceeds until it exceeds the critical mass for gravitational collapse. The formation of a black hole (BH) captures 10^{57} baryons by enclosing them within its horizon, and thus a cavity of approximately 10^{11} cm is formed around it with initial density 10^{-7} g/cm³. A further depletion of baryons in the cavity originates from the expansion of the electron-positron-photon ($e^+e^-\gamma$) plasma formed at the collapse, reaching a density of 10^{-14} g/cm³ by the end of the interaction. It is demonstrated here using an analytical model complemented by a hydrodynamical numerical simulation that part of the $e^+e^-\gamma$ plasma is reflected off the walls of the cavity. The consequent outflow and its observed properties are shown to coincide with the featureless emission occurring in a time interval of duration t_{rf} , measured in the rest frame of the source, between 11 and 20 s of the GBM observation. Moreover, similar features of the GRB light curve were previously observed in GRB 090926A and GRB 130427A, all belonging to the BdHN I class. This interpretation supports the general conceptual framework presented in (Ruffini et al., 2019) and guarantees that a low baryon density is reached in the cavity, a necessary condition for the operation of the "inner engine" of the GRB presented in an accompanying article.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Talk “On the role of a cavity in the hypernova ejecta of GRB 190114C”, The Open Universe International Doctoral School “The discovery of Black Holes”, Villa Ratti, Nice, France, June 10 - 14, 2019;
- talk "On Bose-Einstein condensation in relativistic plasma", 16th Italian-Korean Symposium on Relativistic Astrophysics, ICRANet, Pescara, Italy, 1-5 July, 2019;
- talk "Cavity in the hypernova ejecta of GRB 190114C", 105 Congress of the Italian Physical Society, Gran Sasso Science Institute, L'Aquila, Italy, 23-27 September 2019.

II b Work With Students

- David Melon Fuksman (IRAP PhD): asymmetric explosion in SN ejecta
- Nikolai Prakapenia (NASB): Bose-Einstein condensation in relativistic plasma
- Susana Bedic (IRAP PhD): inflationary measure in loop quantum cosmology
- Rafael Yunis (IRAP PhD): dark matter distribution and temperature evolution

II c Diploma thesis supervision

II d Other Teaching Duties

- lecture course on relativistic kinetic theory with applications in astrophysics and cosmology for the 4th year students of the department of theoretical physics and astrophysics at the Belarusian State University, 4-15 September 2019.

II e. Work With Postdocs

- Ivan Siutsou: relativistic plasma thermalization with quantum degeneracy; photospheric emission

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

- Member of the IRAP PhD Faculty
- coordination of cooperation with the Belarusian State University
- coordination of cooperation with the National Academy of Sciences of Belarus
- coordination of activities in ICRANet-Minsk center
- organizational work for the Fourth Zeldovich Meeting

- supervision of the ICRA Net newsletter
- supervision of ICRA Net press releases

III b. Outside ICRA Net

- Co-PI of the scientific program “Relativistic astrophysical objects and phenomena” within the Belarusian state program “Convergence-2020”, subprogram “Microworld and Universe”;
- Co-PI of the joint ICRA Net-BRFFR research program “Relaxation of multicomponent optically thick relativistic plasma with quantum degeneracy” for 2019-2021.

IV. Other

- Public lectures “Contemporary astrophysics and its perspectives in Belarus”, Belarusian State University and Minsk Science Club, 4-15 September 2019.

2019 List of Publication

1. M. A. Prakapenia, I. A. Siutsou and G. V. Vereshchagin, "Thermalization of electron-positron plasma with quantum degeneracy", *Physics Letters A* 383 (2019) pp. 306-310.
2. G.V. Vereshchagin and S. Bedic, "Inflationary measure in loop quantum cosmology", *Phys. Rev. D* 99 (2019) 043512.
3. R. Ruffini, J. D. Melon Fuksman and G. V. Vereshchagin, "On the Role of a Cavity in the Hypernova Ejecta of GRB 190114C", *The Astrophysical Journal*, Vol. 884, Issue 1 (2019) article id. 191.
4. M. A. Prakapenia and G.V. Vereshchagin, "Bose-Einstein condensation in relativistic plasma", accepted for publication in *European Physics Letters*, 2019.

Surname Name **Xue She-Sheng**

Photo



Position: ICRA Net Faculty

Period covered: 2018 -- 2019

I Scientific Work

Kerr black hole in an external magnetic field, and strongly pulsating electromagnetic field in gravitational collapse and heavy atoms, as well as their relevance to Gamma-Ray Bursts (GRBs) physics.

Strong electromagnetic field in compact stars and heavy atoms and its relevance to their structure and properties.

Pair production rates and radiation in strong and time-varying electromagnetic fields, and its applications in physics and astrophysics.

Pair production and interactions of fields and matter in the cosmological evolution within the framework of Einstein-Maxwell theory.

Four-fermion interactions of Einstein-Cartan theory and its resulted particle spectra for matter and dark matter.

The opacity of high energy cosmic particles in terms of their energy and travelling distance.

See the following list of publications.

II Conferences and educational activities

(II a) Conferences and Other External Scientific Work

Participating the organizations of ICRANet meetings in Korea and China: the 15th Italian-Korean meeting (July, 2019, Pescara, Italy) and the first Hangzhou meeting on Gravitational waves (October, 2019).

Participating the organization of MG15, and session organization, MG15 Rome July 2018.

Participating the preparation of ICRANet agreements with Institutions of China (2018-2019).

Participating the preparation of ICRANet outreach activities: ICRANet exhibitions in Pescara and Rome, la Notte Europea dei Ricercatori 2018-2019 and Besso foundation.

(II b) Work With Students and young researchers

Wang Yu and Rahim Moradi, Li Liang and Luis Gabriel Gómez Díaz, David Melon Fuksman, Yu Ling Chang and Yen-Chen Chen, Soroush Shakeri, Maryam Amiri, B. Elsan Panah and Rashid Riahi, Seddigheh Tizchang, Somayye Mahmoudi, as well as Takahiro Hayashinaka, Cheng-Jun Xia (supported by their nation).

(II c) Diploma thesis supervision (2012-2019)

Yuanbin Wu, Handrik Ludwig, Eckhard Strobel, and Clement Stahl (all are Erasmus Mundus Ph.D. students), their main publications: 12 in Phys. Rev. , and 6 in Nucl. Phys., Phys. Lett.

(II d) Other Teaching Duties (2012-2019)

Teaching courses in Nice and Les Houches schools for IRAP Ph.D. Erasmus Mundus students.

(II e) Work With Professors and Postdocs inside and outside ICRANet (2012-2018)

R. Ruffini, H. Kleinert, G. Vereshchagin, J. Rueda, C. Bianco, W.B. Han, I. Siutsou, C. Argulles, C. Gruber, M. Zarei, M. Abdi, R. Mohammadi, D. Bégué, E. Bavarsad and Sang Pyo Kim.

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Participating organization of ICRANet Seminars and ICRANet outreach activity.

Participating preparation of ICRANet Newsletter. Working with ICRANet administration.

III b. Outside ICRANet

Visiting Chinese Institutions IHEP and ITP, CAS as well as Tsinghua University and Hang Zhou University of technology that are in cooperation with ICRA Net .

IV. Other

The List of Publications (2018 -- 2019)

- C. Cherubini, S. Filippi, A. Loppini, R. Ruffini, R. Moradi, Y. Wang, and S.-S. Xue, "On Perfect Relativistic magneto hydrodynamics around black holes in horizon penetrating coordinates" *Phys.Rev.D*97, 064038 (2018).
- E. Bavarsad, S. P. Kim, C. Stahl, S.-S. Xue, "Effect of a magnetic field on Schwinger mechanism in de Sitter spacetime", *Phys. Rev. D* 97, 025017 (2018).
- R. Ruffini, et al., "Early X-Ray Flares in GRBs", *ApJ*...852...53R (2018).
- T. Hayashinaka, S.-S. Xue, "Physical renormalization condition for de Sitter QED", *Phys. Rev. D* 97, 105010 (2018).
- H. Kleinert and S.-S. Xue "Composite fermions and their pair states in a strongly-coupled Fermi liquid ", *Nuclear Physics B. Volume 936*, November 2018, Pages 352-363
- R. Ruffini, et. al. "On the Ultra-relativistic Prompt Emission, the Hard and Soft X-Ray Flares, and the Extended Thermal Emission in GRB 151027A ", *ApJ* 869, No. 2, 2018, <https://arxiv.org/abs/1712.05001>
- R. Ruffini, et. al. "On the GeV emission of the type I BdHN GRB 130427A ", *ApJ* 886, No. 2, 2019, <https://arxiv.org/abs/1812.00354>
- R. Ruffini, et.al. "Self-similarity and power-laws in GRB 190114C ", *arXiv:1904.04162* and "Self-Similarities and Power-laws in the Time-resolved Spectra of GRB 190114C, GRB 130427A, GRB 160509A, and GRB 160625B" *arXiv:1910.12615*; "On the role of the Kerr-Newman black hole in the GeV emission of long gamma-ray bursts " *arXiv:1803.05476*; "
- E. Bavarsad, S. P. Kim, C. Stahl, S.-S. Xue, "QED effective action in de Sitter space", in preparation, will appear soon in arXiv and regular scientific journal.
- S.-S. Xue, "Einstein equation and Hawking radiation govern Universe evolution", <https://arxiv.org/abs/1910.03938>.
- S. Tizchang, R. Mohammadi and S.-S. Xue, "Probing Lorentz violation effects via a laser beam interacting with a high-energy charged lepton beam." *Eur. Phys. J. C* (2019) 79: 224 <https://arxiv.org/abs/1811.00486>.

M. Haghghat, S. Mahmoudi, R. Mohammadi, S. Tizchang and S.S. Xue, ``Circular polarization of cosmic photons due to their interactions with Sterile neutrino dark matter'', <https://arxiv.org/abs/1909.03883>

M. Abdi, R. Mohammadi, S.-S. Xue, M. Zarei , ``Distinguishing Dirac from Majorana neutrinos in a microwave cavity'', <https://arxiv.org/abs/1909.01536>

D. Bégué, C. Stahl and S.-S. Xue, ``A model of interacting dark fluids tested with supernovae and Baryon Acoustic Oscillations data'', Nuclear Physics, Section B, Volume 940, p. 312-320, (2019), <https://arxiv.org/abs/1702.03185>

S. Shakeri, R. Mohammadi, and S.-S. Xue

``Light by Light Scattering as a Probe for Axion Dark Matter'', the work in preparation

E. Bavarsad, S. P. Kim, C. Stahl, S.-S. Xue, ``Schwinger mechanism in electromagnetic field in de Sitter space time'', EPJ Web of Conferences **168**, 03002 (2018).

E. Bavarsad, S. P. Kim, C. Stahl, S.-S. Xue , ``Effect of Schwinger Pair Production on the Evolution of the Hubble Constant in de Sitter Spacetime'', The proceedings of The Fifteenth Marcel Grossmann Meeting - MG15, University of Rome "La Sapienza" - Rome, July 1-7, 2018

Adjunct Professors of the Faculty



Belvedere Riccardo

Position: Faperj-COSMO Post Doc at Brazilian Center for Research in Physics (CBPF)

Period covered: 2016 - 2019

I Scientific Work

In the last years I worked on Delta matter, to study its effects on the Equation of State of Neutron Stars, in the context of Relativistic Mean Field Theory. Currently, I am working to improve the constraints on Delta matter's coupling constants, in the framework of Relativistic Mean Field Theory. The reason to face this problem is to apply this upgraded constraints on the Neutron Stars EOS, both for stars with local and global charge neutrality, and analyse the astrophysical consequences .

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- 22nd Capra Meeting on Radiation Reaction in General Relativity, Centro Brasileiro de Pesquisas Físicas (CBPF), Rio de Janeiro, Brazil, June 17 - 21, 2019
- XL Encontro Nacional de Física de Partículas e Campos (ENFPC) e XLII Reunião de Trabalho sobre Física Nuclear no Brasil (RTFNB), Campos do Jordão, Brazil, September 1 - 5, 2019

II b Work With Students

- Student supervisor in the context of the Iniciação Científica program (Program of scientific initiation) for undergraduate students. Project title: "Rotating Neutron Stars and Rotating Hybrid Stars in the Mean Field Approximation". Student: Marco Aurelio Laversveiler Paiva. CBPF, Rio de Janeiro, Brazil, September 2018 - in progress.

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc..) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2019 List of Publication

IN PREPARATION:

- R. Belvedere, C. E. Cedeño M. and S. B. Duarte. New constraints on nuclear delta-matter's coupling constants.
- R. Belvedere, C. E. Cedeño M. and S. B. Duarte. Slowly and rapidly rotating neutron stars with extended hadronic nuclear models with delta-resonances.

Thomas Buchert

Position: Professor of Cosmology

Staff Member of CRAL, Head of Cosmology Group :
Université Lyon 1 and École Normale Supérieure Lyon
Adjunct Professor of the Faculty : ICRANet
PI: ERC advanced Grant ARThUs

Period covered: January 2019 - December 2019

I Scientific Work

- (i) Generalization of scalar averaging schemes for arbitrary 3+1 foliations of space-time and arbitrary fluid content. Covariant formulation of the averaging framework.
- (ii) New statistical tools: homology and persistence, and application to the Cosmic Microwave Background.
- (iii) Dark Energy-free fit to supernova data.
- (iv) Dark Matter as an effect of backreaction.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- LOC and SOC : Workshop "Inhomogeneous Cosmologies IV", Torun, Poland (July 2019).
- SOC : Workshop "Emerging Issues in Cosmology and Particle Physics", Visva Bharati, India (January 2020).
- Seminar Public Outreach, Villeurbanne, France (March 2019).
- Seminar Public Outreach, Saint-Genis-Laval, France (March 2019).

II b Work With Students

1 PhD student: Pierre Mourier (defense September 2019). 3 PhD students (ongoing) :
Quentin Vigneron, Martin France and Étienne Jaupart.

II c Diploma thesis supervision:

- 1 Master student M1 (Rémi Faure, ENS) ;
- 2 pre-Master students (Shriya Hirve (India), Clément Richard, ENS).

II d Other Teaching Duties see below.

II e. Work With Postdocs :

Collaboration with Pratyush Pranav, Léo Brunswic, Nezihe Uzun, Asta Heinesen, ERC postdocs, financed by the ERC advanced Grant "ARTHUS, PI: T. Buchert". Collaboration with Jan. J. Ostrowski (Warsaw), Ismael Delgado Gaspar (Mexico).

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet : None.

III b. Outside ICRANet :

Management of ERC advanced grant "ARTHUS, PI: T. Buchert", since September 2017.
Exercises in "Introduction to General Relativity", École Normale Supérieure, Lyon.
Exercises in "Fluidmechanics", Université Lyon 1.

IV. Other Memberships in the *Euclid consortium* ("Theory" and "Clustering"), and in *4MOST*.

2019 List of Publications

peer-reviewed – published and submitted

ad (i) - Heinesen A., Mourier P., Buchert T. : 'On the covariance of scalar averaging and backreaction in relativistic inhomogeneous cosmology', *Class. Quant. Grav.* 36, 075001 (2019).

ad (i) - Buchert T., Mourier P., Roy X. : 'On Average Properties of Inhomogeneous Fluids in General Relativity III: General Fluid Cosmologies', submitted (2019).

ad (ii) - Pranav P., van de Weygaert R., Vegter G., Jones B.J.T., Adler R.J., Feldbrugge J., Park C., Buchert T., Kerber M. : 'Topology and Geometry of Gaussian random fields I : on Betti Numbers, Euler characteristic and Minkowski functionals', *Mon. Not. Roy. Astron. Soc.* 485, 4167 (2019).

ad (ii) - Pranav P., Adler R.J., Buchert T., Edelsbrunner H., Jones B.J.T., Schwartzmann A., Wagner H., van de Weygaert R. : 'Unexpected Topology of the Temperature Fluctuations in the Cosmic Microwave Background', *Astron. Astrophys.* 627, A163 (2019).

ad (iii) – Desgrange C., Heinesen A., Buchert T. : 'Dynamical spatial curvature as a fit to Type Ia supernovae', *Int. J. Mod. Phys. D* 28, 1950143 (2019).

ad (iv) – Vigneron Q., Buchert T. : 'Dark Matter from Backreaction ? Collapse models on galaxy cluster scales' *Class. Quant. Grav.* 36, 175006 (2019).

Buchert T., Mädler T. : 'Editorial note to: On the Newtonian limit of Einstein's theory of gravitation (by Jürgen Ehlers)', *Gen. Rel. Grav.* 51, 162 (2019).

invited papers:

de Jong R.S. et al. : '4MOST: Project overview and information for the First Call for Proposals', *The Messenger*, vol. 175, p. 3-11 (2019).

Kneib R.J. et al. : '4MOST Consortium Survey 8: Cosmology Redshift Survey (CRS)', *The Messenger*, vol. 175, p. 50-53 (2019).



Cherubini Christian

Position: Associate Professor in Mathematical Physics (MAT/07).
Department of Science and Technology for Humans and the Environment
Laboratory of Nonlinear Physics and Mathematical Modeling
University "Campus Bio-Medico di Roma",
Via A. del Portillo 21, I-00128 Rome, Italy
and
Adjunct Professor in ICRANet Faculty.

Period covered: position at ICRANet started on September 11th, 2017

I Scientific Work

- Electrodynamics and magnetohydrodynamics around black holes.
- Mathematical Biology.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Maths from the body II: Venice, June 6-8, 2019

II b Work With Students

Prof. Cherubini has published in 2019 a work in collaboration with Prof. S. Filippi, Prof. R. Ruffini, and several ICRANet scientists and PhD students concerning the GeV Emission of the Type I BdHN GRB 130427A.

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

- Participation to the "Collegio di Dottorato" of the INTERNATIONAL RELATIVISTIC ASTROPHYSICS PH.D."

III b. Outside ICRANet

- Lecturer “Electromagnetism” (Departmental Faculty of Engineering, University Campus Bio-Medico of Rome).
- Lecturer “Mathematical Physics Models for Engineering” (Departmental Faculty of Engineering, University Campus Bio-Medico of Rome).

IV. Other

Prof. Cherubini has a longstanding collaboration with other ICRANET scientists. In particular, in collaboration with Dr D. Bini, Prof. R. T Jantzen, Prof. R. Ruffini and Dr. J.A. Rueda, he has written several articles in various areas of General Relativity. With Prof. S. Filippi he is involved in research activities in the fields of Stellar and Galactic Structures, Effective Geometries and Complex Systems in Nature with a specific focus in biophysics.

2019 List of Publications

- R. Ruffini, R. Moradi, J. A. Rueda, L. Becerra, C. L. Bianco, C. Cherubini, S. Filippi, Y. C. Chen, M. Karlica, N. Sahakyan, Y. Wang, and S. S. Xue, ApJ 886, 82 (2019).
- Loppini A., Gizzi A., Cherubini C., Cherry E.M., Fenton F.H., Filippi S., Phys. Rev. E, vol. 100 , 020201(R) 5 pages (2019).

Surname Name

Massimo Della Valle



Position: Director of Research, Capodimonte Astronomical Observatory, INAF-Naples

Scientific Work

Follow-up of Supernovae:, Photometric and Spectroscopic Evolution, Rates
Supernova and Gamma-ray Burst connection

Galactic and extragalactic Novae

Supernovae-Ia and Gamma-ray Bursts as rulers for cosmological parameters

Kilonovae and short Gamma-ray Bursts

Brief description

My ongoing research concern the study of several classes of transient phenomena such as: Supernovae, Gamma-ray Bursts, Kilonovae and Novae.

Gamma-ray bursts and their Afterglows. My interest in this area started in 2000 when I became member of the SWIFT follow-up team. Most efforts are devoted to the study of the connection between Supernovae and GRBs [2,4,9]

Supernovae. Photometric and the spectroscopic study of all types of SNe (Ia, Ib/c, II-linear, II-plateau) near maximum light and at late stages and their theoretical modeling. The observations at maximum provide us with the necessary data for using SNe (Ia and II) as standard candles. The observations at later stages allow one to discriminate among different energy sources (i.e. radioactive decay, pulsar, light-echo), to model the mechanisms of the explosion, and to shed light on the nature of the progenitor [3,5,7]

Kilonovae. The study of kilonovae associated with short GRBs (e.g. 179817A) has been carried out for individual objects in [1,6,8] , while the kilonova rate has been derived in [10].

2019 List of Publication

1. *Search for the optical counterpart of the GW170814 gravitational wave event with the VLT Survey Telescope.*, Grado et al. 2019, MNRAS, tmp.3186G
2. *GRB 171010A/SN 2017htp: a GRB-SN at $z = 0.33$* , Melandri, A. et al. 2019, MNRAS, 490, 5366
3. *The Spectral Evolution of AT 2018dyb and the Presence of Metal Lines in Tidal Disruption Events*, Leloudas, G. et al. 2019, ApJ, 887, 218
4. *Prospects for multi-messenger extended emission from core-collapse supernovae in the Local Universe*, van Putten, M., Levinson, A., Frontera, F., Guidorzi, C., Amati, L., Della Valle, M. 2019, EPJP, 134, 537
5. *Evidence for a Chandrasekhar-mass explosion in the Ca-strong 1991bg-like type Ia supernova 2016hnk*, Galbany, L. et al. 2019, A&A, 630, 76
6. *Multi-messenger Extended Emission from the Compact Remnant in GW170817*, van Putten, M., Della Valle, M., Levinson, A. 2019, ApJ., 876, L2
7. *Signatures of a jet cocoon in early spectra of a supernova associated with a γ -ray burst*, Izzo et al. 2019, Nature, 565, 324
8. *Observational evidence for extended emission to GW170817*, van Putten, M., Della Valle, M. 2019, MNRAS, 482, L46
9. *Unveiling the enigma of ATLAS17aeu*, Melandri et al. 2019, A&A, 621, 81
10. *GW170817: implications for the local kilonova rate and for surveys from ground-based facilities*, Della Valle et al. 2019, MNRAS, 481, 4355

Jaan Einasto

Position: scientific consultant

Period covered: Jan 1, 2019 - Dec 31, 2019



I Scientific Work

We investigate how properties of the ensemble of superclusters in the cosmic web evolve with time. We performed numerical simulations of the evolution of the cosmic web using the LambdaCDM model in box sizes $L_0 = 1024, 512, 256$ Mpc/h. We found supercluster ensembles of models for four evolutionary stages, corresponding to the present epoch $z = 0$, and to redshifts $z = 1, z = 3$, and $z = 10$. We calculated fitness diameters of superclusters defined from volumes of superclusters divided by filling factors of over-density regions. Geometrical and fitness diameters of largest superclusters, and the number of superclusters as functions of the threshold density were used as percolation functions to describe geometrical properties of the ensemble of superclusters in the cosmic web. We calculated the distributions of geometrical and fitness diameters and luminosities of superclusters, and followed the time evolution of percolation functions and supercluster distributions. We compared percolation functions and supercluster distributions of models and samples of galaxies of the Sloan Digital Sky Survey (SDSS). Our analysis shows that fitness diameters of superclusters have a minimum at a certain threshold density. Fitness diameters around minima almost do not change with time in co-moving coordinates. Numbers of superclusters have maxima which are approximately constant for all evolutionary epochs. The geometrical diameters of superclusters decrease during the evolution of the cosmic web, and the luminosities of superclusters increase during this evolution. Our study suggests that evolutionary changes occur inside supercluster cells of dynamical influence. The stability of fitness diameters and numbers of superclusters during the evolution is an important property of the cosmic web.

We study biasing as a physical phenomenon by analysing geometrical and clustering properties of density fields of matter and galaxies. Our goal is to determine the bias function using a combination of geometrical and power spectrum analyses of simulated and real data. We apply an algorithm based on the local densities of particles, δ , to form simulated, biased models using particles with $\delta \geq \delta_0$. We calculate the bias function of model samples as functions of the particle-density limit δ_0 . We compare the biased models with Sloan Digital Sky Survey (SDSS) luminosity-limited samples of galaxies using the extended percolation method. We find density limits δ_0 of biased models that correspond to luminosity-limited SDSS samples. The power spectra of biased model

samples allow estimation of the bias function $b(> L)$ of galaxies of luminosity L^* . We find the estimated bias parameter of L^* galaxies, $b^* = 1.85 \pm 0.15$. Our conclusion is that the absence of galaxy formation in low-density regions of the Universe is the dominant factor of the biasing phenomenon. The second-largest effect is the dependence of the bias function on the luminosity of galaxies. Variations in gravitational and physical processes during the formation and evolution of galaxies have the smallest influence on the bias function.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

1. Feb 20 -- 22 Tartu-Tuorla seminar 2019 was held in Tartu on topic: "Einasto profile". Jaan Einasto had presentations "Evolution of superclusters" and "The biasing problem".
2. Jun 27 - 19 conference "The Cosmic Web: from Galaxies to Cosmology" was held in Edinburgh. Jaan Einasto had a talk "The biasing phenomenon".
3. Jun 27 - 28 Jaan Einasto participated in conference "Cosmo Gold" in Paris observatory, and the Gruber 2019 Cosmology Prize ceremony.

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

Jaan Einasto participated in the activity of the Estonian Academy of Sciences: annual meetings and discussions on science policy.

Jaan Einasto was awarded by the Harald Keres medal of Estonian Academy of Sciences and by Tartu University large medal.

2019 List of Publication

Einasto, J., Liivamägi, L. J., Suhhonenko, I., & Einasto, M. 2019a, The biasing phenomenon, *A&A*, 630, A62

Einasto, J., Suhhonenko, I., Liivamägi, L. J., & Einasto, M. 2019b, Evolution of superclusters in the cosmic web, *A&A*, 623, A97



Filippi Simonetta

Position: Full Professor in Theoretical Physics (FIS/02)
Departmental Faculty of Engineering
University Campus Bio-Medico of Rome,
Head, Laboratory of Nonlinear Physics and Mathematical Modeling
Pro-Rector for Education
Via A. del Portillo 21, I-001285 Rome, Italy,
Tel. +39-06-225419611
and
Adjunct Professor in ICRANet Faculty.

Period covered: position at ICRANet started on September 12th 2017

I Scientific Work

- Electrodynamics around black holes.
- Theoretical biophysics.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Maths from the body II: Venice, June 6-8, 2019

II b Work With Students

Prof. Filippi has published in 2019 an article in collaboration with Prof. C. Cherubini, Prof. R. Ruffini, and several ICRANet scientists and PhD students. The work in particular concerns black holes electro-dynamics focused on the GeV Emission of the Type I BdHN GRB 130427A. At the moment she is still involved in research activities on black hole electro-dynamics and selected theoretical studies on biophysics.

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Prof. Filippi serves as supervisor for IRAP PhD students.

III b. Outside ICRANet

- Lecturer “Dynamics of Complex Systems” (Engineering Departmental Faculty, University Campus Bio-Medico of Rome).
- Faculty of the “Science and Engineering for Humans and the Environment PH.D “ by University Campus Bio-Medico of Rome.

- IV. Other

Prof. Filippi has a longstanding collaboration with ICRANET scientists. In particular in collaboration with Prof. Remo Ruffini she has written several articles on various aspects of Gravitational Physics. With Prof. Christian Cherubini, Dr Jorge Rueda, Dr Andrea Geralico and Dr Donato Bini she has been involved in research activities in the fields of Stellar and Galactic Structures, Effective Geometries and Complex Systems in Nature.

2019 List of Publications

- R. Ruffini, R. Moradi, J. A. Rueda, L. Becerra, C. L. Bianco, C. Cherubini, S. Filippi, Y. C. Chen, M. Karlica, N. Sahakyan, Y. Wang, and S. S. Xue, *ApJ* 886, 82 (2019).
- Loppini A., Gizzi A., Cherubini C., Cherry E.M., Fenton F.H., Filippi S., *Phys. Rev. E*, vol. 100, 020201(R) 5 pages (2019).
- Loppini A., Filippi S. and H.E. Stanley, *Phys. Rev. E*, vol. 99, 040301(R) 5 pages (2019).

Fisher Robert

Position: **Associate Professor** in Physics
Graduate Program Director
University of Massachusetts Dartmouth
285 Old Westport Road
North Dartmouth, Ma. 02740
Tel. +1-508-999-8353
Email: robert.fisher@umassd.edu



Memberships: International Astronomical Union, American Physical Society, American Astronomical Society, National Society of Black Physicists

Period covered: 2019

I Scientific Work

- **Type Ia Supernovae**
- **Star Formation**
- **Physics of the Interstellar Medium**
- **Turbulence and Combustion**
- **Computational Fluid Dynamics**

II Conferences and educational activities

II a Conferences and Other External Scientific Work

“Three-Dimensional Simulations of White Dwarf Mergers and Turbulently-Driven Detonation Initiation,” Beginnings and Ends of Double White Dwarfs Conference, Copenhagen, Denmark, 7/4/2019

“Universality and Non-Universality in Turbulent Detonation Initiation,” Seminar at Technion University, Israel, 6/27/2019

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

- Research advisor to 5 graduate students and 3 undergraduate students
- Graduate program director
- Instructor for classical mechanics, modern physics, and astrophysics courses

IV. Other

2019 List of Publication

O. Graur, K. Maguire, R. Ryan, M. Nicholl, A. Avelino, A. G. Riess, L. Shingles, I. Seitenzahl, **R. Fisher**, “A year-long plateau in the late-time near-infrared light curves of Type Ia supernovae,” Nature Astronomy, 2019. [ADS](#) [arXiv](#) [DOI](#)

C. Byrohl, **R. Fisher**, D. Townsley, “The Intrinsic Stochasticity of the ^{56}Ni Distribution of Single-Degenerate Near-Chandrasekhar-Mass Type Ia Supernovae,” The Astrophysical Journal, 878, 67, 2019. [ADS](#) [arXiv](#) [DOI](#)

R. Fisher, P. Mozumdar, G. Casabona, “Carbon Detonation Initiation in Turbulent Electron-Degenerate Matter,” The Astrophysical Journal, 876, 64, 2019. [ADS](#) [arXiv](#) [DOI](#)

Filippo Frontera



Position: Adjunct Professor of ICRANET, Distinguished Scholar of the University of Ferrara, Associated Senior Scientist of INAF-OAS Bologna

Period covered: January - December 2019

I Scientific Work

Experimental and observational X-/gamma-ray astronomy, in particular:

- a. Prosecution of the development of a focusing Laue lens of gamma-rays for space astrophysics;
- b. Contribution to the mission concept proposal, THESEUS, accepted by ESA for a 0/A study phase, devoted to high z GRBs, multi-messenger astronomy and monitoring of the X-ray sky for the search of new transient phenomena.
- c. Prosecution of the study of a space mission concept ASTENA (Advanced Surveyor of Transient Events and Nuclear Astrophysics) based on a Laue lens (30-600 keV) with unprecedented sensitivity and on a very large wide field (>1sr) broad band (1 keV-20 MeV) monitor (WFM-IS) with imaging, spectroscopy and polarimetric capabilities. A paper on the mission concept is in advanced stage of preparation for A&A.
- d. Two white papers, based on the ASTENA mission performance, have been submitted to ESA for the new ESA programme "Voyage 2015", one on "A Deep Study of the High-Energy Transient Sky" (Contact Person: Cristiano Guidorzi, University of Ferrara) and the other on "Understanding the Origin of Positron Annihilation Line and the Physics of the Supernova Explosions" (Contact Person: Filippo Frontera, University of Ferrara).
- e. Contribution to the scientific exploitation of the Chinese satellite mission Insight-HXMT.

II Conferences and educational activities

II a. Conferences and Other External Scientific Work

1. *Invited talk on “ASTENA, a new mission concept for an Advanced Surveyor of Transient Events and Nuclear Astrophysics”, at the 12th INTEGRAL conference/1st AHEAD Gamma-Ray Workshop, held 11 - 2 February 2019 in Geneva, Swiss.*
2. *Invited talk on “The Transient High-Energy Sky and Early Universe Surveyor (THESEUS)” at the LXIII Congress della Società Astronomica Italiana, 14-17 May 2019.*
3. *Invited talk on “ASTENA, a new mission concept for Transient Events and Nuclear Astrophysics” at the S4 Symposium on Cosmology and Multi-messenger Astrophysics, within the EWASS Conference, 24-25 June 2019.*
4. *Invited Talk on “The Space Astrophysics in Bologna” at the “THESEUS Consortium Meeting” Bologna, 3-5 July 2019.*
5. *Invited Talk on “Historical overview of GRBs and SGRs” at the Konus-Wind 25th Anniversary, St. Petersburg, Sept 9-13, 2019*
6. *Organization of the Calibration meeting of the Chinese satellite HXMT held in Ferrara on 16-17 September 2019.*
7. *Invited Talk on “Story and main steps of an unexpected discovery: the celestial hard X-rays” at the 105th National Congress of Società Italiana di Fisica, L’Aquila, 23 Sept. 2019.*

II b. Work With Students

yes, with

- a) 1 PhD student Renato Martone, IRAP-PhD program*
- b) 1 PhD student Marco Marongiu, IRAP-PhD Program*

II c Other Teaching Duties

Course at the Master’s Degree in Physics, University of Ferrara, on “Measures and Observations of Celestial X- and gamma-rays”.

II d. Work With Postdocs

Yes, with 2 PostDoc: E. Virgilli and Tais Maiolino at the Physics and Earth Sciences Department, University of Ferrara

III. Service activities

III a. Member of the IRAP-PhD Faculty

IV. Other

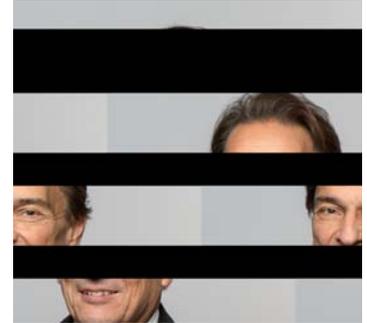
none

2019 List of Publications

- Frontera, Filippo, *The key role of BeppoSAX in the GRB history*, Rendiconti Lincei Scienze Fisiche e Naturali, Vol. 30, pp. 171-184 (2019), <https://doi.org/10.1007/s12210-019-00766-ze>, print arXiv:1902.06119.
- Van Putten, Maurice H. P. M.; Levinson, Amir; Frontera, Filippo; Guidorzi, Cristiano; Amati, Lorenzo; Della Valle, Massimo, *Prospects for multi-messenger extended emission from core-collapse super-novae in the Local Universe*, Phys. J. Plus (2019) 134: 537 DOI 10.1140/epjp/i2019-12932-3
- Maiolino, T.; Laurent, P.; Titarchuk, L.; Orlandini, M.; Frontera, F., *Red-skewed K iron lines in GX13+1*, Astronomy & Astrophysics, Volume 625, id.A8, 13 pp. (2019).
- Cavallari, Erica; Frontera, Filippo, *Erratum: Correction to: Hard X-Ray/Soft Gamma-Ray Experiments and Missions: Overview and Prospects*, Space Science Reviews, Volume 215, Issue 5, article id. 38, 1 pp (2019).
- Guidorzi, C.; Marongiu, M.; Martone, R.; Amati, L.; Frontera, F.; Nicastro, L.; Orlandini, M.; Margutti, R.; Virgilli, E., *A Search for Gamma-Ray Prompt Emission Associated with the Lorimer Burst FRB 010724*, The Astrophysical Journal, Volume 882, Issue 2, article id. 100, 7 pp. (2019).
- Burderi, L.; Sanna, A.; Di Salvo, Amati, L.; Amelino-Camelia, G.; Branchesi, M.; Capozziello, S.; Coccia, E.; Colpi, M.; Costa, E.; De Bernardis, P.; De Laurentis, M.; Della Valle, M.; Falcke, H.; Feroci, M.; Fiore, F.; **Frontera, F.**; Gambino, A. F.; Ghisellini, G.; Hurley, K.; Iaria, R.; Kataria, D.; Labanti, C.; Lodato, G.; Negri, B.; Papitto, A.; Piran, T.; Riggio, A.; Rovelli, C.; Santangelo, A.; Vidotto, F.; Zane, S., *ESA Voyage 2050 whitepaper -- GrailQuest: hunting for Atoms of Space and Time hidden in the wrinkle of Space-Time*, eprint arXiv:1911.02154 (2019).
- Laurent, P.; Acero, F.; Beckmann, V.; Brandt, S.; Cangemi, F.; Civitani, M.; Clavel, M.; Coleiro, A.; Curado, R.; Ferrando, P.; Ferrigno, C.; **Frontera, F.**; Gastaldello, F.; Götz, D.; Gouiffès, C.; Grinberg, V.; Hanlon, L.; Hartmann, D.; Maggi, P.; Marin, F.; Meuris, A.; Okajima, T.; Pareschi, G.; Pratt, G. W.; Rea, N.; Rodriguez, J.; Rossetti, M.; Spiga, D.; Virgilli, E.; Zane, S., *PHEMTO : Polarimetric High Energy Modular Telescope Observatory*, eprint arXiv:1908.08586 (2019).

Curriculum Vitae

Dr Paolo Giommi



PERSONAL INFORMATION

Family name, First name: Giommi Paolo
Researcher unique identifier(s): ORCID: 0000-0002-2265-5003,
Researcher ID: L-1006-2018

Date of birth: 23/06/1952

Nationality: Italian

URL for web site: www.ssdsc.asi.it/pg.html

Email giommipaolo@gmail.com

phone +39 349 4925334

• EDUCATION

1980 Degree of Laurea in Physics (110/110 cum laude)
State University of Milan, Physics department

1981-1982 Junior Research fellow at Harvard Smithsonian Center for Astrophysics (CfA), under the supervision of R. Giacconi and H. Tananbaum

• CURRENT POSITION(S)

From 2016 Senior scientist and lead of the United Nations Open Universe Initiative at the Italian Space Agency (ASI), Italy

2017 Hans Fischer Senior fellow at the Institute for Advanced Study (IAS) of the Technische Universität München (TUM), Germany

2016 Adjoint professor at the International Center for Relativistic Astrophysics, Italy

- **PREVIOUS POSITIONS**

2000-2016 Director of ASI Science Data Center (ASDC), ASI, Italy
2014-now Team leader of the Italian participation to the China-Italy “Moon Mapping” project,
2007-2009 Italian lead scientist (equivalent to PI) for the Italian-French Simbol-X hard-X-ray formation-flying observatory mission (phase-A)
1995-2000 Director of the BeppoSAX Scientific Data Center, ASI, Italy
1991-2010 Collaborator at HEASARC, GSFC, NASA, US
1991-1995 ESIS Project scientist, European Space Agency (ESA), ESRIN, Italy
1986-1991 EXOSAT Archive scientist ESA-ESTEC, The Netherlands
1982-1986 EXOSAT Duty scientist, ESA-ESOC, Germany

- **FELLOWSHIPS AND AWARDS**

1998 Bruno Rossi prize* - for the discovery with BeppoSAX of the X-ray and optical afterglow of Gamma-Ray Bursts.
2007 Bruno Rossi prize - as a key member of the Swift scientific team
2011 Bruno Rossi prize - as a key member of the Agile scientific team
2012 Bruno Rossi prize - as a key member of the Fermi scientific team
*The Bruno Rossi Prize is awarded by the American Astronomical Society:
head.aas.org/rossi/rossi.prize.html
2014-2019 Thomson Reuters “Highly Cited Researchers for ranking among the top 1% or researchers for most cited documents, in their specific fields”.

Recent fellowships

2017 TUM-IAS, Germany Hans-Fischer senior fellow
2016 China Academy of Science – CAS President International Fellowship (PIFI)
2014 Brazil-CAPES Senior Visitor Professor to Brazil

- **SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

Current: 3 PhD students at ICRANet (students from Brazil and Taiwan), 1 PhD student at TUM-IAS, Germany
Past >15 PhD students

- **ORGANISATION OF SCIENTIFIC MEETINGS (last three years)**

2018 15th Marcel Grossmann meeting, 1-7 July, Rome, Italy. Member of SOC.
2018 16th AGILE Workshop, 18-19 May, Rome, Italy. Member of Scientific Organizing Committee
2017 5th Galileo-Xu-Guangqi meeting, 25-30 June, Chengdu, China. Member of SOC
2017 ASI-United Nations – UNOOSA, Open Universe Expert meeting, 11-12 April, Rome. SOC Chair
2017 15th AGILE workshop, 23-24 May, Rome, Italy. Member of Scientific Organizing Committee
2017 United Nations -Italy workshop on the Open Universe initiative, 20-22 November, Vienna, Austria. Member of the international organizing committee
2016 “AGN, what’s in a name” workshop, 27 June 1 July, Munich, Germany. SOC member
2016 14th AGILE workshop, 20-21 June, Rome, Italy. Member of Scientific Organizing Committee

- **INSTITUTIONAL RESPONSIBILITIES (if applicable)**

1991-1995 European Space Information System (ESIS) project scientist (ESA),

1995-2000 Director of the BeppoSAX data center (ASI)

2000-2016 Director of the ASI Science Data Center (ASDC)

2016- now ASI Senior Scientist and responsible of the Open Universe initiative at ASI.

2016- now Faculty member of the International Relativistic Astrophysics Network PhD program

Simbol-X Italian lead scientist (equivalent to Italian PI) during the phase A of this Italian-French mission (2007-2009).

AGILE ASI Project Scientist, Member of AGILE Mission Board and of the science team.

Swift Member of Executive Committee and Lead of XRT data reduction software

JWST-MIRI Member of Steering Committee (2004-2005)

NuSTAR Member of Science Implementation Group and responsible of ASDC data analysis software development for NuSTAR

Planck Member of the scientific team (until 2014)

Fermi AGN team coordinator (2006-2007) and full member of the science team

PLATO Former Responsible of Plato Input Catalogue within the PLATO Data Center

MoonMapping Team leader of the Italian participation to the "MoonMapping" project, which involves fifteen universities and research centres in Italy and China

- **MAJOR COLLABORATIONS**

Over the years Paolo established a wide and very active network of international collaborators, as detailed below.

- Munich - TUM, Physik department, E. Resconi and PhD Students (Data analysis, theory)
- Munich - TUM-IAS
- Munich- ESO, P. Padovani (Astrophysics)
- Rome - ICRANet (Theory and data archiving)
- Rome - University Sapienza (Theory)
- Rome - ASI (Software development, Open Universe)
- Vienna- UNOOSA (Open Universe)
- Rio de Janeiro – CBPF/BSDC (Data acquisition, data analysis, software development)
- USA-Italy-UK, Swift X-ray satellite (Co-I of the mission and full team member)
- USA-Italy, Fermi gamma-ray satellite (Full team member)
- USA-Italy, NuStar hard X-ray satellite (Full team member)
- Switzerland, Geneva – A. Tramacere (Theory and data analysis)
- China, CAS-IHEP, Beijing (Data analysis and theory)
- Armenia- Yeravan, National Academy of Sciences of Armenia (Theory, data analysis, software development)
- IceCube (MOU on Scientific cooperation)

- **SCIENTIFIC EXPERIENCE**

Paolo Giommi has been involved in extragalactic astrophysics since the beginning of his career as a scientist, initially using Einstein and EXOSAT X-ray astronomy data. A good fraction of his scientific interests has been dedicated to multi-frequency studies of blazars, an activity that resulted in many well-known scientific publications, making Paolo one of the world-experts in the field.

Other important topics in Paolo's scientific interests are Gamma-ray bursts and cosmology where he contributed using data from the BeppoSAX, Swift, WMAP and Planck satellites. Paolo is also a senior

member of scientific teams of several projects/missions, including Planck, Swift, AGILE, Fermi, and NuSTAR.

Paolo also led, or played an important role in, the generation of several widely used catalogues of extragalactic sources, including the EXOSAT high Galactic latitude survey, the Rosat-WGA catalog, the BeppoSAX and Swift catalogues of serendipitous sources, the Fermi-LAT catalogues of gamma-ray sources, and the Sedentary 1-2WHSP multi-frequency selected samples of extreme blazars, expected to emit very high energy gamma-rays and possibly neutrinos/Ultra High Energy Cosmic-Rays. Finally he is one of the key authors of the Roma-Bzcat, the most up to date and complete catalogue of blazars.

From the theoretical viewpoint Paolo is the proposer (mostly together with Paolo Padovani) of new paradigms that in the 1995 unified the view of blazars discovered in the Radio and X-ray band, and more recently (2012-2016), demonstrated that the statistical properties of all existing blazar surveys (in the radio, optical, X-ray, gamma-ray and VHE bands), can be explained in a simple way.

From 2016 Paolo extended his research of the study of blazars from multi-frequency electromagnetic observations to multi-messenger astrophysics, including high-energy neutrinos and ultra-high energy cosmic rays.

- **SCIENTIFIC PUBLICATIONS**

Approximately 415 publications in international refereed journals (more than 1000 in total) with over 62,000 citations (Google Scholar) 47,000 (ADS) and a H-index of 108 (Google Scholar), 101 (ADS).

Paolo Giommi, 2019 list of publications in refereed journals

The 3HSP catalogue of extreme and high-synchrotron peaked blazars

Chang, Y. -L.; Arsioli, B.; Giommi, P.; Padovani, P.; Brandt, C. H.

DOI:10.1051/0004-6361/201834526

Bibcode: 2019A&A...632A..77C

A new sample of X-ray selected Swift/SDSS faint blazars and blazar candidates

Turriziani, Sara; Fraga, B.; Giommi, P.

DOI: 10.1093/mnras/stz2253

Bibcode: 2019MNRAS.489.3307T

Swift-XRT Follow-up of Gravitational-wave Triggers in the Second Advanced LIGO/Virgo Observing Run

Klingler, N. J.; Kennea, J. A.; Evans, P. A.; Tohuvavohu, A.; Cenko, S. B.; Barthelmy, S. D.; Beardmore, A. P.; Breeveld, A. A.; Brown, P. J.; Burrows, D. N.; Campana, S.; Cusumano, G.; D’Ài, A.; D’Avanzo, P.; D’Elia, V.; de Pasquale, M.; Emery, S. W. K.; Garcia, J.; Giommi, P.; Gronwall, C.

DOI:10.3847/1538-4365/ab4ea2

Bibcode: 2019ApJS..245...15K

Open Universe for Blazars: a new generation of astronomical products based on 14 years of Swift-XRT data

Giommi, P.; Brandt, C. H.; Barres de Almeida, U.; Pollock, A. M. T.; Arneodo, F.; Chang, Y. L.; Civitaresse, O.; De Angelis, M.; D'Elia, V.; Del Rio Vera, J.; Di Pippo, S.; Middei, R.; Penacchioni, A. V.; Perri, M.; Ruffini, R.; Sahakyan, N.; Turriziani, S.

DOI:10.1051/0004-6361/201935646

Bibcode: 2019A&A...631A.116G

Second AGILE catalogue of gamma-ray sources

Bulgarelli, A.; Fioretti, V.; Parmiggiani, N.; Verrecchia, F.; Pittori, C.; Lucarelli, F.; Tavani, M.; Aboudan, A.; Cardillo, M.; Giuliani, A.; Cattaneo, P. W.; Chen, A. W.; Piano, G.; Rappoldi, A.; Baroncelli, L.; Argan, A.; Antonelli, L. A.; Donnarumma, I.; Gianotti, F.; Giommi, P. ;

DOI:10.1051/0004-6361/201834143

Bibcode: 2019A&A...627A..13B

TXS 0506+056, the first cosmic neutrino source, is not a BL Lac

Padovani, P.; Oikonomou, F.; Petropoulou, M.; Giommi, P.; Resconi, E.

DOI: 10.1093/mnrasl/slz011

Bibcode: 2019MNRAS.484L.104P

AGILE Detection of Gamma-Ray Sources Coincident with Cosmic Neutrino Events

Lucarelli, F.; Tavani, M.; Piano, G.; Bulgarelli, A.; Donnarumma, I.; Verrecchia, F.; Pittori, C.; Antonelli, L. A.; Argan, A.; Barbiellini, G.; Caraveo, P.; Cardillo, M.; Cattaneo, P. W.; Chen, A.; Colafrancesco, S.; Costa, E.; Del Monte, E.; Di Cocco, G.; Ferrari, A.; Fioretti, V. Giommi, P.

DOI:10.3847/1538-4357/aaf1c0

Bibcode: 2019ApJ...870..136L

The Open Universe VOU-Blazars tool

Y.-L. Chang a,b,*, C.H. Brandt b,c, P. Giommi

DOI: 10.1016/j.ascom.2019.100350

Dissecting the region around IceCube-170922A: the blazar TXS 0506+056 as the first cosmic neutrino source

Glauch, Theo; Padovani, Paolo; Giommi, Paolo; Resconi, Elisa; Arsioli, Bruno; Sahakyan, Narek; Huber, Matthias

DOI:10.1051/epjconf/201920702003

Bibcode: 2019EPJWC.20702003G

Science with the Cherenkov Telescope Array

CherenkovTelescope Array Consortium; Acharya, B. S.; Agudo, I.; Al Samarai, I.; Alfaro, R.; Alfaro, J.; Alispach, C.; Alves Batista, R.; Amans, J. -P.; Amato, E.; Ambrosi, G.; Antolini, E.; Antonelli, L. A.; Aramo, C.; Araya, M.; Armstrong, T.; Arqueros, F.; Arrabito, L.; Asano, K.; Ashley, M. ; Giommi, P.

DOI:10.1142/10986

Bibcode: 2019scta.book.....C

KSP: Extragalactic Survey

Mazin, D.; Gerard, L.; Ward, J. E.; Giommi, P.; Brown, A. M.; Cherenkov Telescope Array Consortium

DOI: 10.1142/9789813270091_0008

Bibcode:2019scta.book..143M



Lee Hyung Won

Position:

Period covered:

I Scientific Work

The effect of eccentric waveform for parameter estimation with student Jeongcho Kim and Dr. Chunglee Kim

Code development for parameter estimation with new gravitational waveforms with student Jeongcho Kim

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Organization of 16th Italian-Korean symposium on Relativistic Astrophysics, 1~5 July, 2019, ICRANet, Pescara, Italy

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities

III a. Within ICRANet

III b. Outside ICRANet

Teaching activities : C Programming, Game Engine Development

IV. Other

2019 List of Publication

A. LIGO-Virgo Collaboration papers published in 2019.



Punsly

Position: Research Scientist

Period covered: 10/2019 – 10/2019

I Scientific Work

Black Holes and Quasars

Black Holes and Quasars

1. Introduction

This report describes the research performed by Brian Punsly and collaborators in cooperation with ICRANet in 2019. The research was directed at finding environmental factors that are related to the switch-on of the general relativistic engine responsible for the few percent of accreting black holes that drive powerful relativistic jets. This is important since this will relate directly to constraints on the initial state and boundary conditions on numerical models of black hole driven jets.

2. The Origin of the Event Horizon Scale Jet in M87 and EHT

Global millimeter wavelength Very Long Baseline Interferometry (VLBI) is an ambitious program to study the event horizon scale physics of nearby active galactic nuclei (AGN). The shortest wavelength receivers have been designated as the Event Horizon Telescope (EHT). It has been widely advertised that the experiment will reveal how astrophysical black holes can drive powerful jets near the event horizon – possibly proving the Blandford-Znajek mechanism that drives jets from the event horizon itself. There is only one powerful relativistic jet source that can be explored by the EHT with resolution on the order of the event horizon dimension, the jet in the enormous radio galaxy M87. Thus, M87 is the most studied object in radio jet research.

However, I show in a recent ApJ Letter, “Constraints on Black Hole Jet Models Used As Diagnostic Tools of Event Horizon Telescope Observations of M87” (B. Punsly 2019 ApJL 879 11) that the EHT observations do not show a Blandford-Znajek jet based on 60,000 attempts at numerical simulations made by the EHT collaboration. They fail grossly at the most basic level.

Abstract:

Jet models of Event Horizon Telescope (EHT) data should also conform to the observed jet profiles just downstream. This study evaluates conformance of models of black hole jets to images of the innermost jet of M87. This is a basic test that should be passed before using them to perform a physical interpretation of EHT data. Recent 86 GHz Very Long Baseline Interferometry observations of M87 have revealed the morphology and size of the jet near its source ($<65 M$, or 0.06 lt-yrs after correcting for line of sight to the jet, where M is the black

hole mass in geometrized units) for the first time. Current transverse resolution indicates that this region is dominated by flux emanating from the edge of the jet.

The observed inner jet profiles are compared to all existing published synthetic radio images constructed from “state of the art” 3-D numerical simulations of the

black hole accretion system in M87. Despite efforts to produce the characteristic wide, edge dominated jet, these models are too narrow (by a factor of ~ 2) in the region 0.06 – 0.32 lt-yrs from the source, even though the jets (spine and/or sheath) in the image plane might appear conformant farther downstream. Furthermore, the synthetic radio images are not edge dominated 0.06 – 0.32 lt-yrs from the source, but spine dominated. Analyses that implement these models as physical diagnostics of EHT visibility amplitudes are therefore suspect. Thus, these inner jet characteristics are important considerations before applying simulations to the EHT data.

3. Discrete and Continuous Ejection Models of the Radio Source Associated with GW170817

From the paper of the same name (B. Punjly 2019 ApJL 871 34)

ABSTRACT:

The gravity wave source, GW170817, and associated gamma ray burst (GRB), GRB 170817A, produced radio emission that was detected in multiple epochs of Very Long Baseline Interferometry (VLBI) and with broadband radio photometry. Three unique pieces of observational evidence were determined: a discrete radio emitting region that moves with an apparent velocity of $\approx 4c$, the discrete

region includes all of the radio flux, and there is likely a synchrotron self absorption (SSA) spectral turnover on day ~ 110 and day ~ 160 after ejection. This unprecedented wealth of data for a GRB provides a unique opportunity to understand the radio emitting plasma that was ejected by the putative merger event. The velocity can constrain the kinematics and the SSA turnover has been used to constrain the size to much smaller than can be done with an unresolved

VLBI image, allowing one to estimate the associated plasmoid size directly from the data and improve estimates of the energetics. Models of the radio emission for both a turbulent, protonic, discrete ballistic ejection and a high dissipation region within an otherwise invisible Poynting flux dominated positron-electron jet are considered. On days ~ 110 and ~ 160 post-merger, for the range of models presented, the jet power is $2 \times 10^{39} \lesssim 8 \times 10^{40}$ ergs/s and the ballistic

plasmoid kinetic energy is $3 \times 10^{45} \lesssim 1.5 \times 10^{47}$ ergs. Even though only valid after

day 110, this independent analysis augments traditional GRB light curve studies, providing additional constraints on the merger event.

II Conferences and educational activities

N/A

III. Service activities*N/A*

IV. Other

2019List of Publication

2019 List of Publication

Punsly, B. Discrete and Continuous Ejection Models of the Radio Source Associated with GW170817 2019 ApJL 871 34

Punsly, B. Constraints on Black Hole Jet Models Used As Diagnostic Toolsof Event Horizon Telescope Observations of M87 2019 ApJL 879 11

Quevedo Hernando



Position: Full Professor - National Autonomous University of Mexico
Period covered: 2019

I Scientific Work

II Conferences and educational activities

II a Teaching duties

Course: *Geometrothermodynamics (graduate) January-June 2019*

Course: *Theoretical cosmology (undergraduate) August-December 2019*

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision

- Viridiana Pineda (PhD)

Topic: Microscopic models for black holes

- Daniel Flores (PhD)

Topic: Topological quantization of minisuperspaces

- Pedro Sánchez (PhD)

Topic: Geometrothermodynamics in relativistic astrophysics

- Juan José Vega (PhD)

Topic: Topological quantization of mechanical systems

- Servando Vargas (PhD)

Topic: Mathematical structure of quadrupolar spacetimes

- Luis Miguel Sánchez (PhD)

Topic: Induced gravity

- Luis Fernando Aragón (PhD)

Topic: Simplectic geometrothermodynamics

- Moisés E. Jiménez (MSc)

Topic: Fiberquantization

- Brandon A. Hernández (MSc)

Topic: Black shells

II d Other Teaching Duties

II e. Work With Postdocs

- Francisco L. Escamilla, UNAM

- Daniel F. Higuera, UNAM

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2019 List of Publication

NONPERTURBATIVE QUANTIZATION A LA HEISENBERG: MODIFIED GRAVITIES, WHEELER-DEWITT EQUATIONS, AND MONOPOLES IN QCD

Dzhunushaliev, V.; Folomeev, V.; Quevedo, H.
GRAVITATION & COSMOLOGY, 25, 1-17 (2019)

STATISTICAL MECHANICS OF THE SELF-GRAVITATING GAS IN THE TSALLIS FRAMEWORK

Escamilla-Herrera, L. F.; Gruber, C.; Pineda-Reyes, V. and Quevedo, H.
PHYSICAL REVIEW E 99, 022108 (2019)

DISCLOSING CONNECTIONS BETWEEN BLACK HOLES AND NAKED SINGULARITIES: HORIZON REMNANTS, KILLING THROATS AND BOTTLENECKS

Pugliese, Daniela; Quevedo, Hernando
EUROPEAN PHYSICAL JOURNAL C 79, 209 (2019)

QUASI-HOMOGENEOUS BLACK HOLE THERMODYNAMICS

Quevedo, Hernando; Quevedo, Maria N.; Sanchez, Alberto
EUROPEAN PHYSICAL JOURNAL C 79, 229 (2019)

EXTENSIONS OF MODIFIED CHAPLYGIN GAS FROM GEOMETROTHERMODYNAMICS

Benaoum, Hachemi B.; Luongo, Orlando; Quevedo, Hernando
EUROPEAN PHYSICAL JOURNAL C 79, 577 (2019)

C3 MATCHING FOR ASYMPTOTICALLY FLAT SPACETIMES

Gutierrez-Pineros, Antonio C.; Quevedo, Hernando
CLASSICAL AND QUANTUM GRAVITY 36, 135003 (2019)

STATISTICAL ORIGIN OF LEGENDRE INVARIANT METRICS

Pineda-Reyes, V.; Escamilla-Herrera, L. F.; Gruber, C.; Nettel, F. and Quevedo, H.
PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS-526, 120767 (2019)

EXTENDED THERMODYNAMICS OF SELF-GRAVITATING SKYRMIONS

Flores-Alfonso, Daniel; Quevedo, Hernando
CLASSICAL AND QUANTUM GRAVITY36, 154001 (2019)

KINEMATIC AND STATISTICAL INCONSISTENCIES OF HORAVA-LIFSHITZ COSMOLOGY

Luongo, Orlando; Muccino, Marco; Quevedo, Hernando
PHYSICS OF THE DARK UNIVERSE 25, 100313 (2019)

CHARGED TAUB-NUT SOLUTION IN LOVELOCK GRAVITY WITH GENERALIZED WHEELER POLYNOMIALS

Corral, Cristobal; Flores-Alfonso, Daniel; Quevedo, Hernando
PHYSICAL REVIEW D 100, 064051 (2019)

TOPOLOGICAL CHARACTERIZATION OF HIGHER-DIMENSIONAL CHARGED TAUB-NUT INSTANTONS

Flores-Alfonso, Daniel; Quevedo, Hernando
INTERNATIONAL JOURNAL OF GEOMETRIC METHODS IN MODERN PHYSICS16, 1950154 (2019)

THE EREZ-ROSEN SOLUTION VERSUS THE HARTLE-THORNE SOLUTION

K. Boshkayev, H. Quevedo, G. Nurbakyt, A. Malybayev, A. Urazalina
SYMMETRY11, 1324 (2019)

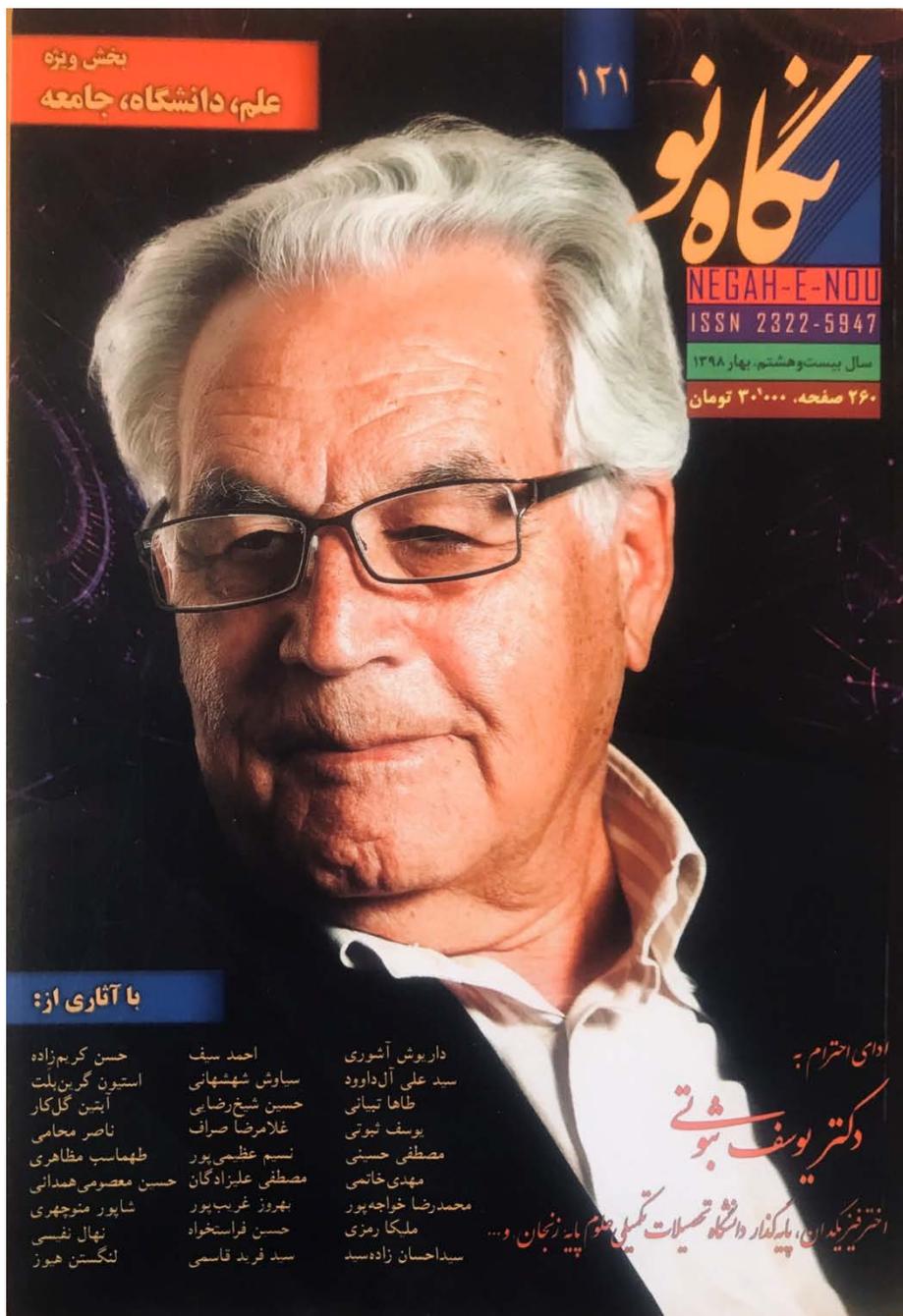
FLUX QUANTIZATION IN DILATONIC TAUB-NUT DYONS

Flores-Alfonso, Daniel; Quevedo, Hernando
REPORTS ON MATHEMATICAL PHYSICS 84, 171 (2019)

THE PHYSICAL SIGNIFICANCE OF GEOMETROTHERMODYNAMIC METRICS

Pineda, Viridiana; Quevedo, Hernando; Quevedo, Maria N., Alberto Sánchez and Edgar Vázquez,
INTERNATIONAL JOURNAL OF GEOMETRIC METHODS IN MODERN PHYSICS 16, 1950168 (2019)

Sobouti, Yousef



Position: Founder, 1991, Founding Director, 1991-2011, and Professor of Physics, Institute for Advanced studies in Basic Sciences (IASBS), Zanjan, Iran
Period covered: 1991-present

I Scientific Work: Stability and Oscillations of Celestial Objects (stars and stellar systems)

II Conferences and educational activities: Professor of Physics, Shiraz University. 1964 - 1997; IASBS, 1991 - present

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet, Adjunct Professor of Icranet

III b. Outside ICRANet

IV. Other

2019 List of Publication

Sobouti, Y. Bibliography (Updated 2019)

1- **Sobouti, Y.**, "Massive gravity as an alternative gravity" J. Gravitation and Cosmology, 2020, to appear

1- **Sobouti, Y.**, "An Oscillator representation of elementary particles" J. Phys. Communication, Journal of Physics Communications, Volume 2, Number 8 (2018)2

2- **Sobouti, Y.**, Lorentz Covariance 'almost' implies electromagnetism and more, Eur. J. Phys. 17 180–2. IOPscience. 2015, arXiv:1507.06393 [physics.class-h]

2- **Sobouti, Y.**, "Minimalist's Electromagnetism - Different Axioms and Different Insight", , 1-4, (2013).

3- **Sobouti, Y.**, "On the Mass and Evolutionary Status of the Bright Red AGB Supergiant $\alpha 1$ Herculis in Why Galaxies Care about AGB Stars II: Shining Examples and Common Inhabitants, Edited by F. Kerschbaum, T. Lebzelter, and R.F. Wing. San Francisco", Proceedings of a conference held at University Campus, Viena, Austria, 16-20 August 2010, Astronomical Society of the Pacific, 2011, 163-164, (2010).

4- **Sobouti, Y.**, "Dark Companion of Baryonic Matter in Spiral Galaxies in DARK MATTER IN ASTROPHYSICS AND PARTICLE PHYSICS, Edited by Hans Volker Klapdor-Kleingrothaus, Irina V Krivosheina", Proceedings of the 7th International Heidelberg Conference on Dark

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Period covered: January 2017 - January 2020



I Scientific Work

Topics of Research: 1. Relativistic Nuclear Physics and Nuclear Structure; 2. Relativistic Quantum Effective Models and their Physical Applications to Compact Stars

II Conferences and educational activities

Conferences organised as Chair

1. IWARA2018 - 8th International Workshop on Astronomy and Relativistic Astrophysics; 8-15 September 2018, Ollantaytambo, Peru. <https://indico.cern.ch/event/646046/overview>
2. STARS2019 - 5th Caribbean Symposium on Cosmology, Gravitation, Nuclear and Astroparticle Physics, Havana, Cuba, 3 - 9 May, 2019. <https://indico.cern.ch/event/721602/overview>
3. SMFNS2019 - 6th International Symposium on Strong Electromagnetic Fields and Neutron Stars, Varadero, Cuba, 9 - 12 May, 2019. <https://indico.cern.ch/event/721602/overview>
4. FICAAU - First International Congress on Astrophysics and Archaeoastronomy. Universidad Nacional de San Antonio Abad del Cusco - UNSAAC 4-6, July, 2019, Cusco, Peru.

www.cesarzen.com/FICAAU/index2.html

5. 2nd FICAAU - Second International Congress on Astrophysics and Archaeoastronomy - 2nd FICAAU. Universidad Nacional de San Antonio Abad del Cusco - UNSAAC 3-5, July, 2020, Cusco, Peru.

www.cesarzen.com/FICAAU/index.html

6. IWARA2020 - 9th International Workshop on Astronomy and Relativistic Astrophysics, Mexico City, Mexico, 6-12 September 2020. <https://indico.cern.ch/event/822124/>

List of Publications

Articles

1. RAZEIRA, M. ; HADJIMICHEF, D. ; MACHADO, M. V. T. ; KÖPP, F. ; VOLKMER, G. ; BODMANN, B. ; DEGRAZIA, G. A. ; VASCONCELLOS, C. A. Z. . Effective field theory with genuine many-body forces and tidal effects on neutron stars. ASTRONOMISCHE NACHRICHTEN, v. 340, p. 209-212, 2019.
2. VOLKMER, G. L. ; RAZEIRA, M. ; HADJIMICHEF, D. ; KÖPP, F. ; VASCONCELLOS, C. A. Z. ; BODMANN, B. . Pseudo-complex general relativity and the slow rotation approximation for neutron stars. ASTRONOMISCHE NACHRICHTEN, v. 340, p. 205-208, 2019.
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5. COSTA, J. E. S. ; HADJIMICHEF, D. ; MACHADO, M. V. T. ; KÖPP, F. ; VOLKMER, G. L. ; RAZEIRA, M. ; VASCONCELLOS, C. A. Z. . Equilibrium configurations of white dwarfs in the pseudo-complex general relativity. ASTRONOMISCHE NACHRICHTEN, v. 338, p. 1085-1089, 2017.
6. RAZEIRA, M. ; HADJIMICHEF, D. ; MACHADO, M.V.T. ; KÖPP, F. ; VOLKMER, G.L. ; VASCONCELLOS, C.A.Z. . Effective field theory for neutron stars with WIMPS in the pc-GR formalism. ASTRONOMISCHE NACHRICHTEN, v. 338, p. 1073-1078, 2017.
7. HADJIMICHEF, D. ; MACHADO, M.V.T. ; KÖPP, F. ; VOLKMER, G.L. ; RAZEIRA, M. ; VASCONCELLOS, C.A.Z. . A dark matter compact star in the framework of the pseudo-complex general relativity. ASTRONOMISCHE NACHRICHTEN, v. 338, p. 1079-1084, 2017.
8. ZEN VASCONCELLOS, CÉSAR ZEN; COELHO, HELIO T. ; HESS, PETER OTTO . Walter Greiner: In Memoriam. INTERNATIONAL JOURNAL OF MODERN PHYSICS: CONFERENCE SERIES, v. 45, p. 1760001, 2017.
9. VOLKMER, G.L. ; HADJIMICHEF, D. ; RAZEIRA, M. ; BODMANN, B. ; VASCONCELLOS, C.A.Z. Ultra-compact objects in semiclassical gravity. ASTRONOMISCHE NACHRICHTEN. January 2020. To be published
10. VASCONCELLOS, C.A.Z. ; HADJIMICHEF, D. ; VOLKMER, G.L. ; RAZEIRA, M. ; BODMANN, B. Pushing the limits of General Relativity beyond the Big Bang singularity. ASTRONOMISCHE NACHRICHTEN. January 2020. To be published
11. KÖPP, F. ; VASCONCELLOS, C.A.Z.; MACHADO, M.V.T. ; On the nature of the QCD phase transition in hybrid compact stars. ASTRONOMISCHE NACHRICHTEN. January 2020. To be published
12. Milton Rojas Gamarra | Steven R. Gullberg | Mônica Estrázulas | Jorge Horvath | César A. Zen Vasconcellos. Complementary duality of the Inka's cosmovision: an astrophysics perspective. ASTRONOMISCHE NACHRICHTEN. January 2020. To be published

Books

1. Zen Vasconcellos, César Augusto. Topics on Strong Gravity. 1. ed. Singapore: WORLD SCIENTIFIC, 2019. 300p.
2. Zen Vasconcellos, Cesar Augusto. Spacetime Singularities in General Relativity, Singapore: WORLD SCIENTIFIC, 2019. https://doi.org/10.1142/9789813277342_0001
3. Zen Vasconcellos, César Augusto. Centennial of General Relativity. 1. ed. Singapore: WORLD SCIENTIFIC, 2017. 336p .

Proceedings Published as Main Editor

1. IWARA2018 - 8th International Workshop on Astronomy and Relativistic Astrophysics; 8-15 September 2018, Ollantaytambo, Peru. ASTRONOMISCHE NACHRICHTEN. 1-3/2019. First published: 28 March 2019

<https://doi.org/10.1002/asna.201990002>

2. STARS2019 - 5th Caribbean Symposium on Cosmology, Gravitation, Nuclear and Astroparticle Physics, Havana, Cuba, 3 - 9 May, 2019. SMFNS2019 - 6th International Symposium on Strong Electromagnetic Fields and Neutron Stars, Varadero, Cuba, 9 - 12 May, 2019. **ASTRONOMISCHE NACHRICHTEN. First Published in January 2020.**

<https://onlinelibrary.wiley.com/journal/15213994>

3. IWARA2020 - 9th International Workshop on Astronomy and Relativistic Astrophysics, Mexico City, Mexico, 6-12 September 2020. **ASTRONOMISCHE NACHRICHTEN. To be published in December 2019/January 2020.**

Lecturers

Aksenov Alexey

Position: Senior researcher of Institute for Computer Aided Design, Russian Academy of Sciences, Moscow, Russia.



Scientific Work

Collapse of stars cores, neutrino transport, multidimensional multi-temperature hydrodynamic simulations, simulations of the countercurrent in a gas centrifuge, one dimensional radiative transfer codes, a numerical modeling of electron-positron pairs and photons transfer, etc.

2019 List of Publication

1. Aksenov A.G., Chechetkin V.M. Large-Scale Instability During Gravitational Collapse and the Escaping Neutrino Spectrum During a Supernova Explosion // *Astronomy Reports*, 2019, Vol. 96, No. 11, pp. 900–909.
2. Aksenov A.G., Tishkin V.F., Chechetkin V.M. Godunov-Type Method and Shafranov’s Task for Multi-Temperature Plasma // *Mathematical Models and Computer Simulations*, 2019, Vol. 11, No. 3, pp. 360–373.

Bini Donato



Position: November 30, 2018 -today

Senior Researcher (permanent position) at
Istituto per le Applicazioni del Calcolo “M. Picone,” CNR
Via dei Taurini, 19 I-00185 Roma

[Previous position from October 1, 1995 -November 29, 2018: Researcher
(permanent) at the same CNR institute]

I Scientific Work

The main topic of my interest is General Relativity with special attention to several classical aspects.

In particular, I'm interested in: analysis and interpretation of exact solutions of Einstein's field equations, spacetime splitting techniques, measurement process and the role of the observer in General Relativity, particle dynamics in certain fixed gravitational backgrounds (either test particles with scalar structure: the mass, or particles with internal structure: spinning test particles and particles with multipolar structure, quadrupolar and beyond), gravitational perturbations, gravitational waves. Currently, the main topics of interest for my research activities involve the PN approximation of General Relativity, gravitational self-force, effective-one-body model, with applications to binary systems.

I'm an expert user of MAPLE™ tensor calculus package.

II Conferences and educational activities

Conferences and Other External Scientific Work

Since 1988 I have participated in all the international meetings of the Marcel Grossmann series as well as all the conferences of the ICRA- ICRANet series.

Diploma thesis supervision

I've been supervisor of the Diploma thesis of several students at the University of Rome "La Sapienza", since 1995:

G. Spoliti, A. Merloni, C. Germani, C. Cherubini, G. Miniutti, G. Cruciani, A. Geralico, A. Lunari, M. De Mattia, D. Gregoris.

Ph.D thesis supervision

Dr. V. Montaquila, Physics departments of the University of Naples "Federico II.," year 2011.

Dr. M. Haney, IRAP Ph.D, University of Rome "Sapienza," year 2013.

Gabriel G. Carvalho (CAPES, Brazil and ICRAANet)

Teaching experiences

I'm Contract Professor of Physics since 2004 at the faculty of Medicine of the University Campus Biomedico, in Rome. From 2007-2009 I have also been Contract Professor of Physics at the Nursery School of the same university.

Work With Postdocs

A Geralico (Istituto per le Applicazioni del Calcolo "M. Picone," CNR, Rome, Italy)

III Service activities

Scientific collaboration with:

Prof. R.T. Jantzen (Villanova University, USA and ICRAANet);

Outside ICRAANet

Scientific collaboration with:

Prof. T. Damour (IHES, Paris, France).

Dr. A. Ortolan (INFN Legnaro, Padova, Italy);

Dr. G. Esposito (INFN, Napoli, Italy)

Other

I'm currently doing referee activity for a large number of international journals in the field of General Relativity and I'm a reviewer for Mathreview.

For the years 2002-2004 I have been the leader of a collaboration project between the Italian Research Council (CNR) and the analogous institution in Venezuela. Title of the project: *Construction of 3d numerical models for the study of magnetohydrodynamics in gravitational physics and astrophysics.*

For the years 2007-2008 I have been the leader of young researchers projects of INDAM (Istituto Nazionale di Alta Matematica). Title of the project: *Light coordinates and spacetime topography.*

For the years 2008-2009 I have been the leader of young researchers projects of INDAM (Istituto Nazionale di Alta Matematica). Title of the project: *Sistemi di Posizionamento Globale relativistici*

2019 List of publications

- 1) Bini D., Geralico A., Jantzen R.T.
Black hole geodesic parallel transport and the Marck reduction procedure
Phys. Rev. D, **99**, 064041 (2019).
e-print arXiv:1807.10085
DOI:10.1103/PhysRevD.99.064041
- 2) Bini D., Geralico A., Plastino W.,
Cylindrical gravitational waves: C-energy, super-energy and associated dynamical effects
Class. Quantum Grav., **36**, 095012 (2019).
e-print arXiv:1812.07938 [gr-qc]
DOI: 10.1088/1361-6382/ab10ec
- 3) Nagar A., Messina F., Rettegno P., Bini D., Damour T., Geralico A., Akcay S., Bernuzzi S.,
Nonlinear-in-spin effects in effective-one-body waveform models of spin-aligned, inspiralling, neutron star binaries
Phys. Rev. D **99**, 044007 (2019)
DOI:10.1103/PhysRevD.99.044007
[arXiv:1812.07923 [gr-qc]].
- 4) Bini D., Geralico A., Jantzen R.T., Plastino W.,
Godel spacetime: elliptic-like geodesics and gyroscope precession
Phys. Rev. D, **100**, 084051, (2019)
DOI:10.1103/PhysRevD.100.084051
e-print arXiv:1905.04917 [gr-qc]
- 5) Bini D., Geralico A., Gionti G., Plastino W., Velandia N.
Scattering of uncharged particles in the field of two extremely charged black holes
Gen. Rel. Gravitation, **51**, 153, (2019)
e-print arXiv:1906.01991 [gr-qc]
DOI:doi.org/10.1007/s10714-019-2642-y
- 6) Bini D. and Geralico A.
New gravitational self-force analytical results for eccentric equatorial orbits around a Kerr black hole: redshift invariant
Phys. Rev. D, **100**, 104002, (2019)

DOI:10.1103/PhysRevD.100.104002
e-print arXiv:1907.11080 [gr-qc]

7) Bini D. and Geralico A.
New gravitational self-force analytical results for eccentric equatorial orbits around a Kerr black hole: gyroscope precession
Phys. Rev. D, **100**, 104003, (2019)
DOI:10.1103/PhysRevD.100.104003
e-print arXiv:1907.11082 [gr-qc]

8) Bini D. and Geralico A.
Analytical determination of the periastron advance in spinning binaries from self-force computations
Phys. Rev. D, to appear, (2019)
e-print arXiv:1907.11083 [gr-qc]

9) Bini D. and Geralico A.
Gauge-fixing for the completion problem of reconstructed metric perturbations of a Kerr spacetime
Phys. Rev. D., submitted, (2019)
e-print arXiv:1908.03191 [gr-qc]

10) Bini D., Damour T. and Geralico A.
Novel approach to binary dynamics: application to the fifth post-Newtonian level
Phys. Rev. Lett., **123**, 231104, (2019)
DOI:10.1103/PhysRevLett.123.231104
e-print arXiv:1909.02375 [gr-qc]

11) Retegno P., Martinetti F., Nagar A., Bini D., Riemenschneider G., and Damour T.
Comparing effective One Body Hamiltonians for spin-aligned coalescing binaries
preprint 2019
e-Print: arXiv:1911.10818 [gr-qc]

12) Bini D. and Esposito G.
New solutions of the Ermakov-Pinney equation in curved spacetime
preprint 2019
e-Print: arXiv:1912.01869 [gr-qc]



Cherubini Christian

Position: Associate Professor in Mathematical Physics (MAT/07).
Department of Science and Technology for Humans and the Environment
Laboratory of Nonlinear Physics and Mathematical Modeling
University "Campus Bio-Medico di Roma",
Via A. del Portillo 21, I-00128 Rome, Italy
and
Adjunct Professor in ICRANet Faculty.

Period covered: position at ICRANet started on September 11th, 2017

I Scientific Work

- Electrodynamics and magnetohydrodynamics around black holes.
- Mathematical Biology.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Maths from the body II: Venice, June 6-8, 2019

II b Work With Students

Prof. Cherubini has published in 2019 a work in collaboration with Prof. S. Filippi, Prof. R. Ruffini, and several ICRANet scientists and PhD students concerning the GeV Emission of the Type I BdHN GRB 130427A.

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

- Participation to the "Collegio di Dottorato" of the INTERNATIONAL RELATIVISTIC ASTROPHYSICS PH.D."

III b. Outside ICRANet

- Lecturer “Electromagnetism” (Departmental Faculty of Engineering, University Campus Bio-Medico of Rome).
- Lecturer “Mathematical Physics Models for Engineering” (Departmental Faculty of Engineering, University Campus Bio-Medico of Rome).

IV. Other

Prof. Cherubini has a longstanding collaboration with other ICRANET scientists. In particular, in collaboration with Dr D. Bini, Prof. R. T Jantzen, Prof. R. Ruffini and Dr. J.A. Rueda, he has written several articles in various areas of General Relativity. With Prof. S. Filippi he is involved in research activities in the fields of Stellar and Galactic Structures, Effective Geometries and Complex Systems in Nature with a specific focus in biophysics.

2019 List of Publications

- R. Ruffini, R. Moradi, J. A. Rueda, L. Becerra, C. L. Bianco, C. Cherubini, S. Filippi, Y. C. Chen, M. Karlica, N. Sahakyan, Y. Wang, and S. S. Xue, ApJ 886, 82 (2019).
- Loppini A., Gizzi A., Cherubini C., Cherry E.M., Fenton F.H., Filippi S., Phys. Rev. E, vol. 100 , 020201(R) 5 pages (2019).



Surname Name: Sang Pyo Kim

Photo

Position: Professor, Kunsan National University, Visiting professor at Institute of Theoretical Physics, CAS, China
Period covered: 2019.01.01-2019.12.31

I Scientific Work

:Applied quantum field theory to cosmology and black holes to handled issues such as (i) QED action in de Sitter space and magnetogenesis (ii) charged black holes for gamma rays and gravitational waves.

:Formulated nonperturbative approach to quantum field theory in curved spacetimes or electromagnetic backgrounds and studied Schwinger effect and its applications.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities*[activities carried out in collaboration with ICRA Net(e.g. teaching activities, conferences etc...) and outside ICRA Net (teaching activities in your university etc...)]*

III a. Within ICRA Net

- (i) Seminar at ICRA Net, “Magnetars, Magnetized Black Holes and Laboratory Astrophysics” Sept. 12, 2019

- (ii) Collaboration with She-Sheng Xue, Ehsan Bavasard and Clement Stahl on “QED action in de Sitter space”
- (iii) Meeting (Prof. Ruffini, Vereshchagin) with Prof. Gerard Mourou on Sept. 16, 2019 at Isola d’Elba

III b. Outside ICRANet

- (i) AP School/Workshop on Gravitation and Cosmology (YITP, Kyoto Univ. Japan, 2019.02.10.-14), invited talk “QED phenomena in (A)dS Space”
- (ii) Yangzhou Miniworkshop on Gravity and Cosmology (Yangzhou Univ., 2019.04.05.-08), invited talk “Astrophysics in Strong EM Fields and Laboratory Astrophysics”
- (iii) Frontiers of Nonlinear Physics (Russia, Novgorod, 2019.06.26.-07.05), invited talk “Fundamental Physics and Laboratory Astrophysics using Ultra-Intense Lasers”
- (iv) BRICS Symposium (Russia, Kazan, 2019.08.29.-09.03), invited talk “Magnetars, Magnetized Black Holes and QED Processes”
- (v) LPHYS19 (Korea, 2019.07.08.-12), invited talks “Equivalence between Phase-Integral and Worldline Instanton Methods” and “Perspective of Laboratory Astrophysics using Ultra-Intense Lasers”
- (vi) Hangzhou International Meeting on Gravitational Waves (China, Hangzhou, 2019.10.11.-14), invited talk “QED Action in de Sitter Space”
- (vii) APPC14 (Malaysia, Kuching, 2019.11.18.-22), “Vacuum Polarization and Persistence on Black Hole Horizon”
- (viii) seminar at Beijing Normal University (2019.05.10: Black Hole Physics in Near-Extremal Horizons)
- (xi) seminar at Zhejiang University of Technology (2019.08.07: Perspective of Quantum Cosmology)
- (x) seminar at Institute of Theoretical Physics, CAS (2019.08.20.: Strong Field QED)

IV. Other

2019 List of Publication

- (i) Sang Pyo Kim, “**Simulation of quantum universe,**” Journal Physics Conference Series 1275 (2019) no.1, 012057.
- (ii) Sang Pyo Kim, Hyun Kyu Lee, “**Quantum Electrodynamics Actions in Supercritical Fields,**”

Journal of Korean Physical Society 74 (2019) no.10, 930-934.

(iii) Chiang-Mei Chen, Sang Pyo Kim, Jia-Rui Sun, “**Charge emission from near-extremal charged black holes,**” arXiv:1903.08881, MG15 Proceedings

(iv) Sang Pyo Kim, “**Astrophysics in Strong Electromagnetic Fields and Laboratory Astrophysics,**” arXiv:1905.13439 [gr-qc], MG15 Proceedings

(v) Sang Pyo Kim, Hyun Kyu Lee, Yongsung Yoon, “**Thermal Interpretation of Schwinger Effect in Near-Extremal RN Black Hole,**” International Journal of Modern Physics D28 (2019) no.11, 1950139

(vi) Rong-Gen Cai, Sang Pyo Kim, Won Kim, “**Spin Effect and Stokes Phenomena for Fermion Production in Electric Fields,**” New Physics: SaeMulli 69 (2019) no. 12, 1235

(vii) Sang Pyo Kim, Don N Page, “**Equivalence between phase-integral and worldline instanton methods,**” arXiv:1904.09749

(viii) Lang Liu, Zong-Kuan Guo, Rong-Gen Cai, “**Merger rate distribution of primordial black hole binaries with electric charges,**” arXiv:2001.02984 [astro-ph.CO]

CURRICULUM VITAE

JOHN C. MESTER

Associate Vice President for Research
University of Arizona
Tucson, AZ 85721
650 799 9640
Email: jmester@email.arizona.edu

EDUCATION

Ph.D. and M.A. in Physics, Harvard University

Dissertation: *The Scattering of Atomic Hydrogen and Helium at Low Temperature*

B.S. in Physics and Mathematics, with highest honors, the Johns Hopkins University

Awarded the Donald E. Kerr Memorial Prize for the most outstanding undergraduate major in physics.

EXPERIENCE

**Associate Vice President for Research
Professor, College of Optical Sciences
University of Arizona**

11/2016 – present

- Reporting to the Senior Vice President for Research, responsible for leading strategic efforts that advance excellence in research by facilitating engagement with federal priorities, coalesce interdisciplinary teams with these priorities, and enhance institution-level structures that align research activities in colleges, centers, and institutes in order to increase sponsored funding, advance interdisciplinary strength areas, and promote public benefit.
- Lead University of Arizona research engagement in Washington, DC. Working to establish a sustainable U Arizona presence in the nation's capital as part of the Washington DC Center for Outreach and Collaboration, in fulfillment of the university's strategic plan.
- Led U Arizona's Research Development Services (RDS) and grew team from 3 to 10 professionals to help researchers and scholars identify funding opportunities, form effective teams, and craft winning proposals; Managed internal seed funding and accelerate for success awards; Managed limited submission proposals; Partnered with the UA Foundation on securing external research support from private foundations. Over 3 years the RDS team aided faculty in securing over \$200M of awards.
- Promote close connection between the University's research and education missions. Supported the transition of the STEM Learning Center to the office of Research Innovation and Impact. Serve as the cognizant office of research lead for the Center and support its contributions on proposals led by faculty in many departments.
- Served as the faculty liaison for the UA Defense and Security Research Institute to identify and coordinate defense and security research opportunities and help research teams obtain new sources of funding through interdisciplinary collaborations and public and private partnerships. Supported spin out of UA Applied Research Corporation, a 501(c)3
- Manage government relations consultations to map out effective agency engagement strategies and facilitate faculty interactions with agency personnel.

Vice President for Science and Programs

Associated Universities, Inc. 1400 16th St. NW Washington, DC 20036

5/2011 – 10/2016

A Research Management Corporation that promotes education, innovation, and discovery through the planning, construction, and operation of forefront scientific facilities

- Led successful proposal for the Management and Operation of the National Radio Astronomy Observatory (NRAO) resulting in the largest award ever for astronomy (\$862M) by the National Science Foundation
- Implemented the transition for re-structuring NRAO in the coming decade to consist of the Karl G. Jansky Very Large Array (VLA), the North American share of the international Atacama Large Millimeter/submillimeter Array (ALMA), and development laboratories and separate the Green Bank Observatory and Very Long Baseline Array into independent observatories managed by AUI
- Led proposal and managed the 2015 conference of the National Society of Black Physicists
- Led strategic planning in collaboration with the AUI President and Board of Trustees
- Oversaw AUI STEM Education Programs, hired the AUI Education officer
- Served as Export Control Officer responsible for ensuring compliance with Commerce and State Department export regulations
- Served as Corporate Secretary for the Virtual Astronomy Observatory, LLC, a subsidiary of AUI and AURA

Senior Research Scientist

Stanford University, Stanford California 94305

8/1992 – 5/2011

Program Manager and Co-Investigator

The Satellite Test of the Equivalence Principle (STEP) Program, a NASA and European Space Agency sponsored technology development collaboration.

- Directed international collaboration among 12 institutions in US and Europe involving over fifty scientists and engineers
- Led proposal team of 14 professionals at Stanford, Marshall Spaceflight Center, Teledyne Brown Engineering, Lockheed Martin, Surrey Satellite Ltd, and EADS

Instructor, Department of Aeronautics and Astronautics

- Developed and taught graduate course AA-255, Space Systems Engineering and Design

Mission Director and Payload Integrated Product Team Lead

The Gravity Probe B Relativity Mission (GP-B), a successful \$780 million NASA sponsored, space science mission, launched April 20, 2004.

- Led development of GP-B payload through assembly, test, and spacecraft integration
- Directed mission operations/spacecraft communications team of 22 people
- Established engineering teams at Stanford and contractor Lockheed Martin to ensure key requirements compliance
- Led research program on superconducting magnetometry
- Achieved the most stringent magnetic requirements of any NASA flight program

Visiting Professor

Institut Henri Poincaré, UMPC Université de Paris VI, Paris, France

2006

- Developed and taught graduate courses on experimental tests of General Relativity

PROFFESIONAL AFFILIATIONS

Scientific Committee, International Center for Relativistic Astrophysics Network

Headquartered in Pescara, Italy

Vice Chair, COSPAR, Committee on Space Research, Commission H: Fundamental Physics in

Space 2004-2012

APS

AAS

Phi Beta Kappa

PUBLICATIONS

54. Gravity Probe B Cryogenic Payload C W F Everitt, R Parmley, M Taber, W Bencze, K Burns, D Frank, J Kolodziejczak, J Mester, B Muhlfelder, D Murray, G Reynolds, W Till and R Vassar
Class. Quantum Grav. 32 224009 (39pp) (2015)

53. The Gravity Probe B Test of General Relativity

C W F Everitt, B Muhlfelder, D B DeBra, B W Parkinson, J P Turneure¹, A S Silbergleit¹, E B Acworth, M Adams, R Adler, W J Bencze, J E Berberian, R J Bernier, K A Bower, R W Brumley, S Buchman, K Burns, B Clarke¹, J W Conklin¹, M L Eglinton¹, G Green, G Gutt, D H Gwo, G Hanuschak, X He, M I Heifetz, D N Hipkins, T J Holmes, R A Kahn, G M Keiser, J A Kozaczuk, T Langenstein, J Li, J A Lipa, J M Lockhart, M Luo, I Mandel, F Marcelja, J C Mester, A Ndili, Y Ohshima, J Overduin, M Salomon, D I Santiago, P Shestopole, V G Solomonik, K Stahl, M Taber, R A Van Patten, S Wang, J R Wade, P W Worden Jr, N Bartel, L Herman, D E Lebach, M Ratner, R R Ransom, I I Shapiro, H Small, B Stroozas, R Geveden, J H Goebel, J Horack, J Kolodziejczak, A J Lyons, J Olivier, P Peters, M Smith, W Till, L Wooten, W Reeve, M Anderson, N R Bennett, K Burns, H Dougherty, P Dulgov, D Frank, L W Huff, R Katz, J Kirschenbaum, G Mason, D Murray, R Parmley, M I Ratner⁴ G Reynolds, P Rittmuller, P F Schweiger, S Shehata, K Triebes, J VandenBeukel, R Vassar, T Al-Saud, A Al-Jadaan, H Al-Jibreen, M Al-Meshari and B Al-Suwaidan
Class. Quantum Grav. 32 224001 (29pp) (2015)

52. STEP and Fundamental Physics James Overduin, Francis Everitt, Paul Worden, John Mester,
Class. Quantum Grav. 29 184012 (2012)

51. Test of superconductivity of pick-up coils for STEP accelerometer and their modification Y. Yang, X.-B. Cao, S.-W. Wang, D. Gill, R. Torrii, J. Mester,
Guangxue Jingmi Gongcheng/Optics and Precision Engineering 18(11):2421-2429. (2012)

50. Super-accurate measurement method of acceleration for satellite test of equivalence principle Y. Yang, X.-B. Cao, S. Wang, J.C. Mester, P.W. Worded, C.W.F. Everitt,
Harbin Gongye Daxue Xuebao/Journal of Harbin Institute of Technology 44(9):7-13. (2012)

49. Gravity Probe B: Final Results of a Space Experiment to Test General Relativity C.W. F. Everitt, D. B. DeBra, B.W. Parkinson, J. P. Turneure, J.W. Conklin, M. I. Heifetz, G. M. Keiser, A. S. Silbergleit, T. Holmes, J. Kolodziejczak, M. Al-Meshari, J. C. Mester, B. Muhlfelder, V. G. Solomonik, K. Stahl, P.W. Worden, Jr., W. Bencze, S. Buchman, B. Clarke, A. Al-Jadaan, H. Al-Jibreen, J. Li, J. A. Lipa, J. M. Lockhart, B. Al-Suwaidan, M. Taber, and S. Wang
Physical Review Letters 106, 221101 (2011)

48. Funamental Physics in Space C. W. F. Everitt and J. C. Mester
Encyclopedia of Aerospace Engineering John Wiley & Sons Ltd II,1430-1455
(2010)

PUBLICATIONS

47. GAUGE: the GrAnd Unification and Gravity Explorer G. Amelino-Camelia, K. Aplin, M. Arndt, J. D. Barrow, R. J. Bingham, C. Borde, P. Bouyer, M. Caldwell, A. M. Cruise, T. Damour, P. D'Arrigo, H. Dittus, W. Ertmer, B. Foulon, P. Gill, G. D. Hammond, J. Hough, C. Jentsch, U. Johann, P. Jetzer, H. Klein, A. Lambrecht, B. Lamine, C. L.ammerzahl, N. Lockerbie, F. Loeffler, J. T. Mendonca, J. Mester, W.-T. Ni, C. Pegrum, A. Peters, E. Rasel, S. Reynaud, D. Shaul, T. J. Sumner, S. Theil, C. Torrie, P. Touboul, C. Trenkel, S. Vitale, W. Vodel, C. Wang, H. Ward, A. Woodgate
Experimental Astronomy 23:549–572 (2009)
46. Satellite Test of the Equivalence Principle Uncertainty Analysis J Mester P Worden Space Science Reviews, SSSI 35 - The Nature of Gravity, Editor-in-Chief: Hans Bloemen,
Space Sci. Rev. 148, 489–99 (2009)
45. Gravity Probe B Data Analysis: Status and Potential For Improved Accuracy aof Scientific Results, C.W.F. Everitt, M. Adams, B. Bencze, B. Clark, J. Conklin, D. DeBra, M. Dolphinh, M. Heifetz, D. Hipkins, T. Holmes, G.M Keiser, J. Kolodzoeczak, J. Li, J. Lipa, J.M Lockhart, J. Mester, B. Muhlfelder, Y. Oshima, B. Parkinson, M. Saloman, A. Silbergleit, K. Stahl, M. Taber, J. Turneaure, S. Wang, P Worden,
SSSI 35 - The Nature of Gravity, Space Sci. Rev. 148, 53–69 (2009)
44. The Science Case for STEP James Overduin, Francis Everitt, John Mester, Paul Worden,
Advances in Space Research 43 1532-1537 (2009)
43. Precision Attitude and Translation Control Design and Optimization, J. Mester
Report of the ICRANet Scientific Committee, Ed. R. Ruffini p 1939-1960 (2008)
42. Satellite Test of the Equivalence Principle - Control and Simulation S. Smoot, A. Walsh, I. Pelivan, M. Maat and J. Mester Proceedings of the 31st Annual AAS Rocky Mountain Guidance and Control Conference 2008, Breckenridge Colorado
Advances In The Astronautical Sciences Volume 131 (AAS 08-013) p 733-742 (2008)
41. On-Orbit Performance of Gravity Probe B: Orbit Determination and Drag-Free Translation Control J. Li, W. J. Bencze, D. B. DeBra, K. Galal, G. Hanuschak, T. Holmes, G. M. Keiser, J. Mester, P. Shestople, H. Small
Advances in Space Research Vol 40 Iss1 Pg 1-10, (2007)
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37. STEP Payload Development

P.W. Worden, J. Anderson, J.-P. Blaser, A.M. Cruise, T. Damour, H. Dittus, C. W. F. Everitt, B. Foulon, Y. Jafry, B. J. Kent, N. Lockerbie, F. Loeffler, G. Mann, J. Mester, C. Pegrum, R. Reinhardt, M. Sandford, A. Schleicher, C. C. Speake, T. J. Sumner, R. Torii, S. Theil, P. Touboul S. Vitale, and W. Vodel, Advances in Space Research, Volume 39, Issue 2, Pages 259-267 (2007)

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29. The Drag Free Control System of the STEP Satellite, Matthias Wiegand, Silvia Scheithauer, Stephan Theil, John Mester, Second Pan-Pacific Basin Workshop May 1-4, Pasadena, California, USA. (2001)
28. STEP Error Model Development Worden, P.; Mester, J.; Torii, R. Classical and Quantum Gravity; 7 July 2001; vol.18, no.13, p.2543-50
27. Measurement Of Density Inhomogeneities In HIPed Beryllium And Niobium For STEP Test Masses S Shiomi, R S Davis, C C Speake, D K Gill and J Mester Classical and Quantum Gravity. 18 (2001)
26. The STEP Mission: Principles And Baseline Design. Mester, J.; Torii, R.; Worden, P.; Lockerbie, N.; Vitale, S.; Everitt, C.W.F. Classical and Quantum Gravity; vol.18, no.13, p.2475-86 (2001)
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23. Ultralow Magnetic Fields and Gravity Probe B Gyroscope Readout J. C. Mester, J. M. Lockhart, B. Muhlfelder, D. Murry and M. Taber, Fundamental Physics in Space Symposium of the 32nd COSPAR Assembly Advances in Space Research; vol.25, no.6, p.1185-8 (2000)
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21. The Technology Heritage Of The Relativity Mission, Gravity Probe B. S. Buchman, F. Everitt, B. Parkinson, J.P. Turneure, D. DeBra, D. Bardas, W. Bencze, R. Brumley, D. Gill, G. Green, G. Gutt, D.H. Gwo, J. Kasdin, M. Keiser, J. Lipa, J. Lockhart, J. Mester, B. Muhlfelder, M. Taber, S. Wang, Y. Xiao, and P. Zhou,
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20. Charge Measurement. Saps Buchman, J.C. Mester, and T.J. Sumner,
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19. Experimental Techniques For Gyroscope Performance Enhancement for the Gravity Probe B Relativity Mission. Saps Buchman, F. Everett, B. Parkinson, M. Keiser, M.A. Taber, D. Bardas, J. Taber, J. Lockhart, B. Muhlfelder, J. Mester, Y. Xiao, G. Gutt, D. Gill, R. Brumley, B. DiDonna
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18. Measurements of the Thermal Emissivity of a Superconducting Niobium Film. R. Brumley, Saps Buchman, and J. C. Mester,
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16. Remanent Magnetization Of Instrument Materials For Low Magnetic Field Applications. J. C. Mester and J. M. Lockhart,
Proceedings of the 21st International Conference of Low Temperature Physics, Czechoslovak Journal of Physics, 46, S5 2751 (1996)
15. Gravity Probe B: Status and Flight Plans. J.C. Mester, C.W.F. Everitt, B.W. Parkinson, and J.P. Turneure,
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14. Non-local Distribution of Recombination Energy in Spin Polarized Atomic Hydrogen. E.S. Meyer, Z. Zhao, J.C. Mester, and I.F. Silvera,
Physical Review B 50, 9339 (1994)
13. Comment on "The Weakest Bond: Experimental Observation of Helium Dimer" E.S. Meyer, J.C. Mester, and I.F. Silvera,
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12. Surface Recombination in Spin-Polarized Hydrogen: Where Does the Heat Go? Z. Zhao, E.S. Meyer, B. Freedman, J. Kim, J.C. Mester, and I.F. Silvera,
Proc. of LT 20, Physica B 194-196, 917-918 (1994)

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11. Low Temperature Scattering of Helium and Atomic Hydrogen. J.C. Mester, E.S. Meyer, T.E. Huber, M.W. Reynolds, and I.F. Silvera, Proc. of LT 20, Physica B 194-196, 887-888 (1994)
10. Observation of Giant Scattering Cross Sections in 4He. E.S. Meyer, J.C. Mester, B. Freedman, J. Kim, M.W. Reynolds, Z. Zhao, and I.F. Silvera, Proc. of LT 20, Physica B 194-196, 885-886 (1994)
9. Critical States in 2D Disk Shaped Superconductors. J. Zhu, J.C. Mester, James Lockhart, and John Turneaure, Physica C 212, 216-22 (1993)
8. Cold Collisions of Ground State 4He: Giant S-Wave Scattering Cross Sections. J.C. Mester, E.S. Meyer, M.W. Reynolds, T.E. Huber, Z. Zhao, B. Freedman, J. Kim, and I.F. Silvera, Physical Review Letters 71, 1343-6 (1993)
7. Novel Technique for Producing Ultracold 4He Beams. E.S. Meyer, J.C. Mester, and I.F. Silvera, Physical Review Letters 70, 908-11 (1993)
6. The Scattering of Atomic Hydrogen and Helium at Low Temperature J C Mester Dissertation, Harvard University, (1992)
5. Measurements of Giant Cross Sections in Low Temperature 4He - 4He Scattering J.C. Mester, E.S. Meyer, T.E. Huber, M.W. Reynolds, and I.F. Silvera, Journal of Low Temperature Physics 89, 569-72 (1992)
4. Heat Transport via Evaporation of Superfluid Helium Films: Giant Effective Kapitza Resistance. J.C. Mester, E.S. Meyer, T.E. Huber, M.W. Reynolds, and I.F. Silvera, Physical Review Letters 68, 3068-71 (1992)
3. Third Sound in Helium on a Molecular Hydrogen Substrate. J.G. Brisson, J.C. Mester, and I.F. Silvera, Physical Review B 44, 12 453 (1991)
2. Magnetic Field Dependence of Resonance Recombination in Spin Polarized Atomic Hydrogen, I.F. Silvera, H.P. Godfried, E.R. Eliel, J.G. Brisson, J.D. Gillaspay, J.C. Mester, and C. Mallerdeau, Physical Review B 37, 1520 (1988)
1. Interaction of Atomic Hydrogen with Undersaturated Helium Films. H.P. Godfried, E.R. Eliel, J.G. Brisson, J.D. Gillaspay, C. Mallerdeau, J.C. Mester, and I.F. Silvera, Physical Review Letters 55, 1311 (1985)

CURRICULUM VITAE

Alexei A. Starobinsky

Born: April 19, 1948, Moscow, USSR

M.S.: 21 January 1972, from the Physics Department, Moscow State University

Ph.D.: 14 November 1975, from the Landau Institute for Theoretical Physics, USSR (now Russian) Academy of Sciences

Supervisor for M.S. and Ph.D.: Academician Ya.B. Zeldovich

Research Positions

- May 1975 - August 1990 — Research Scientist, Senior Research Scientist in the Landau Institute for Theoretical Physics, USSR Academy of Sciences, Moscow - Chernogolovka, USSR
- August 1990 - June 1997 — Head of the Department of Gravity and Cosmology and Leading Research Scientist, Landau Institute for Theoretical Physics, Moscow - Chernogolovka, Russia
- Since June 1997 by now — Principal Research Scientist, Landau Institute for Theoretical Physics, Russian Academy of Sciences, Moscow - Chernogolovka, Russia
- March - September 1991 — Visiting Professor, Ecole Normale Supérieure, Paris, France
- November 1993 - September 1994 — Visiting Professor, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan
- August 2000 - February 2001 — Visiting Professor, Research Center for the Early Universe, University of Tokyo, Tokyo, Japan
- September 2005 - August 2008 — Guest Professor, Inter-University Center for Astronomy and Astrophysics, Pune, India
- September 2006 - December 2006 — Visiting Professor, CNRS, Institut Henry Poincaré, Paris, France
- March 2007 - June 2007 — Visiting Professor, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan

- Since April 2007 by now — part-time Leading and now Principal Research Scientist, Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia
- December 2008 - March 2009, October 2010 - March 2011, January 2012 - March 2012, November 2012 - January 2013, October 2013 - November 2013, March 2015, November 2015, February 2017, December 2017, March 2018, November 2018 — Visiting Professor, Research Center for the Early Universe, University of Tokyo, Tokyo, Japan
- November 2014 - June 2015 (3 months) — Visiting Professor, Institute of Theoretical Physics, Faculty of Science, Utrecht University, Netherlands
- November 2016 — Guest Senior Researcher, Waseda Institute for Advanced Study, Waseda University, Tokyo, Japan
- Since September 2017 by now — part-time Professor, Faculty of Physics, National Research University Higher School of Economics, Moscow, Russia

Administrative Positions

- March 1987 - August 1990 — Science Secretary of the Landau Institute for Theoretical Physics
- May 1990 - June 1990, May 1991 - June 1991 — Co-Director of the USSR-USA Summer Programme for Young Investigators in Cosmology 1990 & 1991 (jointly with K. Thorne in 1990 and D. Schramm in 1991)
- July 1999 - June 2003 — Deputy Director of the Landau Institute for Theoretical Physics, Moscow, Russia

Scientific Awards and Fellowships

- Russian State Distinguished Scientific Fellowship — 1994 - 1997
- The A. A. Friedmann Prize for Research in Gravity and Cosmology from the Russian Academy of Sciences — 1996
- Correspondent Member of the Russian Academy of Sciences — elected 30.05.1997
- Prize of the International Academic Publ. Co. "Nauka/Interperiodica" for the best work of the year published in its journals — 2004

- The Tomalla Prize for extraordinary contributions to General Relativity and Gravity from the Tomalla Foundation for Gravity Research (Switzerland) — 2009
- The Outstanding Referee for the journals of the American Physical Society Award — 2010
- Member of the German Academy of Sciences Leopoldina – the German National Academy of Sciences — elected 24.03.2010
- The Oscar Klein Medal from the Royal Swedish Academy of Sciences and the Stockholm University — 2010
- Full Member of the Russian Academy of Sciences — elected 22.12.2011
- The Amaldi Medal from SIGRAV (Italian Society for General Relativity and Gravitational Physics) — 2012
- The Honorary Professor of the Bashkir State Pedagogical University, Ufa, Russia — 2012
- The Gruber Cosmology Prize from the Gruber Foundation, USA — 2013
- The A. A. Friedmann Medal from the Perm State University, Perm, Russia — 2013
- Foreign Fellow of the National Academy of Sciences, India (Allahabad) — 2013
- The 2014 Kavli Prize in Astrophysics from the Norwegian Academy of Science and Letters, the Norwegian Ministry of Education and Research and the Kavli Foundation — 2014
- Member of the Norwegian Academy of Science and Letters — elected 29.05.2014
- Doctor Honoris Causa from the Kazan Federal University, Kazan, Russia — 2014
- The Gold A. D. Sakharov Medal from the Russian Academy of Sciences — 2016
- Foreign Fellow of the Indian National Science Academy (New Delhi) — since 01.01.2017
- Foreign Associate of the US National Academy of Sciences — elected 02.05.2017
- d'Officier dans l'Ordre national des Palmes Academics, France — 2017

- The F. G. W. Struve commemorative Medal from the Main (Pulkovo) Astronomical Observatory of the Russian Academy of Sciences — 2018
- The ICTP Dirac Medal and Prize — 2019

Membership in National and International Societies and Committees

- Member of the Committee of the International Society on General Relativity and Gravitation (elected) — 1989 - 1997, 2011 - 2019
- IUPAP Representative of the International Society of General Relativity and Gravitation — 2004 - 2010
- Member of the Astronomy panel of the Long-Term Research Grants Program of the International Science Foundation — 1993 - 1994
- Member of the American Physical Society — since 2001, Fellow — since 2011
- President of the Russian Gravitational Society — elected 27.06.2017
- President of the Board and member of the Council of the BRICS-AGAC Association of Gravity, Astrophysics and Cosmology — since 2018

Membership in Editorial Boards of Scientific Journals

- General Relativity and Gravitation — 1989 - 1997
- JETP Letters (Russia) — since 1991
- Astronomy Letters (Russia) — since 1992
- International Journal of Modern Physics D — since 1992
- Classical and Quantum Gravity — 1993 - 1996, and the member of the CQG Advisory Panel — 2011 - 2018
- Gravitation and Cosmology (Russia) — since 1994
- Physical Review D — 2001 - 2003
- Journal of Cosmology and Astroparticle Physics — since 2002
- European Physical Journal C (Theoretical Physics II) — since 2012
- Physics of Elementary Particles and Atomic Nuclei (Russia) — since 2012

- Modern Physics Letters A — since 2013
- SIGMA (Symmetry, Integrability and Geometry: Methods and Applications) — since 2014
- Universe (Advisory Board) — since 2018

AREAS OF PREVIOUS RESEARCH

- Particle creation in cosmology (1972 - 1977).
- Wave amplification and particle creation by rotating black holes (1973 - 1974).
- Observational tests of PBH (1976 - 1979).
- Stability of Cauchy horizons (1979 - 1980).
- Inflation, including first observational test of inflation (1979).
- First self-consistent model of inflation based on the $(R + R^2)$ gravity (1980).
- Theory of generation of adiabatic perturbations during inflation (1982).
- Fluctuations of the temperature of cosmic microwave background radiation (1983 - 1988, 1992 - 1995).
- Stochastic inflation (1984 - 1986, 1994, 2015).
- Multiple inflation (1985, 1992 - 1994).
- Cold dark matter model with the cosmological term (1985).
- Cold + hot dark matter cosmological models (1993 - 1995).
- Features in the primordial spectrum of adiabatic perturbations (1992, 2014 - 2018).
- Theory of reheating after inflation (1994 - 1997).
- Quantum-to-classical transition in cosmology (1996 - 1998, 2007).
- Dark energy in the Universe: theoretical and observational investigation of its properties (1998 - 2000, 2003 - 2004, 2006 - 2009, 2012 - 2019).
- Trans-Planckian particle creation in cosmology (2001 - 2002, 2007).
- Cosmology with tachyon matter (2002).

- ARCHEOPS collaboration (measurement and investigation of CMB temperature fluctuations in the ARCHEOPS experiment) (2002 - 2004).
- Scalar-tensor and $f(R)$ models of dark energy (2000, 2006 - 2007, 2009 - 2011, 2017, 2019).
- Higgs inflation (2008 - 2009, 2012).
- Generalization of inflationary models in modified gravity to supergravity (2011 - 2012).
- Sterile neutrino and $f(R)$ models of dark energy (2013 - 2015).
- Non-local UV generalizations of gravity (2016 - 2018).
- Constant-roll inflation (2015 - 2019).
- R^2 -Higgs inflation (2018, 2019).

LIST OF MAIN PUBLICATIONS

by Alexei A. Starobinsky

1. Ya. B. Zel'dovich, A. A. Starobinskii.
Particle production and vacuum polarization in an anisotropic gravitational field.
Zh. Eksp. Teor. Fiz. **61**, 2161 - 2175, 1971 (*Sov. Phys. - JETP* **34**, 1159 - 1166, 1972).
2. A. A. Starobinskii.
Amplification of waves during reflection from a rotating "black hole".
Zh. Eksp. Teor. Fiz. **64**, 48 - 57, 1973 (*Sov. Phys. - JETP* **37**, 28 - 32, 1973).
3. A. A. Starobinskii, S. M. Churilov.
Amplification of electromagnetic and gravitational waves scattered by a rotating "black hole".
Zh. Eksp. Teor. Fiz. **65**, 3 - 11, 1973 (*Sov. Phys. - JETP* **38**, 1 - 5, 1974).
4. V. N. Lukash, A. A. Starobinskii.
The isotropization of cosmological expansion owing to particle production.
Zh. Eksp. Teor. Fiz. **66**, 1515 - 1527, 1974 (*Sov. Phys. - JETP* **39**, 742 - 747, 1974).
5. Ya. B. Zel'dovich, I. D. Novikov, A. A. Starobinskii.
Quantum effects in white holes.
Zh. Eksp. Teor. Fiz. **66**, 1987 - 1910, 1974 (*Sov. Phys. - JETP* **39**, 933 - 939, 1974).
6. V. N. Lukash, I. D. Novikov, A. A. Starobinskii.
Particle creation in the vortex cosmological models.
Zh. Eksp. Teor. Fiz. **69**, 1484 - 1500, 1975 (*Sov. Phys. - JETP* **42**, 757 - 765, 1975).
7. D. D. Sokolov, A. A. Starobinskii.
Globally inhomogeneous "spliced" universes.
Astron. Zh. **52**, 1041 - 1048, 1975 (*Sov. Astron.* **19**, 629 - 633, 1976).
8. S. G. Mamaev, V. M. Mostepanenko, A. A. Starobinskii.
Particle creation from the vacuum near a homogeneous isotropic singularity.
Zh. Eksp. Teor. Fiz. **70**, 1577 - 1591, 1976 (*Sov. Phys. - JETP* **43**, 823 - 830, 1976).
9. Ya. B. Zel'dovich, A. A. Starobinskii.
Possibility of a cold cosmological singularity in the spectrum of primordial black holes.
Pisma v Zh. Eksp. Teor. Fiz. **24**, 616 - 618, 1976 (*Sov. Phys. - JETP Lett.* **24**, 571 - 573, 1976).
10. V. N. Lukash, I. D. Novikov, A. A. Starobinsky, Ya. B. Zeldovich.
Quantum effects and evolution of cosmological models.
Nuovo Cim. **35B**, 293 - 307, 1976.

11. S. G. Mamaev, V. M. Mostepanenko, A. A. Starobinskii.
Energy and pressure of matter created near an isotropic cosmological singularity.
Pisma v Astron. Zh. **2**, 136 - 139, 1976 (*Sov. Astron. Lett.* **2**, 53 - 54, 1976).
12. A. A. Starobinsky.
Quantum effects in cosmology and black-and-white hole physics.
In: Proc. of the First Marcel Grossman Meeting on General Relativity (Trieste, Italy, 7-12 July 1975), ed. by R. Ruffini, North-Holland Publ. Co., Amsterdam, 1977, pp. 499-501.
13. D. D. Sokolov, A. A. Starobinskii.
The structure of the curvature tensor at conical singularities.
Doklady AN SSSR **234**, 1043 - 1046, 1977 (*Sov. Phys. - Doklady* **22**, 312 - 314, 1977).
14. Ya. B. Zel'dovich, A. A. Starobinskii, M. Yu. Khlopov, V. M. Chechetkin.
Primordial black holes and the deuterium problem.
Pisma v Astron. Zh. **3**, 208 - 211, 1977 (*Sov. Astron. Lett.* **3**, 110 - 112, 1977).
15. Ya. B. Zel'dovich, A. A. Starobinskii.
Rate of particle production in gravitational fields.
Pisma v Zh. Eksp. Teor. Fiz. **26**, 373 - 377, 1977 (*Sov. Phys. - JETP Lett.* **26**, 252 - 255, 1977).
16. A. A. Starobinskii.
On a nonsingular isotropic cosmological model.
Pisma v Astron. Zh. **4**, 155 - 159, 1978 (*Sov. Astron. Lett.* **4**, 82 - 84, 1978).
17. Y. Gursel, V. D. Sandberg, I. D. Novikov, A. A. Starobinsky.
Evolution of scalar perturbations near the Cauchy horizon of a charged black hole.
Phys. Rev. D **19**, 413 - 420, 1979.
18. Y. Gursel, V. D. Sandberg, I. D. Novikov, A. A. Starobinsky.
The final state of the evolution of the interior of a charged black hole.
Phys. Rev. D **20**, 1260 - 1270, 1979.
19. V. Ts. Gurovich, A. A. Starobinskii.
Quantum effects and regular cosmological models.
Zh. Eksp. Teor. Fiz. **77**, 1683 - 1700, 1979 (*Sov. Phys. - JETP* **50**, 844 - 852, 1979).
20. A. A. Starobinskii.
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Pisma v Zh. Eksp. Teor. Fiz. **30**, 719 - 723, 1979 (*Sov. Phys. - JETP Lett.* **30**, 682 - 685, 1979).
21. I. D. Novikov, A. G. Polnarev, A. A. Starobinsky, Ya. B. Zeldovich.
Primordial black holes.
Astron. Astroph. **80**, 104 - 109, 1979.
22. I. D. Novikov, A. A. Starobinskii.
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- Cauchy horizons.
Zh. Eksp. Teor. Fiz. **78**, 3 - 19, 1980 (*Sov. Phys. - JETP* **51**, 1 - 9, 1980).
23. A. A. Starobinsky.
 A new type of isotropic cosmological models without singularity.
Phys. Lett. B **91**, 99 - 102, 1980.
24. A. A. Starobinskii.
 Evolution of small perturbations of isotropic cosmological models with one-loop quantum gravitational corrections.
Pisma v Zh. Eksp. Teor. Fiz. **34**, 460 - 463, 1981 (*Sov. Phys. - JETP Lett.* **34**, 438 - 441, 1981).
25. A. A. Starobinskii.
 Can the effective gravitational constant become negative?
Pisma v Astron. Zh. **7**, 67 - 72, 1981 (*Sov. Astron. Lett.* **7**, 36 - 38, 1981).
26. A. A. Starobinsky.
 Dynamics of phase transition in the new inflationary Universe scenario and generation of perturbations.
Phys. Lett. B **117**, 175 - 178, 1982.
27. A. A. Starobinsky.
 Nonsingular model of the Universe with the quantum-gravitational de Sitter stage and its observational consequences.
 In: Proc. of the Second Seminar "Quantum Theory of Gravity", (Moscow, 13-15 October 1981), INR Press, Moscow, 1982, pp. 58-72.
 Reprinted in: Quantum Gravity, eds. M. A. Markov, P. C. West, Plenum Publ. Co., New York, 1984, pp. 103-128.
28. A. A. Starobinskii.
 Isotropization of arbitrary cosmological expansion given an effective cosmological constant.
Pisma v Zh. Eksp. Teor. Fiz. **37**, 55 - 58, 1983 (*Sov. Phys. - JETP Lett.* **37**, 66 - 69, 1983).
29. A. A. Starobinskii.
 The perturbation spectrum evolving from a nonsingular, initially de Sitter cosmology, and the microwave background anisotropy.
Pisma v Astron. Zh. **9**, 579 - 584, 1983 (*Sov. Astron. Lett.* **9**, 302 - 304, 1983).
30. L. A. Kofman, V. Sakhni, A. A. Starobinskii.
 Anisotropic cosmological model created by quantum polarization of vacuum.
Zh. Eksp. Teor. Fiz. **85**, 1876 - 1886, 1983 (*Sov. Phys. - JETP* **58**, 1090 - 1095, 1983).
31. Ya. B. Zel'dovich, A. A. Starobinskii.
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J. Cosm. Astropart. Phys. **1802**, 017, 2018.
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J. High Energy Phys. **1803**, 071, 2018.
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200. A. Shafieloo, B. L’Huillier, A. A. Starobinsky.
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203. M. He, R. Jinno, K. Kamada, S. C. Park, A. A. Starobinsky, J. Yokoyama.
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204. H. Motohashi, A. A. Starobinsky.
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205. R. Calderon, D. Felbacq, R. Gannouji, D. Polarski, A. A. Starobinsky.
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C. Umiltà.
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tensor theories of gravity.
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inflaton.
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208. X.-L. Li, A. Shafieloo, V. Sahni, A. A. Starobinsky.
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parameters.
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209. I. M. Khalatnikov, A. Yu. Kamenshchik, A. A. Starobinsky.
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and string gas.
JETP **129**, 486-494, 2019 (*Zh. Eksp. Teor. Fiz.* **156**, 581-584, 2019).
210. J. Chluba *et al.* (including A. A. Starobinsky).
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formation and particle physics.
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Wiltshire, David L.



Position: Professor, School of Physical & Chemical Sciences, University of Canterbury, Christchurch, New Zealand

Period at ICRANet: 29 July 2008 – 30 October 2008

I Scientific Work

Inhomogeneous Cosmology, Backreaction, the Averaging Problem in General Relativity.

II Conferences and educational activities

II a Conferences and Other External Scientific Work, presented talks at:

- *New Zealand Institute of Physics Conference, Christchurch, NZ, 15-17 April, 2019*
- *GR22: 22nd International Conference on General Relativity and Gravitation, Valencia, Spain, 7-12 July, 2019*
- *Inhomogeneous Cosmologies IV, Toruń, Poland, 14-19 July, 2019*
- *ACGRG10: 10th Australasian Conference on General Relativity and Gravitation, Wellington, NZ, 9-12 December 2019*

II b Student supervision: Supervised 1 PhD students – *Asta Heinesen*

II c Honours Research Project supervision: Supervised 2 students – *Rudeep Gaur, Joseph Wilson*

II d Other Teaching Duties – Gave three lecture courses at University of Canterbury: *PHYS203 Quantum Physics; PHYS326 Classical Mechanics and Symmetry Principles; PHYS415 General Relativity*.

III. Service activities *III b. Outside ICRANet*: Inhomogeneous Cosmologies Workshop Organizing Committee; Editorial Board of *Classical and Quantum Gravity*; Academic Board at the University of Canterbury; President of NZ Institute of Physics; Australasian Society for General Relativity and Gravitation Committee; International Society on General Relativity and Gravitation Committee.

IV. Other activities

2019 List of Publications

- D.L. Wiltshire, "*Comment on 'Hubble flow variations as a test for inhomogeneous cosmology'*", *Astronomy and Astrophysics* **624** (2019) A12 [4pp]
- A. Heinesen, C. Blake and D.L. Wiltshire, "*Baryon acoustic oscillation methods for generic curvature: Application to the SDSS-III Baryon Oscillation Spectroscopic Survey*", *Journal of Cosmology and Astroparticle JCAP* 03 (2019) 003 [39pp]

Research Scientists



Micol Benetti

Curriculum Vitae

Personal Informations

Place of Birth Rome (Italy)
Date of Birth 01/02/1983
Nationality Italian
Email address benettim@na.infn.it, micol.benetti@gmail.com
Competences Physics, Astrophysics, Cosmology, Astronomy, Mathematics
Main Research Interests Theoretical and Observational Cosmology, General Relativity, Cosmological Models and Inflationary Theory, Extended Theories of Gravity, Cosmography, Cosmological data, Data analysis and parameters constraint, Bayesian inference, Boltzmann solver codes (CAMB and CLASS), Data analysis codes (COSMOMC and MULTINEST), Informatics and programming languages (FORTRAN, PYTHON, C++)

Employment

Current position

05/2018– Present **Postdoc position**, *University of Naples "Federico II", department of Physics.*
Department Research fellowship.

Past fellowship

06/2015– 04/2018 **Postdoc position**, *National Observatory of Rio de Janeiro, COAA (Coordenação de Astronomia e Astrofísica) group.*
Postdoctoral FAPERJ fellowship (Programa Pós-doutorado Nota 10 - 2015).
08/2014– 05/2015 **Postdoc position**, *National Observatory of Rio de Janeiro, COAA (Coordenação de Astronomia e Astrofísica) group.*
Postdoctoral PCI-DA fellowship (Programa de Capacitação Institucional do MCTI, CNPq program).

Education

- 2014 **Ph.D. degree in Relativistic Astrophysics IRAP**,
University of Rome "La Sapienza" - Department of Physics
Thesis: "Constraints on the primordial spectrum and inflationary potential from cosmological observations".
Advisor: Prof. A. Melchiorri, Co-Advisor: Dr. M. Lattanzi
Thesis available in: hdl.handle.net/10805/2392 .
- 2010 **Master degree in Astronomy and Astrophysics**,
University of Rome "La Sapienza" - Department of Physics
Thesis: "Cosmological constraints on primordial oscillations in the inflationary perturbations spectrum", final mark 110/110.
- 2006 **Degree in Physics and Astrophysics**,
University of Rome "La Sapienza" - Department of Physics
Thesis: "Inflationary Theories".

Publications

Published and submitted

- ▷ **Probing the Weak Gravity Conjecture in the Cosmic Microwave Background** M. Winkler , M. Gerbino, M. Benetti
Submitted in *Physical Review D*. [ArXiv:1911.11148](https://arxiv.org/abs/1911.11148)
- ▷ **Connecting early and late epochs by $f(z)$ CDM cosmography**
M. Benetti, S. Capozziello
JCAP, Journal of Cosmology and Astroparticle Physics **12** 008 (2019)
[ArXiv:1910.09975](https://arxiv.org/abs/1910.09975)
- ▷ **Looking for interactions in the cosmological dark sector**, M. Benetti, W. Miranda, H. A. Borges, S. Carneiro, C. Pigozzo, J. S. Alcaniz
JCAP, Journal of Cosmology and Astroparticle Physics **12** 023 (2019)
[ArXiv:1908.07213](https://arxiv.org/abs/1908.07213)
- ▷ **Observational Constraints on Warm Inflation in Loop Quantum Cosmology**, M. Benetti, L. Graef and R. Ramos
JCAP, Journal of Cosmology and Astroparticle Physics **10** 066 (2019)
[ArXiv:1907.03633](https://arxiv.org/abs/1907.03633)
- ▷ **Swampland conjecture in $f(R)$ gravity by the Noether Symmetry Approach**
M. Benetti, S. Capozziello and L. L. Graef
Physical Review D. **100**, 084013 (2019). [ArXiv:1905.05654](https://arxiv.org/abs/1905.05654)
- ▷ **Primordial gravitational waves and the H_0 -tension problem**
L. L. Graef, M. Benetti, J. S. Alcaniz
Physical Review D. **99**, 043519 (2019). [ArXiv:1809.04501](https://arxiv.org/abs/1809.04501)
- ▷ **Constraining quantum collapse inflationary models with current data: The semiclassical approach**
M. P. Piccirilli, G. Leon, S. J. Landau, , M. Benetti, D. Sudarsky
Int. J. Mod. Phys. D Vol. 28, No. 2 (2019) 195004. [ArXiv:1709.06237](https://arxiv.org/abs/1709.06237)

- ▷ **The H_0 and σ_8 tensions and the scale invariant spectrum**
M. Benetti, L.L. Graef, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics* **07** 066 (2018).
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- ▷ **Observational constraints on Gauss-Bonnet cosmology**
M. Benetti, S. Costa, S. Capozziello, J. S. Alcaniz, M. de Laurentis
Int. J. Mod. Phys. D 1850084 (2018). [ArXiv:1803.00895](#)
- ▷ **Dynamical analysis on f(R,G) cosmology**
S. Costa, F. Roig, J. S. Alcaniz, S. Capozziello, M. de Laurentis, M. Benetti
Class. Quantum Grav. **35** 075013 (2018). [ArXiv:1802.02572](#)
- ▷ **Measuring the transversal baryonic acoustic scale from the SDSS DR11 galaxies**, G. C. Carvalho, A. Bernui, M. Benetti, J. C. Carvalho, J. S. Alcaniz
Submitted in MNRAS, *Monthly Notices of the Royal Astronomical Society*
[ArXiv:1709.00271](#)
- ▷ **CMB constraints on β -exponential inflationary models**
M. A. dos Santos, M. Benetti, J. S. Alcaniz, F. A. Brito, R. Silva
JCAP, *Journal of Cosmology and Astroparticle Physics* **03** 023 (2018).
[ArXiv:1710.09808](#)
- ▷ **A Bayesian analysis of inflationary primordial spectrum models using Planck data**, S. Costa, M. Benetti, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **03** 004 (2018).
[ArXiv:1710.01613](#)
- ▷ **Testing non-minimally coupled inflation with CMB data: a Bayesian analysis** , M. Campista, M. Benetti, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **09** 010 (2017).
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- ▷ **Constraining the Break of Spatial Diffeomorphism Invariance with Planck Data** , L. L. Graef, M. Benetti, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **07** 013 (2017).
[ArXiv:1705.01961](#)
- ▷ **Do joint CMB and HST data support a scale invariant spectrum?**
M. Benetti, L. L. Graef, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **04** 003 (2017).
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- ▷ **Warm inflation dissipative effects: Predictions and constrains from the Planck data** , M. Benetti, R. Ramos
Physical Review D 26 **95**, 023517 (2017). [ArXiv:1610.08758](#)
- ▷ **Constraining quantum collapse inflationary models with CMB data**
M. Benetti, S. J. Landau, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **12** 035 (2016).
[ArXiv:1610.03091](#)
- ▷ **Bayesian analysis of inflationary features in Planck and SDSS data**
M. Benetti, J. S. Alcaniz, *Physical Review D* **94**, 023526 (2016). [ArXiv:1604.08156](#)

- ▷ **Baryon Acoustic Oscillations from the SDSS DR10 galaxies angular correlation function**
G. C. Carvalho, A. Bernui, M. Benetti, J. C. Carvalho, J. S. Alcaniz
Physical Review D **93**, 023530 (2016). [ArXiv:1507.08972](#)
- ▷ **Primordial Non-Gaussianities of inflationary step like models**
Camila P. Novaes, M. Benetti, A. Bernui, [ArXiv:1507.01657](#)
- ▷ **Updating constraints by Planck data on inflationary features model**
M. Benetti, Physical Review D **88**, 087302 (2013). [ArXiv:1308.6406](#)
- ▷ **Cosmological data and indications for new physics**
M. Benetti, M. Gerbino, W. H. Kinney, E. W. Kolb, M. Lattanzi, A. Melchiorri, L. Pagano, A. Riotto
JCAP - *Journal of Cosmology and Astroparticle Physics*, **10** 030 (2013).
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- ▷ **Featuring the primordial power spectrum: new constraints on interrupted slow-roll from CMB and LRG data**
M. Benetti, S. Pandolfi, M. Lattanzi, M. Martinelli, A. Melchiorri
Physical Review D **87**, 023519 (2013). [ArXiv:1210.3562](#)
- ▷ **Features in the primordial spectrum: new constraints from WMAP7+ACT data and prospects for Plank**
M. Benetti, M. Lattanzi, E. Calabrese, A. Melchiorri
Physical Review D **84**, 063509 (2011). [ArXiv:1107.4992](#)

In preparation

- ▷ **Constraints on radiative Corrections in Non-Minimal Inflationary Models with Seesaw Mechanism**
J. G. Rodrigues, M. Benetti, M. Campista, J. Alcaniz
- ▷ **Non minimal coupling in β -inflation model**
S. Costa, M. Benetti, J. S. Alcaniz
- ▷ **Extended Electromagnetism**
F. Bajardi, S. Capozziello, M. Benetti
- ▷ **Cosmological Heisenberg's principle and H0 tension**
S. Capozziello, M. Benetti, A. D. A. M. Spallicci
- ▷ **Designer Hybrid metric Palatini gravity**
N. Frusciante, M. Benetti
- ▷ **f(T) in BBN**
M. Benetti, S. Capozziello, G. Lambiase
- ▷ **Cosmography at early times with different dark energy models**
M. Benetti, S. Capozziello, O. Luongo
- ▷ **Quartic Chaotic Inflation in the strong coupling regime**
M. Campista, M. Benetti, J. Alcaniz, S. Capozziello

Proceeding

- ▷ **Cosmic microwave background and large scale structure constraints on primordial inflation**
M. Benetti J. S. Alcaniz, Parallel Session of the "Fourteenth Marcel Grossmann Meeting on General Relativity" held in Rome, 2015, Italy. Published by World Scientific, PART C. pp. 2109-2114 (2017) DOI: [10.1142/97898132266090233](https://doi.org/10.1142/97898132266090233)
- ▷ **Recent results and prospectives on cosmology and fundamental physics from microwave survey**
Burigana, Battistelli, Benetti *et al.*, Parallel Session of the "Fourteenth Marcel Grossman Meeting on General Relativity" held in Rome, 2015, Italy. Published by Int. J. Mod. Phys. D **25** no. 06, 1630016 (2016) [ArXiv:1604.03819](https://arxiv.org/abs/1604.03819)
DOI: [10.1142/S0218271816300160](https://doi.org/10.1142/S0218271816300160), [10.1142/97898132266090031](https://doi.org/10.1142/97898132266090031)
- ▷ **Features in the Early Universe**
M. Benetti, for the "2nd Cesar Lattes Meeting" held in Rio de Janeiro, 2015, Brazil. Published by AIP Conference Proceedings **1693**, 050004 (2015).
DOI: [10.1063/1.4937197](https://doi.org/10.1063/1.4937197)
- ▷ **Features in the primordial spectrum: new constraints by Planck**
M. Benetti, for the "New Horizons for Observational Cosmology" held in Varenna, 2013, Italy. Published by IOS Press, **186**, 416 (2014).
DOI: [10.3254/978-1-61499-476-3-243](https://doi.org/10.3254/978-1-61499-476-3-243)
- ▷ **New constraints on features in the primordial spectrum**
M. Benetti, for "The third Galileo- Xu Guangqi meeting" held in Beijing, 2011, China. Published by Int. J. Mod. Phys. Conf. Ser., **23**, 345 (2013).
DOI: [10.1142/S2010-194513011598](https://doi.org/10.1142/S2010-194513011598)

Chapter of book

- ▷ **Gravity and the Quantum**, *Pedagogical Essays on Cosmology, Astrophysics, and Quantum Gravity*
Springer, series *Fundamental Theories of Physics*, **187** (2017), Pages 11-19, edit to Jasjeet Singh Bagla, Sunu Engineer
Chapter title: *Measuring baryon acoustic oscillations with angular two-point correlation function*, J. S. Alcaniz, G. C. Carvalho, A. Bernui, J. C. Carvalho, M. Benetti. DOI: [10.1007/978-3-319-51700-1](https://doi.org/10.1007/978-3-319-51700-1)

Experience

Teaching

- 2019 **Lecturer**, *Lessons in "Complements of Cosmology" course for MSc students*, Regular professor: Salvatore Capozziello, University of Naples "Federico II", department of Physics, Naples, Italy.
- 2019 **Lecturer**, *Lessons in "Elements of General Relativity and Cosmology" course for graduate students*, Regular professor: Salvatore Capozziello, University of Naples "Federico II", department of Physics, Naples, Italy.
- 2017 **Lecturer**, *course of 10 hours on "Tools for data analysis in cosmology" for Ph.D students and Post-doc*, Federal University of Rio Grande do Norte - UFRN, Natal, RN, Brazil.

- 2017 **Lecturer**, course of 8 hours on “Data analysis in cosmology” for MSc students, University of Naples “Federico II”, department of Physics, Naples, Italy.
- 2017 **Lecturer**, course of 20 hours on “Code for Anisotropies in the Microwave Background I” for MSc students, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2017 **Member of Teaching Staff**, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2015 **Lecturer**, course of 10 hours on “CAMB: a code for cosmological theoretical predictions” for MSc and Ph.D. students, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2015 **Lecturer**, Lessons in “Cosmology” course for MSc students, Regular professor: Armando Bernui, Observatório Nacional, Rio de Janeiro, RJ, Brazil.

Supervision of Students

- 2017-2019 **Ph.D. student Co-Advisor**, *Simony Costa*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2019 **Undergraduate student Co-Advisor**, *Filippo Bouché*, University of Naples “Federico II”, department of Physics, Naples, Italy.
- 2018 **Undergraduate student Co-Advisor**, *Davoud Ahmadi*, University of Naples “Federico II”, department of Physics, Naples, Italy.
- 2018 **Undergraduate student Co-Advisor**, *Alberto Tortora*, University of Naples “Federico II”, department of Physics, Naples, Italy.

Examination board

- Jul-Sept 2019 **Member of exam commission**, *MSc course of Cosmology*, Regular professor: Salvatore Capozziello, University of Naples “Federico II”, department of Physics, Naples, Italy.
- Jul-Sept 2019 **Member of exam commission**, *Graduation course of Elements of General Relativity and Cosmology*, Regular professor: Salvatore Capozziello, University of Naples “Federico II”, department of Physics, Naples, Italy.
- Mar 2019 **Member of Ph.D examination board**, *Ph.D student Simony Santos Das Costas*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- Nov 2017 **Member of Qualify examination board**, *Ph.D student Isaac Mendonça Macedo*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- Oct 2017 **Member of Ph.D examination board**, *Ph.D student Welber Leal de Araújo Miranda*, Federal University of Bahia, Salvador, BA, Brazil.
- Nov 2016 **Member of examination board**, *Annual Astronomy Postgraduate Seminars*, Jornada da Pós Graduação em Astronomia, Observatório Nacional, Rio de Janeiro, RJ, Brazil.

Reviewed Journals

The following peer review contributions are verified by Publons.com, [see this link](#).

The Astrophysical Journal (ApJ), *American Astronomical Society (AAS)*, ISSN 1538-4357, 2018 Impact Factor: 5.580.

MDPI Mathematics Journal, ISSN 2227-7390, 2018 Impact Factor: 1.105.

Organization of Events

- 2020 **Local Organizing Committee**, *Italian Society for General Relativity and Gravitation (SIGRAV) PhD school 2019*, held in Feb 2019, Vietri sul Mare, Italy.
- 2019 **Seminars Coordinator**, *Astrophysics group Lunch Talk*, weekly meeting, Federico II University, Physics department, Naples, Italy.
- 2017 **Local Organizing Committee**, *XXII Special Courses (CCE)*, Ph.D school held in Aug 21-24 2017, Observatório Nacional of Rio de Janeiro, RJ, Brazil.
- 2016 **Local Organizing Committee**, *IV Rio de Janeiro cosmology and gravitation meeting*, held in Apr 18-20 2016, Observatório Nacional of Rio de Janeiro, RJ, Brazil.

Visiting Fellow

- 03/2019 **Laboratoire de Physique et Chimie de l' Environnement et de l' Espace, Orléans**, Inviting professor: Alessandro Spallicci.
- 11/2018 **Astrophysics Institute of Lisbon University, Lisbon**, Inviting: Noemi Frusciante.
- 2012 **Ludwigs Maximilians University, Munich**, Inviting professor: Jochen Weller.
- 2011 **Irvine, University of California**, Inviting professor: Asantha Cooray.

Outreach

- 2019 **Futuro Remoto 2019**, *scientific festival*, adviser in the *Physics in Space* section for INFN initiatives, exposed in *Cittá della scienza* of Naples, Italy.
- 2018 **Oggiscienza.it**, *SISSA medialab online magazine*, Interview on "[The universe after the big bang](#)".
- 2015 **Escola de inverno 2015**, *scientific festival*, talk on *The early universe*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2009 **"L'Universo" Festival delle Scienze 2009**, *scientific festival*, planned and presented popular science events in an inflatable planetarium, exposed in *Auditorium of Rome*, Italy.
- 2008 **Astronomical explainer course**, *Rome planetarium*, outreach training for the 2009 International Year of Astronomy events.

Other

- 2018 **Winner of CANTATA Short Term Scientific Missions (STSM) grant**, *project: Investigating Hybrid-gravity modification of gravity with the EFT approach and cosmological constraints*.
- 2018 **24 university credits (CFU)**, *related to basic skills in anthropo-psycho-pedagogical disciplines and in teaching methodologies and technologies*.
- 2012 **Winner of Sapienza grant "Avvio alla ricerca 2012"**, *project: "Study and analysis of the constraints of cosmological parameters and features in the inflationary primordial spectra, forecast for future experiments. Cosmological model-free analysis of the state equation dynamics of dark energy"*.

Affiliations

- 2018-now **INFN**, *Istituto Nazionale di Fisica Nucleare*, Naples Section.
- 2014-now **SDSS-IV**, *eBOSS*, Sloan Digital Sky Survey.

- 2014-now **J-PAS**, *Javalambre Physics of the Accelerating Universe Astrophysical Survey*.
- 2010-2014 **SDSS-III**, *Sloan Digital Sky Survey*.
- 2010-2014 **Euclid Consortium**.
- 2010-2014 **INFN**, *Istituto Nazionale di Fisica Nucleare, Rome Section*.
- 2010-2014 **ICRAnet**, *International Center for Relativistic Astrophysics Network*.

Computer Skills

- General Microsoft Windows and Linux OSs, Office Packages, L^AT_EX
- Programming languages FORTRAN (Certificate CASPUR course of Fortran 95), PYTHON, IDL, C++
- Scientific Data analysis Software (Origin), Mathematica, Software packages and analysis tools (as COSMOMC, MULTINEST, MONTE PYTHON, CAMB, CLASS codes)

Languages

- Italian **Mother tongue**
- English **Good command**
 - *Two years course in The New British Center Institute, Rome*
 - *English summer Course in "St. Mary School" (Shaftesbury, Dorset)*
 - *English summer Course in Malta*
- Brazilian Portuguese **Good command**
 - *Brazilian Portuguese course in Brazilian Consulate, Rome*
 - *Brazilian Portuguese course in Hoy! Cultural center, Rome*

Main Collaborators and Academic References

- Prof. J. S. Alcaniz** *National Observatory of Rio de Janeiro - Brazil (alcaniz@on.br)*
- Prof. S. Capozziello** *University of Naples - Italy (capozziello@na.infn.it)*
- Prof. A. Melchiorri** *University of Rome - Italy (alessandro.melchiorri@gmail.com)*
- Prof. E. W. Kolb** *University of Chicago - USA (ekolb@uchicago.edu)*

Talks, posters and Seminars

- ▷ Presented talk in Connecting Cosmography at early times, annual national QGSky (INFN iniziativa specifica) *workshop*, Oct 17-18 2019, Trieste, Italy
- ▷ Presented seminary in the *Astrophysics Institute of Lisbon University*, Lisbon, Nov 16 2018, Lisbon, Portugal
- ▷ Presented talk in Tensions on Λ CDM cosmological model and model-independent constraints section of *XVth Marcel Grossmann Meeting* - International meeting, July 1-7 2018, Rome, Italy
- ▷ Presented talk in Extended Gravity and Quantum Cosmology section of *XVth Marcel Grossmann Meeting* - International meeting, July 1-7 2018, Rome, Italy
- ▷ Presented seminary in the *Valongo Observatory*, Rio de Janeiro, Apr 02 2018, Rio de Janeiro, RJ, Brazil
- ▷ Presented seminary for the *ARCOS group*, Federal University of Rio de Janeiro, Physics Institute (IF-UFRJ), March 29 2018, Rio de Janeiro, RJ, Brazil

- ▷ Presented seminary in the *International Institute of Physics*, Federal University of Rio Grande do Norte, Nov 7 2017, Natal, RN, Brazil
- ▷ Presented seminary in the *Physics Institute*, Federal University of Bahia, Oct 20 2017, Salvador de Bahia, BA, Brazil
- ▷ Presented seminary in the *COSMO-CBPF*, Brazilian Center of Physical Research, Aug 28 2017, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *IV CosmoSul - Cosmology and Gravitation in the Southern Cone* - International meeting, Jul 31-2nd Aug 2017, Sao Paulo, SP, Brazil
- ▷ Presented poster in *IVth Meeting on Fundamental Cosmology* - International meeting, Jun 15-17 2016, Barcelona, Spain
- ▷ Presented seminary for the *ARCOS group*, Federal University of Rio de Janeiro, Physics Institute (IF-UFRJ), Jun 02 2016, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *IVth Oficina Carioca de cosmologia e gravitação* - Local meeting, Apr 18-20 2016, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *XIVth Marcel Grossmann Meeting* - International meeting, July 12-18 2015, Rome, Italy
- ▷ Presented talk in *Meeting on Fundamental Cosmology* - International meeting, June 17-19 2015, Santander, Spain
- ▷ Presented talk in *VIth Workshop Challenges Of New Physics In Space* - International meeting, May 24-29 2015, Campos do Jordão, SP, Brazil
- ▷ Presented talk in *IInd Cesar Lattes Meeting* - International ICRAnet meeting, Apr 13-18 2015, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *Xth J-PAS Collaboration Meeting* - International J-PAS meeting, Feb 9-13 2015, Paraty, RJ, Brazil
- ▷ Presented talk in *Theory Miniworkshop J-PAS collaboration* - National J-PAS meeting, Oct 15 2014, Rio de Janeiro, RJ, Brazil
- ▷ Presented poster in *New Horizons for Observational Cosmology* - Ph.D School, Jun 30 -July 6 2013, Varenna, Italy
- ▷ Presented poster in *Essential Cosmology for the Next Generation* - Ph.D School, Jan 16-21 2012, Cancun, Mexico
- ▷ Presented talk in *The third Galileo - Xu Guangqi meeting* - International Conference, Oct 9-15 2011, Beijing, China

Conferences participation

- ▷ Attended the *ASI/COSMOS Workshop on "LambdaCDM"* - International Meeting, May 28-29 2019, Rome, RM, Italy
- ▷ Attended the *First European Physical Society Conference on Gravitation* - International Meeting, Feb 19-21 2019, Rome, RM, Italy
- ▷ Attended the *Euclid & Beyond - The many faces of modern Cosmology* - National Meeting, Feb 11-14 2019, Rome, RM, Italy
- ▷ Attended the *School on Open Problems in Cosmology* - Ph.D School, Jul 17-28 2017, Sao Paulo, SP, Brazil
- ▷ Attended the *XIVth J-PAS Collaboration Meeting* - International J-PAS meeting, March 27-31 2017, Rio de Janeiro, RJ, Brazil

- ▷ Attended the *IVth Jayme Tiomno School of Cosmology* - Ph.D School, Aug 30 - 1st Sept 2016, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *XIIth J-PAS Collaboration Meeting* - International J-PAS meeting, Apr 11-15 2016, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *School of Theory of cosmological perturbations* - Ph.D School, Nov 12-14 2014, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *XIXth Cycle of Special Courses (CCE)* - Ph.D School, Nov 3-7 2014, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *Ist School of Statistical Methods in Physics* - Ph.D School, Oct 6-10 2014, Goiania, GO, Brazil
- ▷ Attended the *XIth School of Cosmology, Gravitational Lenses: their impact in the study of galaxies and Cosmology* - Ph.D School, Sept 17-22 2012, Cargese, France
- ▷ Attended the *Euclid Mission Conference 2012* - International Conference, May 14-17 2012, Copenhagen, Denmark
- ▷ Attended the *Azores school on observational Cosmology* - Ph.D School, Sept 1-5 2011, Angra do Heroismo, Azores, Portugal
- ▷ Attended the *Sciences Fondamentales et Appliquées* - IRAP Ph.D Erasmus Mundus School, May 25-30 2011, Nizza, France
- ▷ Attended the *Neutrinos in Cosmology* - INFN Formation School, May 16-18 2011, Padova, Italy
- ▷ Attended the *Dark Energy probes - Dynamical evolution of globular clusters* - School of Astrophysics "Francesco Lucchin", May 8-13 2011, Bertinoro, Italy
- ▷ Attended the *From Nuclei to white Dwarfs and Neutron Stars* - IRAP Ph.D Erasmus Mundus Workshop, Apr 3-8 2011, Les Houches, France

Sigismondi Costantino

Photo

Position: Professor

Period covered: 27/10/2018-22/01/2020

I Scientific Work

Calibration of the meridian line of S. Maria degli Angeli

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Liceo Galilei, Pescara, *La rifrazione in atmosfera*, 9 November 2018

Liceo Galilei, Pescara, *Il diametro del Sole ad Almucantarar zero*, Science by Night 19 January 2019

Sapienza Università di Roma, Fisica ed. Fermi, 23 gennaio 2019, *Diametro solare, definizioni e misure*

Pontifical Atheneum Regina Apostolorum, 19 february 2019, *L'origine dell'Universo e del tempo* conference

Società Geografica Italiana, Roma [26 february 2019 In Luna Sole et Stellis](#)

Basilica di s. Maria degli Angeli, Roma 21 march 2019 [New Astrometry on the Meridian Line](#)

Accademia dei Lincei, Roma 21 march 2019, Giornata dell'Acqua, [ultrasonic measurements of water level](#)

Pontifical Atheneum Regina Apostolorum, 5 april 2019, *La matrice cristiana della Rivoluzione Scientifica* (for the 10th anniversary of death of Ft. Stanley Jaki OSB)

Museo dell'Aeronautica, 5 aprile 2019 *Equinozi e viaggi spaziali* (conference for the Night of Geography)

Arciconfraternita dei Siciliani, Roma, 10 may 2019, XVII [Gerbertus Meeting](#)

Basilica di s. Maria degli Angeli, Roma 22 may 2019, [L'ingresso del Sole nei Gemelli](#)

ITIS G. Ferraris, Roma: aula magna, 29 may 2019, [100th year of Eddington Eclipse](#)

ICRANet Pescara, 5 july 2019 IK 16 meeting [on the high resolution of solar diameter measurement](#)

Osservatorio Astrofisico di Asiago, [July 18 2019](#), [Rapporto dalla Luna](#) (for the 50th of Moonlanding)

[ESA Workshop AIDA](#) Roma, Terme di Diocleziano 11-13 sept 2019

EPSC meeting in Geneva 20 sept 2019 on the [Transit of Mercury & General Relativity](#)

Basilica di s. Maria degli Angeli, Roma 23 september 2019 [The Pope and the Meridian Line](#)

SIF meeting in L'Aquila 23 sept 2019 on [Il Sole di Secchi abstract](#)

Società Geografica Italiana, Roma 2 october 2019 [Aldebaran and the foundation of Rome](#)

Ordine Dottori Agronomi e Forestali di Roma, 25 october 2019 [I Pollini e la loro diffusione](#)

ICRANet Pescara 11 november 2019 Transit of Mercury meeting [Mercurio in Sole Visu](#) **Chair**

Società Geografica Italiana, Roma 13 november 2019 [Astronomical forcing for the ice age](#)

Basilica di s. Maria degli Angeli, Roma [21 december 2019 On the Orbit of the Earth](#)

Basilica di s. Maria degli Angeli, Roma 23 december 2019 [Secular Variation of the Obliquity and the 220rs](#)

Sapienza Università di Roma, Fisica ed. Fermi, 7 gennaio 2020, *Diametro solare con tre tipi di transito*

Liceo Galilei, Pescara, *Lo storico Minimo di Betelgeuse*, Science by Night 18 January 2020

Società Geografica Italiana, Roma, 22 January 2020, *The (Hypogean) Meridian Line of Augustus*

II b Work With Students

Basic Physics for six classes of Technical Industrial Institute Galileo Ferraris of Rome (full time work)

Advanced Physics (Terrestrial Physics and Astrophysics) ITIS Galileo Ferraris PON 2014-2020 (ID 10.2.2A-FDRPOC-LA-2019-8)

II c Diploma thesis supervision

Thesis of Giorgio Rossi on Tycho Brahe at the Master Science and Faith, Pontifical Atheneum Regina Apostolorum, Roma.

II d Other Teaching Duties

Alternanza Scuola Lavoro with three classes of Galileo Galilei Lyceum of Pescara

Course of History of Astronomy at the Pontifical Atheneum Regina Apostolorum, Rome November 4 2019 - November 23 2019

Course of Laboratory of Astrophysics at Sapienza University 23 January 2019-4 July 2019

ASYAGO 2019 Asiago School for Young Astronomers with Galileo Observations 16 July 5 August 2019.

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Organization and chair of the International Meeting “Mercurio in Sole Visu” of the 11 november 2019 in collaboration with the Pontifical Atheneum Regina Apostolorum, Rome

Alternanza Scuola Lavoro with Galileo Galilei Lyceum in Pescara; conferences of January 19 2019 (the night of science) November 9 2018 (refraction in the atmosphere) October 4 2019 Solar diameter at almucantar at zero.

III b. Outside ICRANet

Alternanza Scuola Lavoro with Galileo Galilei Lyceum in Pescara;

Laboratory of Solar Physics Sapienza University of Rome

Conferences held at the Pontifical Atheneum Regina Apostolorum, Rome about GR projects

[October 15 2019](#) *New findings on the meridian line of s. Maria degli Angeli*

[October 22 2019](#) *Gravitation in the expanding Universe*

[November 13 2019](#) *Mercury transit*

[November 14 2019](#) *Sunset geometry and solar diameter*

ITIS G. Ferraris, 100th of the Eddington eclipse, 29 may 2019

<https://darkskies4all.org/events/details/2019-05-28-1702-100-years-from-eddingtons-eclipse->

IV. Other

*Photometric observations of Betelgeuse, alf Ori, a series of nearly 600 data from Jan 1, 2012. Identification of its historical minimum in December 2019: visual magnitude 1.11 on Dec 7-Dec 19 vs average value around 0.45. Referee report for MNRAS, paper of [Corbard et al. 2019](#) Referee report for *Advance in Space Research: Solar System**

2019 List of Publication

video list of meridian transits in S. Maria degli Angeli, Rome, 2018-2020 [web page ICRA](#)

video list of sea sunset at Ostia in 2019 [web page ICRA](#)

Sigismondi, C. *Lunar Impacts on January 21st* <https://arxiv.org/ftp/arxiv/papers/1902/1902.03137.pdf>

Sigismondi, C. *Danjon Index in partial eclipses* <https://arxiv.org/ftp/arxiv/papers/1910/1910.09291.pdf>

Presentazione al libro di Angelo Secchi, *Il Sole*, in edizione Italiana digitale (2019)

Sigismondi, C. *Mercury Transit strategies*, *Journal of Occultation Astronomy* 2019

Sigismondi, C., *Betelgeuse at the end of 2019* <https://arxiv.org/abs/1912.12539>

Siutsou Ivan



Position: senior research fellow, ICRANet-Minsk, Fundamental Interactions and Astrophysics Centre, B.I. Stepanov Institute of Physics, National Academy of Sciences, Minsk, Belarus
Period covered: 2019

I Scientific Work

In 2019 together with Mikalai Prakapenia and Gregory Vereshchagin we study the process of relaxation of non-degenerate and degenerate relativistic electron-positron-photon plasma in the approximation of Uehling-Uhlenbeck. Also a new system of “supercomputer-on-a-table” class with peak performance of 14 TFLOPS at double precision is constructed and simulation code was adapted for systems of this kind. Protons were included in the code to treat astrophysical plasma at extreme conditions.

Together with Aksana Kurguzava the problem of propagation of radiation in ultrarelativistically expanding shell was treated with inclusion of interaction of the outflow with interstellar medium of typical density. It will deposit additional energy inside the outflow, that will be radiated from the photosphere of optically thick outflow, changing its observable energy and temperature.

Together with Vlad Stefanov and Dmitriy Mogilevtsev we recovered an effect of dephasing induced by a weak gravitational field on the collective radiation dynamics of atomic system in timed single-photon Dicke states. We show that a photon absorbed by the stationary system of randomly placed stationary atoms is no more spontaneously emitted in the direction of the impinging photon. The influence of gravity leads to broadening of the angular distribution of emission.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Report on superluminal motion and time machines in General Relativity, Methodological seminar of the Institute of philosophy of the National Academy of Sciences of Belarus, 26/07/2019.

Report on modern cosmology, Methodological seminar of the Institute of philosophy of the National Academy of Sciences of Belarus, 31/07/2019.

II b Work With Students

Lecture courses on astrophysics, physical kinetics and nonlinear physics at the Graduate School of the National Academy of Sciences of Belarus.

II c Diploma thesis supervision

Supervision of master's thesis of Aksana Kurguzava «Propagation of radiation in ultrarelativistically expanding shell».

II d Other Teaching Duties

Supervision of a command of Gymnasium № 61 for the republican Young physicists' tournament.

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Supervision of Belarusian side of joint research project of ICRANet and the Belarusian Republican Foundation for Fundamental Research by grant №19Ф-ИКР001 «Relaxation of multicomponent optically thick relativistic plasma with quantum degeneracy».

Preparation of a project of law «О присоединении Республики Беларусь к Соглашению об учреждении Международной Сети Центров Релятивистской Астрофизики ICRANET в Пескаре, Италия» (On accession of Republic of Belarus to Agreement on the Establishment of the International Network of Centres for Relativistic Astrophysics ICRANET In Pescara, Italy), its reconciliation with the Ministries before sending to Council of Ministers of Republic of Belarus.

III b. Outside ICRANet

Member of scientific council on problems of fundamental interactions, nuclear physics and plasma physics of B.I. Stepanov Institute of Physics, National Academy of Sciences, academic secretary of subprogram «Microworld, plasma, and Universe» of State scientific research program «Convergence-2020».

IV. Other

Three interviews were published in Belarusian newspapers: «The Universe: from Big Bang to expansion» (7 ДНЕЙ, (34):16–17, 22.08 2019), «National astrophysicists already have the first know-how» (МИНСК-НОВОСТИ, 20.10 2019), and «To touch the stars and catch a comet by the tail» (Настаўніцкая газета, 24.10 2019). Also Ivan Siutsou was one of three invited speakers on a public lecture about Nobel lectures and astrophysics on December 8th, 2019, and gave three comments on TV on time in physics (first) and cosmic weather (others), broadcasted correspondingly April 11th (Belarus 3, Science-mania), December 14th (ONT), December 21st (Belarus 3, Science-mania) of 2019.

2019 List of Publication

1. M.A. Prakapenia, I.A. Siutsou, G.V. Vereshchagin. Thermalization of electron–positron plasma with quantum degeneracy // Physics Letters A. – 2019. – V. 383. – № 4. – P. 306–310. – DOI: 10.1016/j.physleta.2018.10.013.

Visiting Scientists

Bobomurat AHMEDOV

Position:

Fellow of The World Academy of Sciences (TWAS)
Full Professor in Astrophysics and Theoretical Physics
HEAD, THEORETICAL ASTROPHYSICS DEPARTMENT
Ulugh Beg Astronomical Institute
Uzbekistan Academy of Sciences
Astronomicheskaya 33, Tashkent 100052
UZBEKISTAN



I Scientific Work

My present employment and duties:

Bobomurat Ahmedov is currently Full Professor of the National University of Uzbekistan (NUUz), Tashkent and Head of Theoretical Astrophysics Department, Ulugh Beg Astronomical Institute (AI), Tashkent. He has been elected as Fellow of The World Academy of Sciences (TWAS), Trieste, Italy in 2018. He received the PhD degree from the Uzbekistan Academy of Sciences in 1993 and the highest DrSc habilitation degree from NUUz in 2001. He is member of the Expert Group of the Supreme Attestation Committee of the Republic of Uzbekistan and of Scientific and Technical Council in Physics & Mathematics of the Uzbekistan Ministry of Innovative Development. He has published more than 120 research papers in high impact factor refereed journals, he has over 2,300 citations and his current h-index is 28. He has published 3 books as author/co-author and two issues of the journal by the Springer as co-editor. He has received a number of awards, including "The Researcher of the Year 2018" in Uzbekistan, awarded by Scopus database on 23/11/2018, "Science Leader" Web of Science award – 2017, selection by the Clarivate Analytics Web of Science as the "Highly Cited Author" in the country (Uzbekistan) with 77 papers published in the refereed journals during the last 10 years; Uzbekistan State Order "Glory of Labor", 2012 (Mehnat Shuhrati ordeni/Orden Trudovoj Slavy); Award of The World Academy of Sciences for Young Scientists in Physics in Year 2001; Award of Uzbekistan Academy of Sciences for Young Scientists in Physics in Year 1996; International Science Foundation (ISF) Award, 1994.

Main duty of Ahmedov is to carry out the theoretical research in the field of relativistic astrophysics, general relativity and in addition, observational research on GPS and VLF data analysis for ionospheric disturbances caused by various atmospheric, terrestrial and extraterrestrial phenomena. His research is mainly

devoted to the optical and energetic properties of black holes, the general-relativistic electrodynamics of continuous media and its application for theoretical explanation and analysis of EM (electromagnetic) and astrophysical processes in the external gravitational fields, Particles and Fields in the vicinity of Black Holes. Experimental tests of general relativity, general relativistic EM effects and fields for pulsars and magnetized rotating and oscillating neutron stars are also in the scope of his scientific interests. In addition he is doing a research on VLF (very low frequency) EM wave propagation in Earth ionosphere and study of the ionospheric disturbances in D and F layers of the ionosphere caused by various atmospheric, terrestrial and extraterrestrial phenomena.

II Conferences and educational activities

II a. Conferences and Other External Scientific Works

SEMINARS, SUMMER SCHOOLS AND CONFERENCES attended in year 2019

1. **Invited talk** by **B. Ahmedov** at conference Exploring the energetic Universe 2019. June 17-21, 2019.
2. **Talk** by **B. Ahmedov** at the Fudan University in Shanghai, 24/09/2019, Energetic and Optical Properties of Gravitational Compact Objects.
3. **Talk** by **B. Ahmedov** at the Zhejiang University of Technology, Hangzhou, China, 22/02/2019, Energetic and Observational Properties of Black Holes and Magnetized Neutron Stars
4. **Talk** by **B. Ahmedov** at the Shanghai Astronomical Observatory, 18/09/2019, Energetic and Optical Properties of Gravitational Compact Objects.
5. **Plenary talk** "Modern Understanding of Structure and Evolution of the Universe" by **B. Ahmedov** at the IX International Conference "Modern problems of Nuclear physics and Nuclear technologies", Tashkent, 27-09-2019.
6. **Plenary talk** "Optical and Energetic Properties of Gravitational Compact Objects" by **B. Ahmedov** at the 1st PU International Conference on Gravitation and Cosmology", Punjab University, Lahore, January 27 -31, 2019
7. **Plenary talk** "Energetic an Optical Properties of Gravitational Compact Objects" by **B. Ahmedov** at the VIth Italian-Pakistani Workshop on Relativistic Astrophysics, School of Natural Sciences (SNS), NUST, Islamabad, January 24-26, 2019
8. **Talk** by **B. Ahmedov** at the Silesian University in Opava, 22/02/2019, Testing Gravity with Gravitational Waves.
9. 04/10/2019, Technical University of Uzbekistan, Tashkent, Talk by Bobomurat Ahmedov at Erasmus+ Conference of National Erasmus+ Office (NEO) in Uzbekistan
10. 09/11/2019 National University of Uzbekistan, Tashkent REPORT on Erasmus+ Key Action 1 –Mobility for learners and staff –Higher Education Student and Staff Mobility with Silesian University in Opava Period is from August2017 tillAugust2019 by Bobomurat Ahmedov
11. 21/11/2019, Middle School # 103, Tashkent, Public talk of Bobomurat Ahmedov at the Middle School # 103, Tashkent

II b. Work With PhD Students

Abdullo Hakimov, PhD student, Relativistic Astrophysical Processes in Axial Symmetric Alternative Gravitational Models, (**Ph.D. degree is expected in 2020**)

Husan Eshkuvatov, PhD student, Electromagnetic Studies of Ionospheric and Magnetospheric Perturbations Associated with the Earth, Atmospheric and Astrophysical Phenomena (**Ph.D. degree is expected in 2020**)

Ozodbek Rahimov, PhD student, Particle Motion and Electromagnetic Fields around Axial Symmetric Gravitating Objects, (**Ph.D. degree is expected in 2020**)

Javlon Rayimbaev, PhD student, Energetic properties of rotating neutron stars and black holes (**Ph.D. degree is expected in 2020**)

Pulat Tajimuratov, PhD student, Thermal Evolution and Optical Signatures of Neutron Stars (enrolled at present)

Yunusbek Turayev, PhD student, Modeling the dynamics of the structure of the upper layers of variable stars based on observational data (enrolled at present)

II c. Diploma thesis supervision

Malika Khudoyberdieva, graduate student (M.Sc. degree is defended in June 2019)

Shahnoza Anvarova, graduate student (M.Sc. degree is defended in June 2019)

II d. Other Teaching Duties

Fall term 2019: Course in Methods of Mathematical Physics, (80 lecture hours) for the 3rd year undergraduate students (Bachelor Course), Chair of Theoretical Physics, Faculty of Physics, National University of Uzbekistan, Tashkent, Uzbekistan.

Fall term 2019: Course in Gravitational Field Theory (50 lecture hours) for the 2nd year graduate students (Master Course), Chair of Theoretical Physics, Faculty of Physics, National University of Uzbekistan, Tashkent, Uzbekistan.

Spring term 2019: Course in Nuclear Astrophysics (80 lecture hours) for the 1st year graduate students (Master Course), Chair of Nuclear Physics, Faculty of Physics, National University of Uzbekistan, Tashkent, Uzbekistan.

II e. Work With Postdocs

Partial work with DrSc **Ahmadjon Abdujabbarov**, DrSc, starting 2009 on project “General Relativistic Astrophysical Processes in Vicinity of Axial Symmetric Compact Objects in Presence of Magnetic Field”

Dr Farruh Atamurotov, Optical and Energetic processes in vicinity of relativistic compact objects (**Ph.D. degree is obtained in March 2018**)

Dr Sanjar Shaymatov, General relativistic astrophysical processes in the vicinity of compact gravitational objects in the presence of an electromagnetic field, (**Ph.D. degree is obtained in December 2018**)

Dr Bobir Toshmatov, Dr Arman Tursuniv and Dr Shukhrat Mardonov

III Service activities

Within ICRA Net

Outside ICRA Net

Details of projects leaded in year 2019

Leader of 4 Years Research Project "*Astrophysical Processes in Stationary and Dynamic Relativistic Gravitation Objects*" from the Uzbekistan Academy of Sciences, **Grant VA-FA-F-2-008-A**, Tashkent, Uzbekistan (**1 January 2017 - 31 December 2020**).

Member of Expert Group on Physics and Mathematics of the Supreme Attestation Committee under the Cabinet of Ministers of the Republic of Uzbekistan (starting **January 2014 up to now**).

IV Other

Coordinator, The AS-ICTP India-Kazakhstan-Thailand-Uzbekistan Network (IKTUN, NT-01) on Theoretical Astrophysics, Gravitation and Cosmology.

2019 List of Publications

1. Sanjar Shaymatov, Naresh Dadhich, **Bobomurat Ahmedov**, "The higher dimensional Myers-Perry black hole with single rotation always obeys the Cosmic Censorship Conjecture", 2019, **Eur. Phys. J. C** (2019) 79:585, 5pp.
2. Jaroslav Vrba, Ahmadjon Abdujabbarov, Arman Tursunov, **Bobomurat Ahmedov**, Zdenek Stuchlik, Particle motion around generic black holes coupled to non-linear electrodynamics, 2019, **Eur. Phys. J. C**, 79:778, 15pp.
3. Carlos A. Benavides-Gallego, Ahmadjon Abdujabbarov, Daniele Malafarina, Bobomurat Ahmedov and Cosimo Bambi, Charged particle motion and electromagnetic field in γ spacetime, **Physical Review D**, 2019, V. **99**, 044012, 13pp.

4. Bobir Toshmatov, Zdeněk Stuchlík, Bobomurat Ahmedov and Daniele Malafarina, Relaxations of perturbations of spacetimes in general relativity coupled to nonlinear electrodynamics, **Physical Review D**, 2019, **V. 99**, id.064043, 9 pp.
5. Narzilloev Bakhtiyor, Abdujabbarov Ahmadjon, Bambi Cosimo, **Ahmedov Bobomurat**, Charged particle motion around a quasi-Kerr compact object immersed in an external magnetic field, **Physical Review D**, 2019, **V. 99**, id.104009, 12pp.
6. Askar B. Abdikamalov, Ahmadjon A. Abdujabbarov, Dimitry Ayzenberg, Daniele Malafarina, Cosimo Bambi and Bobomurat Ahmedov, Black hole mimicker hiding in the shadow: Optical properties of the γ metric, **Physical Review D**, 2019, **V. 100**, 024014, 12pp.
7. Turimov B.V., Bobir Toshmatov, Bobomurat Ahmedov, Zdeněk Stuchlík, Quasinormal modes of magnetized black hole, **Physical Review D**, 2019, **V. 100**, 084038, 8pp.
8. Javlon Rayimbaev, Bobur Turimov and Bobomurat Ahmedov, Braneworld effects in plasma magnetosphere of a slowly rotating magnetized neutron star, **International Journal of Modern Physics D**, Vol. 28, No. 10 (2019) 1950128 (21 pages)
9. Turimov, Bobur; **Ahmedov, Bobomurat**; Abdujabbarov, Ahmadjon; Bambi, Cosimo, Gravitational lensing by a magnetized compact object in the presence of plasma, **International Journal of Modern Physics D**, Vol. 29, No. 1 (2020) 2040013 (15 pages)
10. **Bobomurat Ahmedov**, Turimov B.V., Zdeněk Stuchlík, Arman Tursunov, Optical properties of magnetized black hole in plasma, **International Journal of Modern Physics: Conference Series**, Vol. 49 (2019) 1960018 (10 pages)
11. B. Ahmedov and A. Bokhari, Preface, **The Arabian Journal of Mathematics**, Springer, Berlin (2019) Vol. 8, Issue 3, 161–162
12. B. Ahmedov and A. Bokhari, Preface, **The Arabian Journal of Mathematics**, Springer, Berlin (2019) Vol. 8, Issue 4, 255–257
13. **Bobomurat Ahmedov**, Relativistic Astrophysics in Uzbekistan, Under One Sky, The IAU Centenary Symposium Proceedings IAU Symposium No. 349, 2019, D. Valls-Gabaud, J. Hearnshaw & C. Sterken, eds., p.276-282.
14. Sanjar Shaymatov, Naresh Dadhich, Bobomurat Ahmedov, Six-dimensional Myers-Perry rotating black hole cannot be overspun, 2019, eprint arXiv190807799
15. Sanjar Shaymatov, Naresh Dadhich, Bobomurat Ahmedov, Mubasher Jamil, Five dimensional charged rotating minimally gauged supergravity black hole cannot be over-spun and/or over-charged in non-linear accretion, 2019, eprint arXiv190801195

Monography and Special Issues edited:

- 16.A.A. Abdujabbarov, B.J. Ahmedov, Photons Motion and Optical Properties of Black holes, Tashkent, 184 pp.
- 17.B. Ahmedov and A. Bokhari, Editors of Mathematical Physics, General Relativity and Relativistic Astrophysics, Part I, The Arabian Journal of Mathematics, Springer, Berlin, (2019) Vol. 8, Issue 3, 161–254.
- 18.B. Ahmedov and A. Bokhari, Editors of Mathematical Physics, General Relativity and Relativistic Astrophysics, Part II, The Arabian Journal of Mathematics, Springer, Berlin, (2019) Vol. 8, Issue 4, 255–334.



Muhsin Aljaf

PhD Applicant

📍 No.96, JinZhai Road Baohe District, Hefei, China.

☎ +8613085060490

✉ Mohsen@mail.ustc.edu.cn

Personal Data

Birth: 07 July 1992
Nationality: Kurdish
Marital status: Single

Work experience

Coordinator

Jul 2019 - Present

[International Center for Theoretical Physics \(ICTP\), Trieste \(Italy\)](#)

- Organizing winter and summer schools for physics students in Iraqi Kurdistan within supported Physics Without Frontiers program of ICTP.
- Inviting volunteers physicists and speakers from ICTP and around the world to these schools.
The goal of the project is to:
 1. Outreach to those that have less access to scientific research, in particular young people from groups poorly represented in the scientific field.
 2. Disseminate current scientific research to the public, propagating scientific culture.

Teaching Assistant

Sep 2015 - Jul 2017

University of Sulaimani, Sulaimani (Iraqi Kurdistan)

Teaching Java programming to undergraduate students.

Science Journalist

Oct 2014 - Present

Physic4kurd.net, Sulaimani (Iraqi Kurdistan)

First Physics website in Kurdish, Al Sulaymaniyah (Iraqi Kurdistan)

<http://www.physic4kurd.net>

Mostly writing, editing, reviewing, translating science-related essays, articles, and news in Kurdish for public understanding of science.

Education

Master's of Science in Astrophysics (MSc)

Jul 2018 - Present

University of Science and Technology of China, Hefei (China)

Main Study Subjects: General relativity, Cosmology, Advanced Mathematical Methods in Physics, Particle Cosmology.

ICTP Summer School on Particle Physics

Jun 2019 - Jul 2019

International Centre for Theoretical Physics (ICTP), Trieste (Italy)

- A detailed overview school of particle physics from the basics of Standard Model phenomenology to the most important areas where significant progress has been achieved recently
- Syllabus: Standard Model and Flavor, Neutrino, Collider Physics, Beyond the Standard Model, Dark Matter, Formal Developments in HEP, Fundamental Physics from The Precision Frontier

Chiense Language Diploma

Sep 2017 - Jul 2018

Anhui Normal University, Wuhu (China)

Two semester of learning basic and intermediate chinese language.

Aristotle's Physics(An introductory course)

Jan 2016 - Jul 2016

Zanin Library, Khormal, Sulaimani (Iraqi Kurdistan)

A 60-hour course taught by Dr. Arfan Mustafa at Zanin Library.

Syllabus:

- The four causes.
- Motion.
- The principle of causational synonymy.
- Priority among motions.
- Movers and unmoved movers.

Bachelor's Degree in Physics (B.Sc.)

Sep 2010 - Jul 2014

Department of Physics, University of Sulaimani, Sulaimani (Iraqi Kurdistan)

Average GPA:3.4 [First Honor]

Main Study Subjects: Quantum Mechanics, Atomic Physics, Electromagnetic Theory, Solid State Physics, Nuclear Physics, Thermodynamics, and Statistical Mechanics, Analytical Mechanics, Numerical Analysis, Optics & Spectroscopy, Polymer + Nanotechnology, Research methodology and Research project, Computer and Programming, Complex Analysis and Complex Functions, Advanced Calculus & Differential Equations, Calculus.

Personal Skills

Languages



Kurdish (native), English (fluent), Persian (fluent), Chinese (proficient), Arabic (basics), Japanese(basics)

Computer



Operating systems: Linux, Windows
Programming: Java, Fortran, Python
Computational software: Mathematica, Maple

Communication



Simplifying hard to grasp theories and Explaining Physics in general to the public (through being responsible for the Physics related-Q&A section of our website s social media network for 6 years)

Leadership



Currently serving as the coordinator of Physics Without Frontiers program of ICTP for Iraqi Kurdistan)

Research interests

- Dark energy theories
- Effective field theories of gravity
- Inflation in string theory and particle physics
- Bouncing cosmology

Publications

- Master's Thesis Title: "Phase space analysis and singularity classification for linearly interacting dark energy models", Muhsin Aljaf, Daniele Gregoris, and Martiros Khurshudyan (Nov 2019), [[arXiv:911.00747](https://arxiv.org/abs/911.00747)] [Submitted to European Physical Journal C].
- "Fluctuations in Sun's Radiation by Measuring Earth's Angular Velocity", Hossieni H, Jabar MAF, Muhsin A, Journal of Climatology & Weather Forecasting (Nov 2015).

Ongoing Projects

- Non-minimal Coupling Higgs Inflation with a Running Kinetic Term Zehua Xiao, Muhsin Aljaf, Jiaming Shi, and Taotao Qiu
- Selecting best interacting Chaplygin gas cosmological models by Gaussian Process and H(z) data, Muhsin Aljaf, Daniele Gregoris, and Martiros Khurshudyan

Scholarships and Awards

- ICTP's Summer School Program on Particle Physics grant (Jun 2019).
- Chinese Government Scholarship (Sep 2018).
- Top Undergraduate Student Award by University of Sulaimani (Jul 2014)

Conferences

- Symposium on "Gravity and Cosmology in the Gravitational-wave Era", Central China Normal University, Wuhan, China (Participated with a poster on "non-minimal Higgs inflation") (April 2019).
- S. -T. Yau science forum, Mathematical Science Center, Tsinghua University. (Nov 2018).

Talks and Visits

- Higgs inflation with a running kinetic term, International Center for Relativistic Astrophysics Network, Pescara, Italy (July 2019).
- Model-independent of dark energy models using the Gaussian process, Particle Cosmology Group, University of Science and Technology of China, Hefei, China (Dec 2018).
- The strangeness of Quantum mechanics and common sense, Ishik University, Erbil, Iraqi Kurdistan (November 2016).
- Origin and distribution of life in the universe, Department of physics (May 2014).
- Basic Principle and application of Holography, University of Sulaimani, Physics Department, Suliamnyah, Iraqi Kurdistan (April 2013).

Memberships

- Particle Cosmology Group, Department of Astronomy, University of Science and Technology of China.
- Cosmology Group, Department of Physics, Central China Normal University.
- ICTP's Physics [Without Frontiers Program](#).

References

- Prof. Yifu-Cai, Department of Astronomy, University of Science and Technology of China.
Email: yifucai@ustc.edu.cn
- Prof. Emmanuel N. Saridakis, National Technical University of Athens, Athens, Greece.
Email: msaridak@phys.uoa.gr
- Prof. Qiu Taotao, Central China Normal University (CCNU), Wuhan, China.
Email: qiutt@mail.ccnu.edu.cn
- Prof. Paolo Bartalini, University of Pisa, Department of Physics, Italy.
Email: paolo.bartalini@cern.ch

Hobbies

Languages, Traveling , Reading in philosophy, Movies, Classical and rock music.

Ansoldi Stefano

Position: Researcher, permanent, full time, University of Udine
Period covered:



I Scientific Work

1. Vacuum decay with wormhole creation, and its effects in the early universe (in collaboration with Takahiro Tanaka)
2. Study of generalized covariant Galileon models, and phenomenological bounds coming from ISW-galaxy cross-correlations (in collaboration with F. Gaicomello, Antonio de Felice)
3. Machine learning approaches to detect quasinormal modes in gravitational waves signals (in collaboration with I. Gambardella)
4. Realization of the maximum curvature hypothesis in $f(R)$ theories (in collaboration with Eduardo Guendelman, Hideki Ishihara, Yuki Sakakihara)
5. Maintenance of an automated Fermi data analysis and alert system for target of observations in very high energy gamma rays (MA4U, Magic Automated Analyzing And Alerting Unit)
6. Upgrade and maintenance of MPSS (MAGIC Proposal Submission System), a WEB tool for submission of observation proposals to the MAGIC telescope
7. Upgrade of an automated system for selection of gravitational wave and other alerts using VOEvents (TATA, The Automated Transient Advocate)

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Outreach activities

1. 2019, March 26: public lecture “Gravity, quantum theory, and black holes” (in Italian, “Gravitazione, teoria dei quanti e buchi neri”), Caffè dei quanti, Udine, Italy;
2. 2019, May 31: public lecture “Black holes: a curious gravitational brainteaser” (in Italian, “Buchi neri: un curioso grattacapo gravitazionale”), Botteghe del sapere, Udine, Italy

II b Work With Students

Please, see the sections below about thesis/dissertation supervision, and internship supervision

Undergraduate thesis

1. Daniele Ceppi (supervisor): “*Black Holes and Uniqueness Theorems*” (in Italian, “*Buchi neri e teoremi di unicità*”)
2. Antonello D’Oronzo (supervisor): “*The mathematical and physical foundations of the concept of Wormhole in General Relativity*” (in Italian, *Basi matematiche e fisiche del concetto di Wormhole in Relatività Generale*)
3. Fabiano Feleppa (supervisor): “*On the Sagnac effect and its curved spacetime extension*” (in Italian, “*Sull’Effetto Sagnac e la sua Generalizzazione in Spaziotempo Curvo*”)
4. Silvia Gasparotto (supervisor): “*Black Hole Thermodynamics and Entanglement Entropy*”
5. Benjamin Hernandez (supervisor): “*Causal Structure and Singularity Theorems in General Relativity*”
6. Biancamaria Sersante (supervisor): “*Black holes radiation: Hawking original proposal*”
7. Marco Sicklinger (supervisor): “*Spacetimes with horizons but without singularities: from the Bardeen solution to more recent realizations*” (in Italian, “*Strutture dello spazio tempo con orizzonti ma senza singolarità: dalla soluzione di Bardeen a realizzazioni più recenti*”)
8. Nicolò Venuti (supervisor): “*Introduction to the PPN formalism for gravitational theories*”
9. Giacomo Zelbi (supervisor, in collaboration with G. Cescutti): “*Binary mergers and galaxy chemical evolution*” (in Italian, “*Coalescenze di sistemi binary ed evoluzione chimica della galassia*”)
10. Francesco Cesa (supervisor): “*Geometric formulation of electrodynamics in relativity*”

Master thesis

1. Maria Berti (supervisor, in collaboration with F. Lepori and M.Viel): “*Cosmic acceleration: from Effective Field Theory to constraints on model parameters*”
2. Giuseppe Diana (supervisor): “*Quantum processes in inflationary cosmology: Dynamics of quantum fields, nucleation and tunnelling of vacuum bubbles*”
3. Alberto Monte (supervisor, in collaboration with A. Pittelli): “*AdS/CFT Correspondence and Holographic Entanglement Entropy*”
4. Marco Pasini (supervisor, in collaboration with A. Flachi): “*Unruh effect: quantization in non-inertial reference frames*”
5. Marco Carmelo Ventura (supervisor): “*Properties of the $f(R)$ -Gravitational Potential Generated by Ultralight Axions*”

II d Other Teaching Duties

Supervisor of about 10 internships (at the undergraduate and master level) about theoretical physics, differential geometry, and gravitational physics

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

1. General Relativity (within the joint master course between the universities of Trieste and Udine)
2. Advanced General Relativity (within the joint master course between the universities of Trieste and Udine)

IV. Other

2019 List of Publication

1. *Bounds from ISW-galaxy cross-correlations on generalized covariant Galileon models*
F. Giacomello, A. De Felice, S. Ansoldi
arXiv:1811.10885 [astro-ph.CO].
[10.1088/1475-7516/2019/03/038](https://arxiv.org/abs/10.1088/1475-7516/2019/03/038).
JCAP 1903 (2019) 038.
2. *Observation of inverse Compton emission from a long gamma-ray burst*
MAGIC Collaboration (V. A. Acciari, ..., S. Ansoldi, *et al.*)
[10.1038/s41586-019-1754-6](https://arxiv.org/abs/10.1038/s41586-019-1754-6).
Nature 575 (2019) no.7783, 459-463.
3. *Teraelectronvolt emission from the gamma-ray burst GRB 190114C*
MAGIC Collaboration (V. A. Acciari, S. Ansoldi, ..., *et al.*)
[10.1038/s41586-019-1750-x](https://arxiv.org/abs/10.1038/s41586-019-1750-x).
Nature 575 (2019) no.7783, 455-458.
4. *Gamma Rays and Gravitational Waves*
By E. Burns, ..., S. Ansoldi, *et al.*
arXiv:1903.04472 [astro-ph.HE].

5. *Open data from the first and second observing runs of Advanced LIGO and Advanced Virgo*
LIGO Scientific and Virgo Collaborations (R. Abbott, ..., S. Ansoldi, *et al.*)
arXiv:1912.11716 [gr-qc].
6. *All-sky Medium Energy Gamma-ray Observatory: Exploring the Extreme Multimessenger Universe*
AMEGO Collaboration (R. Caputo, ..., S. Ansoldi, *et al.*)
arXiv:1907.07558 [astro-ph.IM].
7. *Increasing the Astrophysical Reach of the Advanced Virgo Detector via the Application of Squeezed Vacuum States of Light*
Virgo Collaboration (F. Acernese, ..., S. Ansoldi, *et al.*)
[10.1103/PhysRevLett.123.231108](https://doi.org/10.1103/PhysRevLett.123.231108).
Phys.Rev.Lett. 123 (2019) no.23, 231108.
8. *Monitoring of the radio galaxy M87 during a low emission state from 2012 to 2015 with MAGIC*
MAGIC Collaboration and INFN Consortium, Rome, Italy and Armenian Consortium:
ICRANet-Armenia at NAS RA, A. Alikhanyan National Laboratory, Yerevan, Armenia and
Finnish MAGIC Consortium: Finnish Centre of Astronomy with ESO (V. A. Acciari, ..., S.
Ansoldi, *et al.*)
arXiv:2001.01643
9. *New hard-TeV extreme blazars detected with the MAGIC telescopes*
MAGIC Collaboration (V. A. Acciari, ..., S. Ansoldi, *et al.*)
arXiv:1911.06680 [astro-ph.HE].
10. *Statistics of VHE gamma-Rays in Temporal Association with Radio Giant Pulses from the Crab Pulsar*
MAGIC Collaboration (M. L. Ahnen, ..., S. Ansoldi, *et al.*)
arXiv:1911.00634 [astro-ph.HE].
11. *Testing emission models on the extreme blazar 2WHSP J073326.7+515354 detected at very high energies with the MAGIC telescopes*
MAGIC Collaboration (V. A. Acciari, ..., S. Ansoldi, *et al.*)
arXiv:1909.11621 [astro-ph.HE].
[10.1093/mnras/stz2725](https://doi.org/10.1093/mnras/stz2725).
Mon.Not.Roy.Astron.Soc. 490 (2019) no.2, 2284-2299.
12. *Constraints on gamma-ray and neutrino emission from NGC 1068 with the MAGIC telescopes*
MAGIC Collaboration (V. A. Acciari, ..., S. Ansoldi, *et al.*)
arXiv:1906.10954 [astro-ph.HE].
[10.3847/1538-4357/ab3a51](https://doi.org/10.3847/1538-4357/ab3a51).
Astrophys.J. 883 (2019) 135.
13. *Measurement of the extragalactic background light using MAGIC and Fermi-LAT gamma-ray observations of blazars up to $z = 1$*
By MAGIC Collaboration (V. A. Acciari, ..., S. Ansoldi, *et al.*)
arXiv:1904.00134 [astro-ph.HE].
[10.1093/mnras/stz943](https://doi.org/10.1093/mnras/stz943).
Mon.Not.Roy.Astron.Soc. 486 (2019) no.3, 4233-4251.

14. *Deep observations of the globular cluster M15 with the MAGIC telescopes*
By MAGIC and Finnish Centre of Astronomy with ESO Collaborations and MAGIC Finnish Consortium: Tuorla Observatory (V.A. Acciari, ..., S. Ansoldi, *et al.*)
arXiv:1901.04367 [astro-ph.HE].
[10.1093/mnras/stz179](https://arxiv.org/abs/10.1093/mnras/stz179).
Mon.Not.Roy.Astron.Soc. 484 (2019) no.2, 2876-2885.
15. *MAGIC and Fermi-LAT gamma-ray results on unassociated HAWC sources*
MAGIC and HAWC and Fermi-LAT Collaborations (M. L. Ahnen, ..., S. Ansoldi, *et al.*)
arXiv:1901.03982 [astro-ph.HE].
[10.1093/mnras/stz089](https://arxiv.org/abs/10.1093/mnras/stz089).
16. *A Fast Very High Energy γ -ray Flare from BL Lacertae during a Period of Multiwavelength activity in June 2015*
MAGIC Collaboration (V. A. Acciari, ..., S. Ansoldi, ..., *et al.*)
arXiv:1901.01733 [astro-ph.HE].
[10.1051/0004-6361/201834010](https://arxiv.org/abs/10.1051/0004-6361/201834010).
Astron.Astrophys. 623 (2019) A175.
17. *Discovery of TeV gamma-ray emission from the neighbourhood of the supernova remnant G24.7+0.6 by MAGIC*
MAGIC Collaboration (V. A. Acciari, ..., S. Ansoldi, *et al.*)
arXiv:1812.04854 [astro-ph.HE].
[10.1093/mnras/sty3387](https://arxiv.org/abs/10.1093/mnras/sty3387).
Mon.Not.Roy.Astron.Soc. 483 (2019) no.4, 4578-4585.

Boçi Sonila

Position: Lecturer, Department of Physics, Faculty of Natural Sciences, University of Tirana
Period covered: 2019

I Scientific Work

During 2019 I continued working on some relations on GRB physics, to understand their origin.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision: 2 diploma thesis supervisions, for Master of Science in Physics: Teacher of Physics for high school.

II d Other Teaching Duties: Lectures, seminars and laboratories for students of Bachelor in Physics and Master of Science in Physics: Teacher of Physics for high school.

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRAANet (e.g. teaching activities, conferences etc...) and outside ICRAANet (teaching activities in your university etc...)*]

III a. Within ICRAANet

III b. Outside ICRAANet

IV. Other

2019 List of Publication



Surname and Name **Hoang Ngoc Long**

Position: Head of Particle Physics section, Graduate School, Institute of Physics

Vietnamese Academy of Science and Technology

Period covered: From 2000 --- now

I. Scientific Work

Now I am interested in fermion mixing and hierarchy and in Early Universe puzzles.

II. Conferences and educational activities

II a. Conferences and Other External Scientific Works:

- *Editor of journal of Vietnam: **Communications in Physics**.*

II b. Work With Students: I give lectures on Quantum Field Theory for Undergraduate students, Hanoi University of Education, Standard Model for Graduate students, Can Tho University

II c. Diploma thesis supervision: I am supervisor for 2 Ph. D. students and 3 Master Students.

II d. Other Teaching Duties: I am a referee for some Ph. D. Theses.

II e. Work With Postdocs: Now I work with Postdoc: V. Q. Phong and L. T. Hue

III. Service activities

III a. Within ICRA Net: I hope to visit ICRA NET next year 2020

III b. Outside ICRA Net:

IV. Other I am referee for some International Journal such as: Phys. Rev. D, Physics Letters B, Int. J. Mod. Phys. A,...

2019 List of Publication (8 papers)

1. Lepton masses and mixings in a T flavoured 3-3-1 model with type I and II seesaw mechanisms, V. V. Vien, H. N. Long, A. E. C'arcamo Hern'andez, *Mod. Phys. Lett. A* **34** (2019), No 1, 1950005, arXiv:1812.07263[hep-ph].
2. Multiperiod structure of electroweak phase transition in the 3-3-1-1 model, V. Q. Phong, N. T. Tuong, N. C. Thao and H. N. Long, *Phys. Rev. D* **99**, No 1, 015035 (2019), arXiv:1805.09610[hep-ph].
3. Fermion Mass and Mixing in a simple extension of the Standard Model based on T_7 flavor symmetry, V. V. Vien and H. N. Long, *Physics of Atomic Nuclei* **82**, No 2, (2019), pp. 168—182, [arXiv:1609.03895(hep-ph)].
4. Constraining heavy neutral gauge boson Z' in the 3 - 3 - 1 models by weak charge data of Cesium and proton, H. N. Long, N. V. Hop, L. T. Hue, and N. T. T. Van, *Nucl. Phys. B* **943** (2019) 114629 (26 pages) arXiv:1812.08669[hep-ph].
5. Bounds on dipole moments of tau-neutrino from single photon searches in $SU(4)_L \times U(1)_X$ model at CLIC and ILC energies, D. T. Binh, Vo Van On, H. N. Long, *Int. J. Mod. Phys. A* **34** No 11 (2019) 1950062 (16 pages), arXiv:1803.03538[hep-ph]
6. Some phenomenological aspects of the 3-3-1 model with the C'arcamo-Kovalenko-Schmidt mechanism, H. N. Long, N. V. Hop, L. T. Hue, N. H. Thao, A. E. C'arcamo Hern'andez, *Phys. Rev. D* **100**, No 1, 015004 (2019), (21 pages), arXiv:1810.00605[hep-ph].
7. Comment on the article by D. Borah and B. Karmakar "Linear seesaw for Dirac neutrinos with A_4 flavour symmetry", *Phys. Lett. B* **789** (2019) 59-70, arXiv: 1806.10685, V. V.

Vien, H. N. Long and A. E. C\'arcamo Hern\'andez, *Phys. Lett.* **B 798**, (2019) 134979 (2 pages), arXiv:1909.11047[hep-ph]

8. Fermion Mass and Mixing in a Low-Scale Seesaw Model based on the S_4 Flavor Symmetry, V. V. Vien, H. N. Long and A. E. C\'arcamo Hern\'andez, *Progress of Theoretical and Experimental Physics* (PTEP), **2019**, vol. **11**, 113B04 (16 pages), arXiv:1909.09532[hep-ph].

\documentclass{report} \usepackage[latin1]{inputenc} \begin{document} \centerline{\bf CURRICULUM VITAE} \medskip \noindent {\obeylines \bf Kepler de Souza Oliveira Filho (S.O. Kepler)} Work address: Instituto de Física Universidade Federal do Rio Grande do Sul Porto Alegre - RS 91501-970 Telephone: 55(51)3308-6556 Brasil e-mail: kepler@if.ufrgs.br Research-ID H-5901-2012 ORCID 0000-0002-7470-5703

<http://lattes.cnpq.br/8496716957724133> \medskip \noindent {\bf Personal Data:} Date and place of birth: 16/02/1956 - Salvador BA - Brazil. Parents: Kepler de Souza Oliveira and Helenita Trindade de Oliveira. } \noindent {\bf Citations by Jun/19 at ISI: 5666, H=41} %\medskip

\noindent {\bf Education:}

1977 - Bachelor of Physics, Universidade Federal do Rio Grande do Sul, Brazil.

1981 - Master of Arts, Department of Astronomy, University of Texas at Austin.

1984 - Doctor of Philosophy - {\bf Ph.D.}, Department of Astronomy, University of Texas at Austin.

1992 - Computer System Administration, Cray Training Center, in Eagan, MN, USA.

\medskip \noindent {\bf Professional Experience:}

1976-1977 - Teaching and Research Assistant, Instituto de Física, Universidade Federal do Rio Grande do Sul (UFRGS) - Brazil.

1979-1984 - Research Assistant, Department of Astronomy, UT.

1979-1984 - Assistant Professor, Instituto de Física, UFRGS.

1984-to present - Professor, Instituto de Física, UFRGS.

1985-1990 - Director of the Astronomical Observatory UFRGS.

1990-1991 - Visiting researcher at Département de Physique, Université de Montréal, Canada.

1992-1993 - General Director of the National Center for Supercomputing, UFRGS.

1992-1994 - Chairman, Department of Astronomy, UFRGS.

1995 - Visiting Scholar, Department of Astronomy, University of Texas.

1997-1998 - Chairman, Department of Astronomy, UFRGS.

2001-2002 - Director of the Astronomical Observatory UFRGS.

2002-2004 - President of the Brazilian Astronomical Society.

2003-2004 - Chairman, Department of Astronomy, UFRGS.

2005 - Senior Resident Astronomer at the SOAR - Southern Astrophysical Research telescope, in Chile.

2008-2011 - Brazilian representative at the Gemini Observatory Board of Directors.

2011-2012 - Chairman, Department of Astronomy, UFRGS.

2013-2015 - Chairman, Physics and Astronomy Committee at National Research Council of Brazil (CNPq).

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`%\medskip`

`\noindent {\bf Publications in Refereed Journals}`

`\begin{enumerate} \item Juan Jose Claria \& S.O. Kepler. {\bf 1980}, "Wide- and Narrow-Band Photometry of Stars in a Field Around Collinder 135", Publications of the Astronomical Society of the Pacific, {\bf 92}, 501-513.`

`\item Edward Lewis Robinson, R. Edward Nather, \& S.O. Kepler, {\bf 1982}, "BT Monocerotis: An Eclipsing Nova", Astrophysical Journal, {\bf 254}, 646-652.`

`\item S.O. Kepler, Edward Lewis Robinson, R. Edward Nather, \& John T. McGraw {\bf 1982}, "The Pulsation Periods of the Pulsating White Dwarf G117-B15A", Astrophysical Journal, {\bf 254}, 676-682.`

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item Julieta P. Sanchez Arias, Alejandra Daniela Romero, Alejandro Hugo Crsico, Ingrid Pelisoli, Victoria Antoci, S. O. Kepler, Leandro Gabriel Althaus & Mariela A. Corti, 2018, Comparing the asteroseismic properties of pulsating pre-extremely low mass white dwarf and Delta Scuti stars, *Astronomy & Astrophysics*, Volume 616, id.A80, 14 pp. DOI: 10.1051/0004-6361/201731808, <http://adsabs.harvard.edu/abs/2018A%26A...616A..80S>

item Keaton J. Bell, Ingrid Pelisoli, S. O. Kepler, W. R. Brown, Don Earl Winget, Karen I. Winget, Zach Vanderbosch, Brabara Garcia Castanheira, J. J. Hermes, Michael Houston Montgomery, & Detlev Koester, 2018, The McDonald Observatory search for pulsating sdA stars Asteroseismic support for multiple populations, *Astronomy & Astrophysics*, A6, 11 pp., DOI: 10.1051/0004-6361/201833279,

https://www.aanda.org/articles/aa/abs/2018/09/aa33279-18/aa33279-18.html?utm_source=email

item Fabola Campos, Ingrid Pelisoli, S. Kamann, T.-O. Husser, Stefan Dreizler, A. Bellini, Edward Lewis Robinson, D. Nardiello, G. Piotto, S. O. Kepler, Alina G. Istrate, Don Earl Winget, Michael Houston Montgomery & Aron Dotter, 2018, Outliers: multicolour photometry guiding the search for evolved binary systems in the globular cluster 47 Tucanae, *Monthly Notices of the Royal Astronomical Society*, 481, 4397-4409, doi:10.1093/mnras/sty2591

item Leila M. Calcaferro, Alejandro Hugo Crsico, Leandro Gabriel Althaus, Alejandra Daniela Romero, & S. O. Kepler, 2018, Pulsating low-mass white dwarfs in the frame of new evolutionary sequences, *Astronomy & Astrophysics*, 620, A196, 12 p., DOI: 10.1051/0004-6361/201833781

item Veronica Dexheimer, Leonardo Tayn Tosetto Soethe, J. Roark, Rosana de Oliveira Gomes, S. O. Kepler & Stefan Schramm, 2018, Phase transitions in neutron stars, *International Journal of Modern Physics E*, <https://doi.org/10.1142/S0218301318300084>

item Gustavo Ourique, Alejandra Daniela Romero, S. O. Kepler, Detlev Koester, Larissa A. Amaral, 2019, A study of cool white dwarfs in the Sloan Digital Sky Survey Data Release 12, *Monthly Notices of the Royal Astronomical Society*, Volume 482, Issue 1, 1 January 2019, p.

649-657, DOI: 10.1093/mnras/sty2751,
<https://academic.oup.com/mnras/article/482/1/649/5129149?guestAccessKey=f4ee3079-5fb3-4e2d>

\item Ingrid Pelisoli, Keaton J. Bell, S. O. Kepler & Detlev Koester, 2019, The sdA problem - III. New extremely low-mass white dwarfs and their precursors from Gaia astrometry, Monthly Notices of the Royal Astronomical Society, Volume 482, DOI: 10.1093/mnras/sty2979
<https://academic.oup.com/mnras/advance-article/doi/10.1093/mnras/sty2979/5173092?guestAccessKey>
 DOI: 10.1093/mnras/sty2979

\item Alejandra Daniela Romero, S. O. Kepler, Simon R. G. Joyce, Gabriel Ramos Lauffer & Alejandro Hugo Crsico, 2019, The white dwarf mass-radius relation and its dependence on the hydrogen envelope, Monthly Notices of the Royal Astronomical Society, Volume 484, Issue 2, 1 April 2-19, p. 2711-2724, DOI: 10.1093/mnras/stz160
<https://academic.oup.com/mnras/article/484/2/2711/5289881?guestAccessKey=ebc84568-3fb2-42cd>

\item Detlev Koester & S. O. Kepler, 2019, Carbon-rich (DQ) white dwarfs in the Sloan Digital Sky Survey, Astronomy & Astrophysics, 628, A102, DOI: 10.1051/0004-6361/201935946,
<https://www.aanda.org/articles/aa/abs/2019/08/aa35946-19/aa35946-19.html>

\item Alejandra Daniela Romero, Larissa Antunes Amaral, Theyllor Klippel, David Sanmartim, Luciano Fraga, Gustavo Ourique, Ingrid Pelisoli, Gabriel Ramos Lauffer, S. O. Kepler & Detlev Koester 2019, Ground based observation of ZZ Ceti stars and the discovery of four new variables, Monthly Notices of the Royal Astronomical Society, stz2571,
<https://academic.oup.com/mnras/advance-article/doi/10.1093/mnras/stz2571/5570606?guestAccessKey>
 10.1093/mnras/stz2571 \end{enumerate} \medskip \noindent{\bf Books:} \begin{enumerate}

\item Introduçã{o} à Astronomia e à Astrofísica, 1998, CD-ROM and hypertext - UFRGS.

\item Imagens Médicas, 1998, book and hypertext - UFRGS.

\item Fundamentos de Astronomia e Astrofísica, 1999, book with Maria de Fátima Oliveira Saraiva - UFRGS.

\item Introduçã{o} à Astronomia e à Astrofísica, 1999, CD-ROM and hypertext.

\item Astronomia e Astrofísica, book with Maria de Fátima Oliveira Saraiva - Editora da UFRGS, ISBN 85-7025-510-1.

\item Evoluçã{o} e Interiores Estelares, 2001 book and hypertext - UFRGS

\item Astronomia e Astrofísica, 2003 CD-ROM for the Instituto do Milnio para Evoluçã{o} de Estrelas e Galxias na Era dos Grandes Telescpios: Instrumentaço para Gemini e SOAR.

\item Astronomia e Astrofísica, 2004 book with Maria de Fátima Saraiva, Editora Livraria da Física, ISBN: 85-8832-523-3, 760 pgs, 2nd. edition.

\item Astronomia e Astrofísica, 2014 book with Maria de Fátima Saraiva, Editora Livraria da Física, ISBN: 978-85-7861-187-3, 780 pgs, 3rd. edition.

\noindent Astronomia e Astrofísica, 2017 book with Maria de Fatima Saraiva, Editora Livraria da Física, ISBN: 978-85-7861-485-0, 614 pgs., 4th. edition. \end{enumerate}

\medskip \noindent{\bf Membership in Professional Societies:} Sociedade Astronômica Brasileira - Vice-President (1986-1988), President (2003-2004), Vice-President (2014-2016) International Astronomical Union Academia Brasileira de Ciências

\medskip \noindent{\bf Languages:} Portuguese English French Spanish } \end{document}



Lee Hyung Won

Position:

Period covered:

I Scientific Work

The effect of eccentric waveform for parameter estimation with student Jeongcho Kim and Dr. Chunglee Kim

Code development for parameter estimation with new gravitational waveforms with student Jeongcho Kim

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Organization of 16th Italian-Korean symposium on Relativistic Astrophysics, 1~5 July, 2019, ICRANet, Pescara, Italy

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities

III a. Within ICRANet

III b. Outside ICRANet

Teaching activities : C Programming, Game Engine Development

IV. Other

2019 List of Publication

A. LIGO-Virgo Collaboration papers published in 2019.

Surname Name

Photo

LIN Wenbin

Position: Professor, University of South China
Period covered: 2018.01 - present

Position: Professor, Southwest Jiaotong University
Period covered: 2009.10 - present



I Scientific Work

1. Extraction of gravitational wave signals with deep learning.
2. Analytical solution for quasi-Keplerian motion in Reissner-Nordström spacetime
3. Parameterized post-post-Newtonian light propagation in the field of one spherically-symmetric body
4. Velocity effects on gravitational frequency shift by a moving Kerr-Newman black hole
5. Post-Minkowskian solution for the small-deflection motion of test particles in Kerr-Newman spacetime
6. GPR antenna design

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

Supervising 3 PhD students and 8 master students on the fields of general relativity and gravitation, deep learning, microwave theory and technology

II c Diploma thesis supervision

Guansheng He, Study on Relativistic Effects of the Moving Black Hole, PhD thesis

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

Teaching activities: Introduction for Applied Physics, Applied software Practice

Holding Conference: Conference on feedback of black hole accretion, outflow and active galactic nuclei, Chengdu, April 12-15, 2019.

IV. Other

2019 List of Publication

1. B. Yang, **W. Lin***, "Post-Keplerian motion in Reissner-Nordström spacetime", *Gen. Relativ. Gravit.*, 51, 116 (2019).
2. X. Zhu, B. Yang, C. Jiang, **W. Lin***, "Parameterized post-post-Newtonian light propagation in the field of one spherically-symmetric body", *Commun. Theor. Phys.* 71, 1455 (2019).
3. G. He, C. Pan, **W. Lin***, "Velocity Effects on Second order Contributions to Gravitational frequency shift by a moving Kerr-Newman black hole", *Eur. Phys. J. C.* 79, 705 (2019).
4. B. Yang, C. Jiang, **W. Lin***, "Post-Minkowskian solution for the small-deflection motion of test particles in Kerr-Newman spacetime", *Class. Quantum Grav.*, 36, 085010 (2019).
5. L. Wang, M. Yang, **W. Lin***, "Effects of resonant magnetic perturbation on the instability of single tearing mode with non-shear flow", *Chin. Phys. B* 28, 015203 (2019).
6. A. Raza, **W. Lin***, Y. Liu, A. Sharif, Y. Chen, "A magnetic-loop based monopole antenna for GPR applications", *Microwave & Opt. Tech. Lett.*, 61:1052 (2019).

Klaudio Peqini

Position: Visiting Researcher

Period covered: 16 September – 30 September 2018



I Scientific Work

1. 05.2015 Duka B., **Peqini K.**, De Santis A., Pavon-Carrasco F.J., 2015. Using “domino” model to study the secular variation of the geomagnetic dipolar moment. *Phys. Earth. Planet. Inter.* 242, 9–23. **Impact factor: 2.480.** <http://dx.doi.org/10.1016/j.pepi.2015.03.001>
2. 09.2015 **Peqini K.**, Duka B., De Santis A., 2015. Insights into pre-reversal paleosecular variation from stochastic models. *Front. Earth Sci.* 3:52. doi: 10.3389/feart.2015.00052. **Impact factor: 1.970.**
3. 01.2016 **Peqini K.**, Duka B., 2016. Insights into reversals mechanism of the geomagnetic field through stochastic models simulations. *Proceedings Book of The International Physics Conference Tirana 2015.* https://sites.google.com/site/albanian_physics2015/
4. 06.2016 Duka B., Duka E., **Peqini K.**, 2016. Recovering external contribution from the monthly mean series of a given geomagnetic observatory. *ANNALS OF GEOPHYSICS*, 59, 3, G0321; doi:10.4401/ag-6971. **Impact factor: 1.374.**
5. 07.2017 **Peqini K.**, Duka B., 2017. Statistical Indicators as Potential Early Signals of Transitions in Time Series Obtained by a Statistical Model: Geomagnetic Field Case. *Proceedings book of the International Conference on Applied Statistics and Econometrics (ICASE 2017) 27-28 April 2017 Tirana, Albania.* <http://icase.epoka.edu.al/2017/category-proceedings-1729.html>
6. 03.2018 **Peqini K.**, Duka B., Dominici, G., 2018. Crustal field recovery and secular variation from regional and global models over Albania. *ANNALS OF GEOPHYSICS*, 61, 1, GM101, 2018. doi: 10.4401/ag-7419 **Impact factor: 1.374.**
7. 03.2018 **Peqini K.**, Duka B., 2018. Statistical indicators as potential early signals of transitions in time series obtained by a statistical model: geomagnetic field case. *International Journal of Applied Statistics and Econometrics (IJASE)* doi: 10.26384 /IJASE1807 <https://esa.org.al/volume-1/>
8. 09.2018 **Peqini K.**, Duka B., Egli R., Leichter B., 2018. Crustal geomagnetic field and secular variation by regional and global models for Austria. **111, 1, 048–063. doi: 10.17738/ajes.2018.0004** **Impact factor: 1.034.**
9. 12.2018 **Peqini K.**, Duka B., 2018. Core-Mantle Boundary Velocity Field Recovering From a Four-Century Geomagnetic Field Model. *JNTS (Journal of Natural and Technical Sciences)*, 46 (XXIII), 3–

18.

10. 02.2019 **Peqini K.**, Duka B., 2019. The velocity field at the Earth's core–mantle boundary. AIP Conference Proceedings **2075**, 120026; Published Online: 26 February 2019; <https://doi.org/10.1063/1.5091284>

11. 11.2019 **Peqini K.**, Duka B., 2019. Small-scale velocity field at the Core-Mantle Boundary constructed from the gufml global model. AIP Conference Proceedings **2178**, 030007; Published Online: 25 November 2019; <https://doi.org/10.1063/1.5135405>

12. 12.2019 Luga E., **Peqini K.**, 2019. The Influence of Oxide Content on the Properties of Fly Ash/Slag Geopolymer Mortars Activated with NaOH. Periodica Polytechnica Civil Engineering, 63 (4), pp – . <https://doi.org/10.3311/PPci.14381> **Impact factor: 0.905.**

II Conferences and educational activities

II a Conferences and Other External Scientific Work

1. 05.2013 Participant in the 4th seminar on parallel systems and programming organized on 30 May 2013 close in the Center for Research and Development of the Faculty of Information Technology, Polytechnic University of Tirana (UPT), as part of the European project FP7 HP-SEE.

2. 05.2014 **K. Peqini** and B. Duka: “Applying “domino” model to study dipolar geomagnetic field reversals and secular variation”. Poster presentation in the annual conference of EGU held in Vienna (27 April-2 May 2014).

3. 04.2015 **K. Peqini** and B. Duka: “Comparison of the dipolar magnetic field generated by two Ising-like models”. Poster presentation in the annual conference of EGU held in Vienna (12-17 April 2015).

4. 06.2015 E. Filippi, A. De Santis, F. J. Pavon-Carrasco, B. Duka, **K. Peqini**: “Some evidence for a Turbulent Diffusion in the Geodynamo from geomagnetic global models of the last few millennia”. Poster presentation in the IUGG Conference 2015 held in Prague (22 June-2 July 2015).

5. 11.2015 **K. Peqini** and B. Duka: “Insights into reversals mechanism of the geomagnetic field through stochastic models simulations”. Oral presentation in The International Physics Conference held in Tirana (13-14 November 2015).

6. 04.2016 **K. Peqini** and B. Duka: “Recovering the crustal and unmodelled external contributions to the geomagnetic field of the European area”. Oral presentation in the annual conference of EGU held in Vienna (17-22 April 2016).

7. 09.2016 **K. Peqini**: Recent results on recovering the non-modeled external magnetic field and crustal magnetic field from the confrontation of regional and global models of the geomagnetic field. Oral presentation in **The Second International Workshop on recent LHC results and related topics held in Tirana (26-27 September 2016)**. <https://indico.cern.ch/event/561738/>

8. 04.2017 **K. Peqini** and B. Duka: “**Geomagnetic Crustal field Anomalies over small countries (Austria and Albania) according to regional and global models**”. Poster presentation in the annual conference of EGU held in Vienna (23-28 April 2017).

9. 04.2017 **K. Peqini**, B. Duka and A. Uka: “Statistical indicators as potential early signals of transitions in time series obtained by a statistical model: Geomagnetic field case”. Oral presentation at the 1st International Conference on Applied Statistics and Econometrics (ICASE) 2017, held at Epoka University (27-28 April 2017).
10. 09.2017 B. Duka and **K. Peqini**: “Regional geomagnetic field modeling”. Oral presentation at the XII Annual Meeting of ALBSHKENCA, Prishtina, Kosovo (01-03 September 2017).
11. 11.2017 **K. Peqini** and B. Duka: “Time variation of the velocity field in core-mantle boundary (CMB)”. National conference KSNTEK, Tirana, 17-18 November, 2017.
12. 04.2018 **K. Peqini**, B. Duka and B. Leichter: “Jerks and the velocity field at the CMB recovered using gufm1 model”. Poster presentation in the annual conference of EGU held in Vienna (08-13 April 2018).
13. 08.2018 **K. Peqini** and B. Duka: “The Velocity Field at the Earth’s Core-Mantle Boundary”. Oral presentation in the BPU (Balkan Physics Union) 10th Conference held in Sofia, Bulgaria (26-30 August, 2018).
14. 10.2018 **K. Peqini**: “Flow at the Core-Mantle Boundary and Jerks”. Oral presentation in the III International Workshop on recent LHC Physics results and related topics held in Tirana, Albania (10-12 October 2018).
15. 04.2019 **K. Peqini**, M. Ifti and B.Duka: “Statistical and Hurst Analysis of Palaeomagnetic Data”. Poster Presentation in the annual conference of EGU held in Vienna (07-12 April 2019).
16. 05.2019 **K. Peqini**: “Velocity field at the core-mantle boundary and jerks”. Oral presentation in the First International Conference on Research, Application and Educational Methods, RAEM, held in Korça, Albania, 24 May 2019.
17. 07.2019 **K. Peqini** and B. Duka: “Small-scale velocity field at the core-mantle boundary constructed from the gufm1 global model”. Oral presentation in the 35th International Physics Congress of the Turkish Physical Society, held in Bodrum, Turkey, 03-08 September 2019.
18. 11.2019 **K. Peqini**, M. Ifti and S. Miço: “Hurst exponent and magnitude distribution from palaeomagnetic and model generated time series”. Oral presentation in the 1st International Conference on Applied Physics (ICAP), held in Tirana, Albania, 20-22 November 2019.
19. 11.2019 S. Miço, M. Ifti, P. Dhoqina, D. Prenga, **K. Peqini**: “Statistical properties of time series of air pollutants and meteorological data”. Oral presentation in the 1st International Conference on Applied Physics (ICAP), held in Tirana, Albania, 20-22 November 2019.

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRAANet (e.g. teaching activities, conferences etc...) and outside ICRAANet (teaching activities in your university etc...)*]

III a. Within ICRAANet

III b. Outside ICRAANet

I have been teaching various courses at the Department of Physics of the Faculty of Natural Sciences of Tirana University. These courses range from General Physics (Mechanics, Electromagnetism) to courses in Theoretical Physics (Analytical Mechanics, Introductory Classical Electrodynamics and Introductory Statistical Physics). Also I have participated in the committee of the Department of Physics, Faculty of Natural Sciences, University of Tirana, for the opening of a new Bachelor program with special focus on Applied Physics disciplines.

IV. Other

Below is given a list of the scientific projects that I have been member of:

1. 2012-2014 Participant in the project: “Study of the stability of fluid dynamic systems in cylindrical and spherical geometry”, project included in the Executive Program of Scientific and Technological Cooperation between Albania and Italy, for the years 2012 – 2014.
2. 2013-2015 Participant in the project: “Numerical experiments on the natural convection of the fluids between coaxial cylinders and concentric spheres (NUM-EXP-NAT-CONV)”, a winning project of “hp-see-pilot-call-awarded- applications” (High Performance Computing in South East Europe).
3. 2013-2014 Participant in the project: “Numerical simulations of natural convection in cylindrical cavities and the determination of the indicators of critical phenomena in the time series of the geomagnetic field variation”, funded by the Faculty of Natural Sciences, University of Tirana.
4. 2014-2015 Participant in the project: “Optimization and Scalability testing of a new OpenFoam application”. Field of research is: Engineering an Energy Sources.
5. 2015-2017 Participant in the project: “Using ground and satellite data to study the variations of the geomagnetic field over Austria and Albania”. This Project is in collaboration between University of Tirana and ZAMG (Zentrale Anstalt für Geophysik und Geodynamik) Vienna, Austria.

2019 List of Publication

1. **Peqini K.**, Duka B., 2019. The velocity field at the Earth’s core–mantle boundary. AIP Conference Proceedings **2075**, 120026; Published Online: 26 February 2019; <https://doi.org/10.1063/1.5091284>
2. **Peqini K.**, Duka B., 2019. Small-scale velocity field at the Core-Mantle Boundary constructed from the gufml global model. AIP Conference Proceedings **2178**, 030007; Published Online: 25 November 2019; <https://doi.org/10.1063/1.5135405>

3. Luga E., **Peqini K.**, 2019. The Influence of Oxide Content on the Properties of Fly Ash/Slag Geopolymer Mortars Activated with NaOH. Periodica Polytechnica Civil Engineering, 63 (4), pp – . <https://doi.org/10.3311/PPci.14381> **Impact factor: 0.905.**

Perez Martinez Aurora Maria

Position: Senior Researcher/Senior Professor
Period covered: 2019



I Scientific Work

- Study of anisotropic structure equation of compact objects.
- Study magnetized BEC stars
- Study of magnetized Quark stars and stability
- Study of Jets from pulsars rol of the magnetic field

II Conferences and educational activities 2019

-WONP, Havana April 2019 work presented: "Jets from Compact objects: magnetic field effect".

-Stars 2019, and SMFNS2019 6-13 May. co-works presented:

- Magnetic field effects on Bose–Einstein Condensate Stars, Gretel Quintero, Aurora Pérez Martínez and H. Perez Rojas.
- Modelling anisotropic magnetized strange quark stars " Samantha Lopez Perez, Gretel Quintero, Daryel Manreza Paret and Aurora Pérez Martínez
- The photon time delay in magnetized vacuum magnetosphere A.W. Romero, E. Rodriguez Querts, H. Perez Rojas, A. Perez Martinez, L. Cruz Rodriguez, G. Piccinelli Bocchi and J. A. Rueda

II b Work With Students.

- Supervision of the master thesis of Lismary Suarez González Phase transition and boson condensate of neutral and charged bosons in presence of magnetic field.

-Supervision of the PhD thesis and conclusion of the thesis defended on 14 June 2020. Title: Condensate of neutral and charged bosons in presence of magnetic field. Astrophysical applications: Jets and Boson Stars. PhD student: Gretel Quintero Angulo.

II c Diploma thesis supervision

-Diploma thesis of Physics of Samantha Lopez, Havana University. Havana

II d Other Teaching Duties

II e. Work With Postdocs

Work in collaboration with D. Manreza Paret and Gretel Quintero Angulo in topics related to:

- Magnetized BEC stars.
- Modelling anisotropic magnetized strange quark stars

III. Service activities [*activities carried out in collaboration with ICRAANet (e.g. teaching activities, conferences etc...) and outside ICRAANet (teaching activities in your university etc...)*]

II a. Within ICRAANet

1. Work in collaboration with Jorge Rueda in The photon time delay from pulsars

III b. Outside ICRAANet

Collaboration:

- Collaboration with Gabriella Piccinelli from FES Aragon UNAM, Quantum Faraday Effect in the Universe
- Collaboration with Gabriella Piccinelli from FES Aragon UNAM, Quantum Faraday rotation
- Collaboration with Daryl Manreza Paret from Havana University. Anisotropic structure equations for Magnetized Quark stars, BEC stars.

IV. Other

Visit Fermi National Laboratory FERMILAB, May-June 2019

Visit ICTP, Trieste June-July 2019 **Seminar** at Department of High Energy Physics and Cosmology (HECAP), "Can the magnetic field shape a compact object?" July 9 2019.

Organization of conferences and school:

Pre-school of stars2019

International conferences: stars2019/smfns2019 May 2019

Symposium of Cuban Physical Society 2020

List of Publications

1. (Self-)Magnetized Bose–Einstein condensate stars, G. Quintero Angulo, A. Perez Martinez, H. Perez Rojas, and D. Manreza Paret, Int J of Modern Phys D Vol. 28, No. 10 1950135, (2019).
2. Modeling anisotropic magnetized white dwarfs with gamma metric D. Alvear Terrero, V. Hernandez Mederos, S. Lopez Perez, D. Manreza Paret, A. Perez Martinez, G. Quintero Angulo arXiv:1807.09943 Phys. Rev. D, no. 10, 103008 (2019)
3. Anisotropic magnetized sources in general relativity: An exact description for the magnetized vacuum, D. Alvear Terrero, P. Bargueño, E. Contreras, Angulo, A. Perez Martinez G. Quintero arXiv:1804.01439v1 [gr-qc] Int J. Mod Phys Vol. 28, No. 07, 1950090 (2019) <https://doi.org/10.1142/S0218271819500901>



Position: Consultant/Professor

Period covered: 01 Jan 2019–31 December 2019

I Scientific Work

(a) Journal Publications

1. “Linearization criteria for two dimensional systems of third order ordinary differential equations by complex approach”, H.M. Dutt, M. Safdar and A. Qadir, *Arabian J. Math.*, **8** (2019) 163 - 170.
2. “Constraining Baryons in the M31 Galactic Halo by Planck Data”, N. Tahir, F. De Paolis, **A. Qadir** and A.A. Nucita, *Int. J. Mod. Phys. D***28** (2019) 1950088 (15 pages).
3. “On the rotating baryonic dark halos”, F. De Paolis, A.V. Gurzadyan, A.A. Nucita, V.G. Gurzadyan, **A. Qadir**, A. Kashin, A. Amekhyan, S. Sargsyan, Ph. Jetzer, G. Ingrosso and N. Tahir, *A&A***629** (2019) A87 (5 pages).
4. “Constraining baryon distribution in the nearby spiral galaxies by using Planck data”, N. Tahir, F. De Paolis, **A. Qadir** and A.A. Nucita, *Arabian J. Math.*, 2019 <https://doi.org/10.1007/s40065-019-0244-x>.
5. “Comparison of Noether symmetries and first integrals of two-dimensional systems of second order ordinary differential equations by real and complex methods”, M. Safdar, **A. Qadir**, M.U. Farooq, *Symmetry*, **11**(2019) 1180 (12 pages), doi:10.3390/sym11091180.
6. “Recent results and perspectives on cosmic backgrounds from radio to far-infrared”, C. Burigana, G. De Zotti, A. Fialkov, A. Qadir, T. Trombetti, M. Bonato, M. Negrello, H.U. Norgaard-Nielsen and N. Tahir, *Int. J. Mod. Phys. D*,**28** (2019) 1930021 (22 pages).
7. “Virial clouds explaining the observed rotational asymmetry in the galactic halos”, **A. Qadir**, N. Tahir, and M. Sakhi, *Phys. Rev. D* **100** (2019) 043028, 8 pages.
8. “On the reality of Hawking radiation”, **A. Qadir**, *Int. J. Mod. Phys. D* (to appear).
9. “Dark energy from non-degenerate Higgs-vacuum”, M. Usman and **A. Qadir**, *Int. J. Mod. Phys. D* (to appear).
10. “Motion of test particles for Weyl-interaction modified gravity”, H.W. Lee and **A. Qadir**, *Int. J. Mod. Phys. D* (to appear).

(b) Conference Proceedings

11. “Virial Clouds as a Model for Doppler Asymmetry in the Cosmic Microwave Background Radiation”, **A. Qadir** and N. Tahir, *Proc. MG15 Meeting*, eds. R.T. Jantzen and R. Ruffini, World Scientific (to appear).
12. “Dark energy from non-degenerate Higgs-vacuum”, M. Usman and **A. Qadir**, *Proc. MG15 Meeting*, eds. R.T. Jantzen and R. Ruffini, World Scientific (to appear).

II Conferences and educational activities

II a Conferences and Other External Scientific Work:

- (i) Organizer and speaker at the Sixth Italian-Pakistani Workshop on Relativistic Astrophysics, 24—26 January 2019, NUST, Islamabad, Pakistan;
- (ii) In the organizing committee and speaker at the Second International Conference on Gravitation & Cosmology 27—30 January 2019, Punjab University, Lahore, Pakistan;
- (iii) Keynote speaker and participant at the Sixteenth Symposium on the Frontiers of Physics of the Pakistan Physical Society, Government College University Lahore, Pakistan, 29 January 2019;
- (iv) Attended and presented two talks at the Fifteenth Marcel Grossmann Meeting, 1—7 July 2019, Universita “La Sapienza”, Rome, Italy;
- (v) Keynote speaker at Second International Conference on Applied and Engineering Mathematics (ICAEM'19) 27—29 August 2019, HITech University, Taxila, Pakistan;
- (vi) Speaker and participant at International Workshop on Modern Group Analysis at the Department of Mathematics of Blekinge Institute of Technology, Karlskrona, Sweden (in collaboration with the Laboratory GAMMETT, Ufa State Aviation University, Ufa, Russia, dedicated to the memory of Nail, H. Ibragimov) 4, 5 November 2019;
- (vii) Keynote speaker at NUST Conference on Recent Trends in Mathematical Sciences—II 3, 4 December 2019, Islamabad, Pakistan.

II b Work With Students: Involved in supervising: (i) a PhD student, Kamran Qadir Abbasi (to whom I also gave a Reading and Research course); (ii) involved in supervising an MS student, Aqsa Yasmin at the Physics Department of NUST, Islamabad, Pakistan.

II c Diploma thesis supervision: Supervised MS theses: (i) “Defining energy in gravitational waves using the post-Newtonian approximation and comparison of the gravitational waves behavior at different post-Newtonian orders”, Sharoon Sardar, (Physics Department); (ii) “Boundary conditions for the extended suture model”, Aneela Naheed (Mathematics Department); (iii) “Cold gas clouds and rotational asymmetry in the galactic halos”, Noraiz Tahir (Physics Department); (iv) “Wheeler’s delayed choice double slit experiment: mysteries, misinterpretations complementarity and measurement” M. Usman (in process); supervised Final Year Project for BS (Laurea) Physics at NUST: (v) “Interaction of CMB radiation with molecular hydrogen clouds”, M. Sakhi; (vi) “Black hole mining and its effects”, Hassan Siddiqui; (vii) “Primordial black holes (as Dark Matter)”, ZohaLaraib; (viii) “Cosmic inflation”, Darjat Mohammad; (ix) “Review of the problem of quantum gravity”, Nimra Farooq.

II d Other Teaching Duties: Taught courses: (i) Thermal Physics (MS Physics, NUST); (ii) General Relativity (MS Physics & Mathematics, NUST); (iii) Thermal Physics (MS Physics); (iv) Advanced Transform Techniques (MS Mathematics); (v) Crash Course on Error Analysis and Error Propagation (MS/PhD Physics students and Lab Demonstrators) , GIK Institute, Topi, Swabi, Pakistan.

II e. Work With Postdocs: M. Usman (ex-PhD student) working on looking for the CMB imprint of the Rueda-Ruffini degenerate Fermi cores as dark matter in galaxies.

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet: (i) Attended and spoke at MG15; (ii) worked with Prof. Hyung Won Lee on our idea of modified relativistic dynamics.

III b. Outside ICRANet: Trying to get Pakistan into an MoU with ICRANet.

IV. Other Delivered a number of seminars at NUST and GIKI and advised students of MS and PhD of other physicists and mathematicians regarding their research.

2019 List of Publication (Given in I)

Prof. Dr. Johann Rafelski

Position: **Professor of Physics**
The University of Arizona
Period covered: **2019 (appointed 1987)**



I Scientific Work: My recent research is focused on the exploration of strong field and strong acceleration phenomena in the laboratory and the Universe. I have continued to perform analysis of the properties of the quark-gluon plasma created in relativistic particle collisions in laboratory experiments and use these insights in the study of the early Universe seeking understanding of baryogenesis, and more generally, the characterization of the energy content of the Universe. This includes study of compact cosmic objects, neutrino cosmology and darkness.

II Conferences and educational activities

II a Conferences and Other External Scientific Work I consult for the CERN laboratory in Geneva and participate in collaboration meetings of quark-gluon plasma experiments. My extramural lectures are listed here:
<http://www.physics.arizona.edu/~rafelski/conf.html>

II b Work With Students I supervise five cand. Ph.D. students at the University of Arizona. Two more students are currently working to gain Diploma Thesis.

II c Diploma thesis supervision: In 3 past years six Diploma thesis were gained by students working with me. Five of these are working with me on their Ph.D. today.

II d Other Teaching Duties: I present graduate and undergraduate courses in theoretical physics at The University of Arizona typically in the fields of quantum physics and relativity.

II e. Work With Postdocs I continue to mentor recent Ph.D. graduates and collaborate with them over distance on projects of common interest.

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet: Acted as representative of The UArizona at ICRANet

III b. Outside ICRANet: Member of The University of Arizona Senate, Chair of Physics Faculty Awards Committee.

IV. Other: US Fulbright Fellow at the Wigner Institute in Budapest

2019 List of Publication

Mass melting and pair production in strong fields (with Stefan Evans) arXiv preprint arXiv:1911.08714 (under review).

Discovery of Quark-Gluon-Plasma: Strangeness Diaries J Rafelski arXiv preprint arXiv:1911.00831 (2019) 140 page long **topical review in press EPJ-ST**

Classical neutral point particle in linearly polarized EM plane wave field arXiv:1904.10587 [hep-ph] (with Martin Formanek, Andrew Steinmetz,) Plasma Physics and Controlled Fusion **61** (8), 084006 (2019)

Virtual axion-like particle Complement to Euler-Heisenberg-Schwinger action (with S Evans) Physics Letters **B 791**, 331-334 3 (2019)

Magnetic dipole moment in relativistic quantum mechanics (with Andrew Steinmetz, Martin Formanek) The European Physical Journal **A 55** (3), 40

2019 Book



Raffaelli Bernard



Position: **Associate Professor of Physics**,
ESME Sudria – Graduate School of Engineering,
Department of Physics - Lyon Campus,
16, rue de l'Abbaye d'Ainay – 69002 Lyon, France.

Period covered: August 2016 – Today

I Scientific Work

- Quantum Field theory in curved spacetime: Hadamard renormalization of the energy-momentum tensor of a quantum field theory and problems related to the vacuum energy in General Relativity.
- High energy black hole physics: semiclassical description of resonant scattering by black holes and applications to quasinormal modes, strong gravitational lensing, gravity/CFT correspondence.
- Gauge theories of gravity.
- Spinor approaches to spacetime and matter.
- Topological quantum computation and quantum engineering.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- 2018, June 7th – Theoretical Physics seminar at ENS Lyon: “Regge poles in Black Hole Physics”

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

Teaching activities at ESME Sudria – Graduate School of Engineering, Lyon Campus:

- For 1st year students: Mechanics, Fluid Mechanics, Thermodynamics,
- For 2nd year students: Wave Physics, Electromagnetism,
- For 3rd year students: Quantum Physics, Signal Processing.

IV. Other

2019 List of Publication

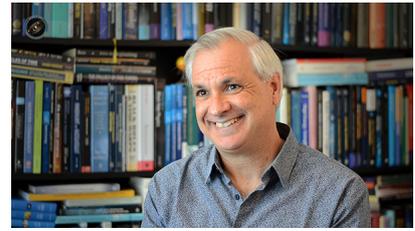
- Academic book of Mathematical Physics in French: “Mathematiques en Physique – Concepts et outils” / “Mathematics in Physics – Concepts and tools”, JP Provost, B Raffaelli and G Vallée, Dunod ed., January 2019.

English summary: This book introduces and illustrates by many examples, the main concepts and mathematical tools encountered in the physics curriculum at the undergraduate and graduate levels. Through the choice of its applications, it offers the reader a synthetic perspective on many traditional areas of physics, such as thermodynamics, electromagnetism, optics, physics of continuous media... and opens up to more recent developments such as renormalization, gauge theories, Einstein's gravitation and the cosmological constant.

- (To appear) Chap5: “A quantum and historical look at the status of inertia in Physics”, JP Provost and B Raffaelli, in Jijel’s School of Theoretical Physics Proceedings: “Topics in Mathematical Physics, Quantum Physics and Path Integrals”, edited by A Bounames and A Makhlouf, ISTE Sciences Publishing eds.

Gustavo Esteban Romero

Curriculum Vitae



Datos Personales

Nacionalidad: Argentina

Lugar de nacimiento: La Plata, Prov. de Bs. As.

Fecha de nacimiento: 20 de septiembre de 1964

DNI: 17.225.283

Servicio militar: Cumplido en la Armada, 1983/1984

Domicilio: Av. 44, No. 1695, Piso 1C
(1900) La Plata, Argentina

T.E.: +54 9 221 571 8669

E-mail (laboral): romero@iar.unlp.edu.ar

E-mail (laboral): romero@fcaglp.unlp.edu.ar

E-mail (personal): gustavo.esteban.romero@gmail.com

Formación académica

1981 **Bachiller**, *Colegio Sagrado Corazón de Jesús, La Plata.*

1984–1991 **Licenciado en Física**, *Facultad de Ciencias Exactas, Universidad Nacional de La Plata.*

Promedio total: 8.93 (ocho punto noventa y tres)

1995 **Doctor en Física**, *Facultad de Ciencias Exactas, Universidad Nacional de La Plata.*

Tesis Doctoral: Variabilidad rápida de radiofuentes extragalácticas australes

Directores: Dr. Fernando R. Colomb y Prof. Dr. Héctor Vucetich

Calificación: 10 (diez)

Formación de posgrado

- 1991 **El desarrollo de la Ciencia Moderna**
Profesor: Dr. Guillermo Boido
Universidad Nacional de La Plata
Aprobado el 17-12-91
Calificación: 10 (diez)
- 1992 **Gravitación I**
Profesor: Dr. Vucetich
Universidad Nacional de La Plata
Aprobado el 12-04-94
Calificación: 10 (diez)
- 1993 **Gravitación II**
Profesor: Dr. Vucetich
Universidad Nacional de La Plata
Aprobado el 12-04-94
Calificación: 10 (diez)
- 1994 **Introducción a la Cosmología Relativista**
Profesor: Dr. Vucetich
Universidad Nacional de La Plata
Aprobado el 22-12-94
Calificación: 10 (diez)
- 1994 **Teoría de Campos I**
Profesor: Dr. L. Epele
Universidad Nacional de La Plata
Aprobado el 2-05-95
Calificación: 10 (diez)

Asistencia a escuelas internacionales

- Agosto 1991 Curso de atualizaçõ em Filosofia da Ciencia
Dictado por el Prof. Dr. Mario Bunge
Universidade Federal de Santa Catarina, Florianópolis, Brasil
- Diciembre 1992 IV Canary Islands Winter School on Infrared Astronomy
Tenerife, España
- Junio-Julio IV Vatican Summer School on Observational Astronomy and Astrophysics (Active Galactic Nuclei)
1993 Castel Gandolfo, Italia
- Octubre 1997 First Joint ON-OAC School on Observational Cosmology (Galaxy Evolution)
UFRJ, Rio de Janeiro, Brasil

- Marzo 1999 First School of Astroparticle Physics in Argentina
Departamento de Física, UBA, Buenos Aires, Argentina
- Diciembre 1999 ICTP/ICGEB Ibero-American School of Astrobiology (IASA): Origins from the
Big-Bang to Civilisation
IDEA Convention Center, Caracas, Venezuela

Lugares de trabajo

- 1997-1998 Instituto Astronômico e Geofísico
Av. Miguel Stefano 4200, CEP 04301-904 São Paulo, SP, Brasil
E-mail: gustavo@radio.iagusp.usp.br
- 1991-1996 Instituto Argentino de Radioastronomía
- 1998-presente C.C. 5, 1894 Villa Elisa, Prov. de Bs. As., Argentina
E-mail: romero@irma.irma.unlp.edu.ar
T.E. (54) 221 4254909 ext. 115, Fax: (54) 221 4254909 ext. 117
- 1995-1997 Departamento de Física, Facultad de Cs. Ex., UNLP
- 1998-2000 C.C. 67, 1900 La Plata, Prov. de Bs. As., Argentina
E-mail: romero@venus.fisica.unlp.edu.ar
- 2003-presente Facultad de Ciencias Astronómicas y Geofísicas (FCAGLP), UNLP
Paseo del Bosque, 1900 La Plata, Prov. de Bs. As., Argentina
Email: romero@fcaglp.unlp.edu.ar

Becas obtenidas

- 1992-1994 Beca de Iniciación a la Investigación
CONICET
Tema: Variabilidad en Blazars
Directores: F.R. Colomb y H. Vucetich
- 1994-1996 Beca de Perfeccionamiento
CONICET
Tema: Variabilidad en Blazars
Directores: F.R. Colomb y H. Vucetich
- 1996-1997 Beca Post-Doctoral
CONICET
Tema: Variabilidad en Blazars
Directores: H. Vucetich y E. Bajaja
- 1997-1998 Beca Post-Doctoral
Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), Brasil
Tema: Procesos Físicos en Núcleos Galácticos Activos

Sept.-Nov. Max Planck Fellowship
2001 Max Planck Institut für Kernphysik Heidelberg
Tema: High Energy Gamma-Rays from Galactic Sources

Cargos y posiciones

1997-1998 Posición Post-Doctoral
Universidade de São Paulo
Instituto Astronômico e Geofísico (IAG)

1998-presente Miembro permanente de la Carrera del Investigador Científico y Tecnológico

1998-2001 Investigador Asistente
Carrera del Investigador Científico y Tecnológico
CONICET

2001-2004 Investigador Adjunto
Carrera del Investigador Científico y Tecnológico
CONICET

2004-2007 Investigador Independiente
Carrera del Investigador Científico y Tecnológico
CONICET

2007-2014 Investigador Principal
Carrera del Investigador Científico y Tecnológico
CONICET

2014-presente Investigador Superior
Carrera del Investigador Científico y Tecnológico
CONICET

Abril 2001 Visiting Research Scientist
Noviembre 2003

October- Center for Astrophysics, Guangzhou University, Guangzhou, China
November
2015

2001-2008 Guest Senior Scientist
Max Planck Institut für Kernphysik
Heidelberg, Germany
Períodos: September-November, 2001, March-June, 2003, June-July, 2007, June-
July, 2008

Jun.-Jul. 2002 Visiting Full Professor
Université de Paris VII

- Paris, France
- Oct.-Nov. 2003 Visiting Scientist
 Department of Physics, The University of Hong Kong
 Hong Kong, China
 Hong Kong University Staff Number: 38834
- 2005-2018 Visiting Professor
 Facultat de Física, Universitat de Barcelona
 Barcelona, Spain
- 2001-2018 Visiting Scientist
 Facultat de Física, Universitat de Barcelona
 Barcelona, Spain
 Períodos: November 2001, November 2004, October-November 2008, February 2009, May 2009, October 2009, May 2011, November 2012, April 2015, July 2016
- 2005-2007 Profesor Adjunto Ordinario de *Introducción a la Astrofísica Relativista*
 Facultad de Ciencias Astronómicas y Geofísicas (UNLP)
 La Plata, Argentina
- 2007-2010 Profesor Asociado Ordinario de *Introducción a la Astrofísica Relativista*
 Facultad de Ciencias Astronómicas y Geofísicas (UNLP)
- Jun.-Sept. 2010 Profesor Titular Interino de *Introducción a la Astrofísica Relativista*
 Facultad de Ciencias Astronómicas y Geofísicas (UNLP)
- Abril 2007 Visiting Professor
 Universidade Estadual de Campinas -UNICAMP
 Campinas, Brazil
- Nov.-Dec. 2008 Visiting Scientist
 l'Observatoire de Paris, Laboratoire de l'Univers et de ses Théories (LUTH)
 Meudon, France
- 2013-2016 Visiting Professor
 Centro de Radioastronomía y Astrofísica (CRyA), UNAM
 Morelia, Mexico
 Períodos: March 2013, March 2015, June 2016
- July 2013 Professors Invitats d'Excellència (PIE) – Visiting Lecturer of Excellence
 Barcelona Knowledge Campus (BKC) of the Universitat de Barcelona
 Barcelona, Spain
- Oct.-Nov. 2014 Visiting Professor
 Course on *Black hole astrophysics*.
 Double Doctoral Degree Program in Astrophysics DDAp (KIT - UNSAM)
 Karlsruhe Institute of Technology - Campus North, Karlsruhe, Germany.

- July 2016 Visiting Professor
 Course on *Scientific philosophy*.
 Double Doctoral Degree Program in Astrophysics DDAp (KIT - UNSAM)
 Departamento de Física, Universidad Nacional de San Martín (UNSAM).
- October 2017 Visiting Professor
 Courses on 1. *Scientific Philosophy* and 2. *Particle acceleration in astrophysics*.
 Double Doctoral Degree Program in Astrophysics DDAp (KIT - UNSAM)
 Karlsruhe Institute of Technology - Campus North, Karlsruhe, Germany.
- January-February 2018 Visiting Professor
 Course on *Scientific Philosophy*.
 Institute of Cosmos Science (ICCUB), University of Barcelona, Catalonia, Spain
- June 2019 Visiting Professor
 Course on *Scientific philosophy*.
 Curso de postgrado
 Departamento de Física, Facultad de Ciencias Exactas, Universidad Nacional de Buenos Aires (UBA).
- July 2019 Visiting Scientist
 Joint research on Materialism.
 Departamento de Lógica, Historia y Filosofía de la Ciencia, Facultad de Filosofía, Universidad de Sevilla, España.
- October- November 2019 CAPES Research Fellow
 Research on cosmological black holes.
 Department of Physics, Universidade do Estado de Rio de Janeiro (UERJ), Rio de Janeiro, Brazil.
 Coordenação de Aperfeiçoamento de Pessoal de Nivel Superior (CAPES).
- 2010-presente Profesor Titular Ordinario de *Introducción a la Astrofísica Relativista*
 Facultad de Ciencias Astronómicas y Geofísicas (UNLP)
- 2018-presente Director del Intituto Argentino de Radioastronomía (IAR)
 CONICET - CICPBA, Argentina

Temas de investigación

1991-presente Astrofísica relativista, astrofísica de altas energías, radioastronomía. Dentro de estas áreas se incluyen tanto estudios observacionales como teóricos de: núcleos galácticos activos, remanentes de supernova, fuentes de rayos gamma no-identificadas, pulsares, blazares, microcuasares, gamma-ray bursts, rayos cósmicos, procesos no-térmicos en estrellas tempranas, cascadas electromagnéticas, física de la acreción a diferentes escalas, objetos estelares jóvenes, agujeros negros, lensing gravitacional, galaxias starbursts, agujeros de gusano, fuentes de neutrinos, binarias de rayos X, estructuras a gran escala en el medio interestelar, clusters de galaxias.

Además se han desarrollado líneas de investigación en filosofía de la ciencia, ética y metafísica (ontología).

Participación en proyectos subsidiados

- 1994-1996 Radioastronomía en ondas centimétricas
Director: Marcelo Arnal
Universidad Nacional de La Plata
- 1996-1997 Rayos cósmicos ultra energéticos detectables desde el hemisferio sur
Director: I.N. Azcárate
Agencia Nacional de Promoción Científica y Tecnológica
- 1997-1999 Morfología del Medio Interestelar
Director: M. Arnal
Agencia Nacional de Promoción Científica y Tecnológica
- 1999-2004 Astrofísica de núcleos activos y objetos energéticos galácticos
Director: I.N. Azcárate
CONICET
- 1999-2001 GAC. Gravitación, Astrofísica y Cosmología
Director: H. Vucetich
Facultad de Ciencias Astronómicas y Geofísicas de la UNLP
- 2004-2008 Interacción de vientos estelares con el medio interestelar
Director: C.E. Cappa
Facultad de Ciencias Astronómicas y Geofísicas de la UNLP
- 2008-2010 Estrellas de gran masa, los vientos estelares, y su interacción con el medio interestelar
Director: C.E. Cappa
Facultad de Ciencias Astronómicas y Geofísicas de la UNLP
- 2010-2014 Estrellas de gran masa, los vientos estelares, y su interacción con el medio interestelar
Director: C.E. Cappa

- Facultad de Ciencias Astronómicas y Geofísicas de la UNLP
- 2007-2010 Grant AYA2007-68034-C03-01
 Estudio observacional y teórico de fuentes galácticas de alta energía desde radio hasta rayos gamma muy energéticos
 Director: J.M. Paredes
 Ministerio de Educación y Ciencia de España
- 2008-2009 Grant from Le Conseil Scientifique du GdR PCHE
 La connexion gamma / RCUHE / neutrino - Modèles hadroniques du emission de Noyaux Actifs
 Groupement de Recherche Phenomènes Cosmiques de Haute Energie
 Director: Andreas Zech
 LUTh, Observatoire de Paris (Meudon)
- 2009-2011 Estudios observacionales y teóricos de objetos estelares extremos
 PICT-2007-00848 BID 1728/OC-AR
 Director: Paula Benaglia
 Agencia Nacional de Promoción Científica y Tecnológica
- 2010-2012 Excellence fund FQM-5418
 Fuentes galácticas de alta energía
 Director: J. Martí
 Junta de Andalucía, Spain
- 2010-2013 Grant AYA2010-21782-C03-01
 Estudio observacional y teórico de fuentes galácticas de alta energía desde radio hasta rayos gamma muy energéticos
 Director: J.M. Paredes
 Ministerio de Educación y Ciencia de España
- 2012-2014 Estudios observacionales y teóricos de objetos estelares extremos
 Director: P. Benaglia
 Facultad de Ciencias Astronómicas y Geofísicas de la UNLP
- 2013-2016 Estudios observacionales y teóricos de objetos estelares relativistas
 PICT-2012-00878- Péstamo BID
 Director: Paula Benaglia
 Agencia Nacional de Promoción Científica y Tecnológica
- 2014-2017 Grant AYA2013-47447-C3-1-P
 Eyecciones astrofísicas en procesos de alta energía no térmicos. Teoría y observaciones multi-longitud de onda
 Director: J.M. Paredes
 Ministerio de Economía y Competitividad de España
- 2017-2020 Grant AYA2016-76012-C3-1-P
 Eyecciones astrofísicas en procesos de alta energía no térmicos. Teoría y observaciones multi-longitud de onda
 Director: J.M. Paredes

Ministerio de Economía y Competitividad de España
2017-2022 Estudios observacionales y teóricos de remanentes de supernova y objetos compactos asociados
PICT-2017-2865
Director: Jorge Combi
Agencia Nacional de Promoción Científica y Tecnológica

Dirección de proyectos subsidiados

- 1999-2000 Investigaciones observacionales sobre la variabilidad de la emisión de Núcleos Activos Extragalácticos (A-13622/1-86)
Director: G.E. Romero
Fundación Antorchas
- 1999-2001 Estudios observacionales de variabilidad rápida de Núcleos Activos Extragalácticos (PICT 03-04881)
Director: G.E. Romero
Agencia Nacional de Promoción Científica y Tecnológica
- 2001-2004 Investigaciones observacionales y teóricas en astrofísica relativista de blazares y otros objetos compactos (Proyecto 13887-13)
Director: G.E. Romero
Fundación Antorchas
- 2002-2004 Astrofísica de núcleos activos y objetos energéticos galácticos (PIP 0430/98)
Director: G.E. Romero (en reemplazo de Azcárate)
CONICET
- 2002-2005 Astrophysics of galactic gamma-ray sources (Proyecto A01U01)
Director: G.E. Romero
Proyecto de cooperación internacional ECOS-SETCIP (Francia - Argentina)
- 2004-2005 Astrofísica de fuentes de rayos gamma y microcuasares (Proyecto No. 4248-40)
Director: G.E. Romero
Proyecto de cooperación internacional con el grupo del Prof. Josep María Paredes, de la Univerisitat de Barcelona
Fundación Antorchas
- 2004-2009 Investigaciones observacionales y teóricas en astrofísica de altas energías (PICT 03-13291)
Director: G.E. Romero
Agencia Nacional de Promoción Científica y Tecnológica
- 2005-2008 Estudios observacionales y teóricos en astrofísica relativista (PIP 5375)
Director: G.E. Romero
CONICET
- 2010-2014 Estudios observacionales y teóricos en astrofísica relativista (PIP 0078)

Director: G.E. Romero
CONICET
2014-2019 Estudios observacionales y teóricos en astrofísica relativista
(PIP11220130100338CO/14)
Director: G.E. Romero
CONICET

Subsidios recibidos

- Diciembre 1992 Full grant otorgada por el Instituto Astrofísico de Canarias
Motivo: Participación en la IV Canary Island Winter School, España
Monto: US\$ 1400
- Junio 1993 Full grant otorgada por el Vatican Observatory
Motivo: Participación en la IV Vatican School on Observational Astronomy and
Astrophysics, Castel Gandolfo
Monto: US\$ 2000
- Febrero 1996 Subsidio de viaje otorgado por la Universidad Nacional de La Plata
Motivo: Participación en la Blazar Variability Conference, Florida International
University, USA
Monto: US\$750
- 1999-2000 Subsidio en apoyo a proyectos de investigación científica
Fundación Antorchas
Monto: US\$6800
- 1999-2001 Subsidio en apoyo a proyectos de investigación científica (PICT 03-04881)
Agencia Nacional de Promoción Científica y Tecnológica
Monto: US\$ 14500
- Septiembre 1999 Travel grant otorgada por The University of New Hampshire
Motivo: Participación en The Fifth Compton Symposium, Portsmouth
Monto: US\$ 586
- Noviembre 1999 Travel grant otorgada por el International Center for Theoretical Physics
Motivo: Participación en la Ibero-American School on Astrobiology: Origins from
the Big-Bang to Civilization, Trieste
Monto: US\$ 300 + living expenses
- Septiembre 2000 Travel grant otorgada por la European Space Agency
Motivo: Participación en el IV INTEGRAL Workshop, Alicante
Monto: US\$ 700
- Octubre 2000 Travel grant otorgada por el CONICyT (Mexico) a través del Instituto Nacional
de Astrofísica, Óptica y Electrónica (INAOE)
Motivo: Participación en el Workshop on the Nature of the Unidentified Galactic
High-Energy Gamma-Ray Sources, Tonantzintla

- Monto: US\$ 600 + living expenses
- 2001-2004 Subsidio de inicio de carrera
Fundación Antorchas
Monto: US\$50200
- 2003-2004 Subsidio PICT 0430/98
CONICET
Monto: ~ US\$1655
- 2004-2005 Subsidio de colaboración internacional (Astrofísica de fuentes de rayos gamma y microcuasares – Proyecto No. 4248-40)
Fundación Antorchas
Monto: US\$ 7000
- 2004-2009 Subsidio en apoyo a proyectos de investigación científica (PICT 03-13291)
Agencia Nacional de Promoción Científica y Tecnológica
Monto: US\$ 33000
- 2005-2008 Subsidio en apoyo a proyectos de investigación plurianuales (PIP 5375/04)
CONICET
Monto: US\$ 30000
- 2010-2014 Subsidio en apoyo a proyectos de investigación plurianuales (PIP 0078/10)
CONICET
Monto: US\$ 36000
- 2010 Subsidio en apoyo a reuniones científicas internacionales (RC 2010-133)
IAU Symposium 275 - Jets at all Scales
Agencia Nacional de Promoción Científica y Tecnológica
Monto: US\$ 10000
- 2010 Subsidio en apoyo a reuniones científicas internacionales (convocatoria 2010)
CONICET
IAU Symposium 275 - Jets at all Scales
Monto: US\$ 6000
- 2010 Subsidio en apoyo a reuniones científicas internacionales (convocatoria 2010)
IAU Symposium 275 - Jets at all Scales
Centro Latino Americano de Física (CLAF)
Monto: US\$ 1600
- 2014 Subsidio en apoyo a reuniones científicas internacionales (convocatoria 2013)
CONICET
GRACO II
Monto: US\$ 3000
- 2015 Subsidio en apoyo a reuniones científicas internacionales (convocatoria 2014)
CONICET
HEPRO V
Monto: US\$ 10000

- 2014-2018 Subsidio en apoyo a proyectos de investigación plurianuales (PIP 11220130100338CO/14)
 CONICET
 Monto: US\$ 36000
- 2017 Helmholtz International Fellowship Award
 Helmholtz Association, Germany
 Monto: US\$ 25000

Premios y distinciones

- 1998 Honorable Mention
 Gravity Research Awards
 The Gravity Research Foundation
 Otorgado por el artículo *Wormholes, gamma ray bursts, and the amount of negative mass in the universe* by D.F. Torres, G.E. Romero, L.A. Anchordoqui.
- 2003 Premio Bernardo Houssay a la Investigación Científica y Tecnológica
 Secretaria de Ciencia, Tecnología e Innovación Productiva, Argentina
 Categoría: Investigador Joven (Astronomía).
- 2003 Premio Enrique Gaviola en Astronomía
 Academia Nacional de Ciencias, Córdoba, Argentina.
- 2004 Top Scientific Contribution
 Physics and Advanced Technology Directorate
 Lawrence Livermore National Laboratory
 To the paper *High-energy gamma-rays from stellar associations* by D. F. Torres, E. Domingo-Santamaría, G. E. Romero, *Astrophys. J. Lett.* **601**, L75-L78, 2004
- 2005 Premio Giambiaggi otorgado a la Tesis Doctoral *Gamma-Ray Emission from Microquasars*, realizada por M.M. Marina Kaufman Bernadó y dirigida por G.E. Romero.
- 2008 Premio Carlos Varsavsky otorgado a la Tesis Doctoral *Radiación gamma en binarias con acreción*, realizada por Mariana Orellana y dirigida por G.E. Romero.
- 2009 Premio J.L. Sérsic al Investigador Consolidado en Astronomía
 Asociación Argentina de Astronomía.
- 2009 Premio Houssay a la Investigación Científica y Tecnológica 2009
 Ministerio de Ciencia, Tecnología e Innovación Productiva, Argentina
 Edición especial por el Bicentenario de la Nación, entregado el 17/08/2010 por la Presidente de la Nación.
- 2010 Premio a la Labor Científica
 Universidad Nacional de La Plata, Argentina
 Primera edición, entregado el 16/12/2010 por el Presidente de la Universidad Nacional de La Plata.
- 2011 Honorable Mention

- Gravity Research Awards
The Gravity Research Foundation
Otorgado por el artículo *Time and irreversibility in an accelerating universe* by G.E. Romero, and D. Pérez.
- 2012 Premio Carlos Varsavsky otorgado a la Tesis Doctoral *Modelos radiativos para jets en binarias de rayos X* (título original en inglés), realizada por Gabriela S. Vila y dirigida por G.E. Romero.
- 2017 Helmholtz International Fellowship Award
Helmholtz Association, Germany
Uno de los 10 investigadores de todo el mundo reconocidos cada año por la Asociación Helmholtz y recompensados con un premio de 20.000 euros.
- 2017 Springer Exceptional Reviewer in Philosophy
Springer Journals.
<http://www.springer.com/gp/page/recognize-review/philosophy/a-special-thanks-to-these-exceptional-reviewers/15289316>
- 2019 Associate Member
ICTP South American Institute for Fundamental Research.
<http://www.ictp-saifr.org/ictp-saifr-associate-members/>
- 2019 Top Cited Author Award
American Astronomical Society - IOP Publishing.
Author of one of the top 1% most-cited papers in astronomy and astrophysics published over the period of 2016–2018: *Fast radio bursts and their gamma-ray or radio afterglows as Kerr–Newman black hole binaries*, Tong Liu et al. 2016 ApJ 826, 82.
- 2019 Graduado Ilustre de la UNLP
Universidad Nacional de La Plata, Argentina
Título honorario otorgado por el Presidente de la UNLP.

Gestión Académica e Institucional

- 2000-presente Director Grupo de Astrofísica Relativista y Radioastronomía (GARRA)
Ver <http://www.iar.unlp.edu.ar/garra/>
- Sept. 2005-2008 Presidente de la Asociación Argentina de Astronomía.
- 2006-2008 Miembro de la Comisión Asesora en Astronomía del CONICET, Argentina
- 2007-2009 Miembro del Consejo Directivo del Instituto Argentino de Radioastronomía (IAR)
- 2013-2018 Miembro del Consejo Directivo del Instituto Argentino de Radioastronomía (IAR)
- 2009-2013 Vice-Director del Instituto Argentino de Radioastronomía (IAR)
- 2009-2013 Miembro de la Comisión de Infraestructura, CCT-La Plata, CONICET, Argentina
- 2010-2013 Miembro del Consejo Directivo de la Facultad de Ciencias Astronómicas y Geofísicas (FCAyG) de la Universidad Nacional de la Plata
- 2010-2013 Miembro del Steering Committee de la Colaboración CTA Argentina

- 2010-2013 Miembro de la Comisión de Grados Académicos, Facultad de Ciencias Astronómicas y Geofísicas (FCAyG) de la Universidad Nacional de la Plata
- 2011-2012 Member of Speakers and Publications Office (SAPO), The Cherenkov Telescope Array (CTA)
- 2012-2014 Miembro de la Comisión Asesora en Astronomía del CONICET, Argentina
- 2014- Miembro del Steering Committee de la Colaboración QUBIC Argentina
- 2018-2022 Director del Instituto Argentino de Radioastronomía (IAR)
- 2018-2022 Miembro del Consejo Directivo del Centro Científico Tecnológico (CCT) La Plata del CONICET
- 2019- Miembro del Consejo de Supervisión del Proyecto LLAMA, Argentina

Categorización en el Programa de Incentivos

Categoría I

Responsabilidad por Profesores Invitados e Investigadores Invitados

- 2008 Prof. Felix A. Aharonian (MPIfK, Heidelberg), Visiting Professor, FCAyG, University of La Plata, February 2008 (1 month), res. 254/07
- 2008 Prof. Charles D. Dermer (Naval Research Lab, USA), Visiting Professor, FCAyG, University of La Plata, February 2008 (1 month), res. 254/07
- 2008 Prof. Josep María Paredes (University of Barcelona), Visiting Professor, FCAyG, University of La Plata, February-March 2008 (2 months), res. 254/07
- 2010 Prof. Santiago E. Perez-Bergliaffa (University of Rio de Janeiro), Visiting Professor, FCAyG, University of La Plata, February-March 2010 (1 month), res. 24/10
- 2011 Prof. Orlando L.G. Peres (Sao Paulo State University at Campinas -UNICAMP-), Visiting Professor, University of La Plata, November-December 2011 (1 month), res. Presidencia/Relaciones Internacionales
- 2012 Prof. Sylvain Chaty (University of Paris VII), Visiting Professor, FCAyG, University of La Plata, May-June 2012 (1 month), res. 146/12
- 2013 Prof. Valenti Bosch-Ramon (Universitat de Barcelona), Visiting Professor, FCAyG, University of La Plata, May-June 2013 (1 month), res. 123/13
- 2016 Prof. Manel Perucho (Universidad de Valencia), Visiting Professor, FCAyG, University of La Plata, June 2016 (1 month), res. 341/15
- 2002-presente Visiting Scientists, IAR: Prof. Peter Biermann (several opportunities), Prof. Josep M. Paredes (several opportunities), Prof. Sylvain Chaty, Dr. Valentí Bosch-Ramon (several opportunities), etc.

Dirección de tesis de Licenciatura

- 2003 Sra. Laura Chajet
Director de la práctica de la especialidad (FCAGLP/UNLP) (co-director: S.A. Cellone)
Tema: *Sistema binario de agujeros negros en el quasar 3C 273.*
Aprobada el 4/04/03. Calificación: 10 (diez)
- 2003 Sr. Sebastián Nuza
Director de su tesis de licenciatura en Física (UBA)
Tema: *Modelos binarios de agujeros negros supermasivos para el blazar AO 0235+164*
Aprobada el 17/07/2003. Calificación: 10 (diez)
- 2004 Srta. Mariana Orellana
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP) y director de beca Antorchas (2002-2004)
Tema: *Emisión gamma en estrellas de neutrones con acreción*
Aprobada el 18/03/04. Calificación: 10 (diez)
- 2005 Srta. Anabella T. Araudo
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP) (co-director: S.A. Cellone)
Tema: *Microvariabilidad extrema de blazares*
Aprobada el 29/12/05. Calificación: 10 (diez)
- 2007 Srta. Gabriela S. Vila
Director de su tesis de licenciatura en Física (FCE/UBA)
Tema: *Interacciones hadrónicas en el entorno de agujeros negros*
Aprobada el 15/03/07. Calificación: 10 (diez)
- 2009 Srta. Florencia L. Vieyro
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Co-Director: Lic. Gabriela S. Vila
Tema: *Procesos no-térmicos en la corona de agujeros negros acretantes*
Aprobada el 23/03/09. Calificación: 10 (diez)
- 2009 Srta. María Victoria del Valle
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Co-Director: Mariana Orellana
Tema: *Absorción de rayos gamma en Cygnus X-1*
Aprobada el 25/03/09. Calificación: 10 (diez)
- 2010 Srta. Cintia S. Peri
Co-Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Director: Paula Benaglia

- Tema: *Radiación electromagnética de una estrella runaway*
Aprobada el 29/03/10. Calificación: 10 (diez)
- 2010 Srta. Daniela Pérez
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP)
Tema: *Causalidad global en cosmología*
Aprobada el 29/06/10. Calificación: 10 (diez)
- 2010 Srta. Ana Virginia Penacchioni
Director de su tesis de licenciatura en Física (FCE/UNLP)
Tema: *Producción de neutrinos en collapsars*
Aprobada el 01/07/10. Calificación: 10 (diez)
- 2011 Sr. Federico García
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Co-Director:
Deborah Aguilera
Tema: *Atenuación de campos magnéticos en estrellas de neutrones acretantes*
Aprobada el 28/03/11. Calificación: 10 (diez)
- 2011 Srta. Camila Anahi Correa
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP)
Tema: *Termodinámica de agujeros negros regulares*
Aprobada el 02/11/11. Calificación: 10 (diez)
- 2012 Srta. Alejandra E. Suárez
Co-Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Director:
M. Clementina Medina
Tema: *Caracterización de sitios para astronomía gamma de altas energías*
Aprobada el 29/11/12. Calificación: 10 (diez)
- 2014 Sr. Santiago del Palacio
Co-Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Director:
Valenti Bosch Ramon
Tema: *Interacciones de partículas relativistas en vientos estelares*
Aprobada el 20/03/14. Calificación: 10 (diez)
- 2015 Sr. Federico López Armengol
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP)
Tema: *Evolución cosmológica de agujeros negros y su relación con la segunda ley de la termodinámica*
Aprobada el 25/02/15. Calificación: 10 (diez)
- 2015 Srta. Ana Laura Müller
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Co-Director:
M. V. del Valle
Tema: *Radiación no-térmica por colisiones de nubes de alta velocidad*
Aprobada 23/03/2016. Calificación: 10 (diez)
- 2017 Sr. Luciano Combi
Director de su tesis de licenciatura en Física (FCE/UNLP).

- Tema: *Equivalencia entre la relatividad general y la gravedad de torsión*
Aprobada 13/12/2016. Calificación: 10 (diez)
- 2017 Sr. Eduardo Gutierrez
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Co-Director:
F.L. Vieyro
Tema: *Cosmología y agujero negros primordiales*
Aprobada 14/03/2017. Calificación: 10 (diez)
- 2017 Sr. Gastón Escobar
Co-Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Director:
G.S. Vila
Tema: *Radiación de altas energías en fuentes ultraluminosas de rayos X*
Aprobada 30/03/2017. Calificación: 10 (diez)
- 2018 Sr. Pablo Sotomayor Checa
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Co-director:
L. Pellizza
Tema: *Modelo de micorcuásar de Población III*
Aprobada 16/03/2018. Calificación: 10 (diez)
- 2019 Sr. Joaquín Pelle
Director de su tesis de licenciatura en Astronomía (FCAGLP/UNLP). Co-director:
L. Pellizza
Tema: *Inyección leptónica sobre agujeros negros acretantes*
Aprobada 21/03/2019. Calificación: 10 (diez)

Dirección de tesistas de Maestrado

- 2009 Srta. Chloé Guennou
Director de su tesis de Maestrado en Física (Université de Paris XI, France)
Tema: *High-energy particle interactions in the inner jets of FR I radio galaxies*
Aprobada, October 2009. Calificación: 10 (diez)
- 2010 Sr. Romain Thomas
Director de su tesis de Maestrado en Física (Université de Paris XI, France)
Tema: *Gravitational entropy in Kerr black holes*
September 2010. Calificación: 10 (diez).
- 2014 Srta. Pauline Zarrouk
Director de su tesis de Maestrado en Física (Université de Paris XI, France).
Co-director: M. V. del Valle
Tema: *Cosmic ray propagation inside turbulent molecular clouds*
October 2014. Calificación: 10 (diez).
- 2016 Srta. Natalia Zambrana Prado
Director de su tesis de Maestrado en Física (Université de Paris XI, France).

Tema: *A study of the interaction of a jet with clouds of the broad line region in a blazar*

October 2016. Calificación: 10 (diez).

Dirección de tesis de Doctorado

- 2002 Lic. Ernesto Eiroa
Director de Tesis Doctoral (UBA)(co-director: D.F. Torres)
Tema: *Investigaciones en lensing gravitacional con objetos relativistas*
Aprobada el 29/05/02. Calificación: 10 (diez)
- 2004 M.Sc. M.M. Marina Kaufman Bernadó
Director de Tesis Doctoral (UBA)
Tema: *Gamma-Ray Emission from Microquasars*
Aprobada el 15/12/04. Calificación: Sobresaliente, con Mención Especial. Esta tesis recibió el Premio Giambiaggi 2005 a la mejor tesis doctoral en Física otorgado por la Asociación Física Argentina
- 2006 Lic. Ileana Andruchow
Director de Tesis Doctoral (FCAGLP/UNLP) (co-director: S.A. Cellone)
Tema: *Estudios fotopolarimétricos de microvariabilidad en blazares*
Aprobada el 25/09/06. Calificación: Sobresaliente, 10 (diez)
- 2007 Lic. Mariana Orellana
Director de Tesis Doctoral (FCAGLP/UNLP)
Tema: *Radiación gamma en binarias con acreción*
Aprobada el 06/12/07. Calificación: Sobresaliente, 10 (diez). Esta tesis recibió el Premio Carlos Varsavsky 2008 a la mejor tesis doctoral en Astronomía y Astrofísica otorgado por la Asociación Argentina de Astronomía
- 2009 Lic. Matías Reynoso
Director de Tesis Doctoral junto a O. Sampayo (Departamento de Física, Universidad Nacional de Mar del Plata)
Tema: *Astrofísica de fuentes de neutrinos.*
Aprobada el 27/03/09. Calificación: Sobresaliente, 10 (diez)
- 2010 Lic. Anabella T. Araudo
Director de Tesis Doctoral (FCAGLP/UNLP)
Tema: *Estudios teóricos en astrofísica de fuentes de rayos gamma galácticas.*
Aprobada el 20/09/2010. Calificación: Sobresaliente, 10 (diez)
- 2012 Lic. Gabriela S. Vila
Director de Tesis Doctoral (FCE/UBA)
Tema: *Radiative models in jets of X-ray binaries*
Aprobada el 28/03/2012. Calificación: Sobresaliente, 10 (diez), con mención especial del jurado. Esta tesis recibió el Premio Carlos Varsavsky 2012 a la mejor tesis doctoral en Astronomía y Astrofísica otorgado por la Asociación Argentina de Astronomía

- 2013 Lic. María Victoria del Valle
 Director de Tesis Doctoral (FCAGLP/UNLP)
 Tema: *Procesos de altas energías en estrellas y sistemas estelares*
 Aprobada el 11/11/2013. Calificación: Sobresaliente, 10 (diez)
- 2013 Lic. Florencia L. Vieyro
 Director de Tesis Doctoral (FCAGLP/UNLP)
 Tema: *Efectos de partículas relativistas en el entorno de agujeros negros*
 Aprobada el 12/11/2013. Calificación: Sobresaliente, 10 (diez)
- 2016 Lic. Daniela Pérez
 Director de Tesis Doctoral (FCAGLP/UNLP)
 Tema: *Agujeros negros astrofísicos*
 Aprobada el 10/03/2016. Calificación: Sobresaliente, 10 (diez)
- 2016 Lic. Florencia Teppa Pannia
 Co-Director de Tesis Doctoral (FCAGLP/UNLP). Director: Santiago E. Perez Bergliaffa
 Tema: *Aplicaciones de soluciones no homogéneas de las ecuaciones de Einstein a problemas cosmológicos*
 Aprobada el 17/03/2016. Calificación: Sobresaliente, 10 (diez)
- 2018 Lic. Santiago del Palacio
 Co-Director de Tesis Doctoral (FCAGLP/UNLP)
 Tema: *Radiación no térmica asociada a estrellas de gran masa*
 Aprobada el 20/11/2018, Calificación: Sobresaliente, 10 (diez)
- Lic. Federico López Armengol
 Director de Tesis Doctoral (FCAGLP/UNLP)
 Tema: *Investigaciones sobre agujeros negros astrofísicos*
 Aprobada el 28/11/2019, Calificación: Sobresaliente, 10 (diez)
- In progress Lic. Ana Laura Müller
 Director de su Thesis Doctoral en Astronomía (UNSAM/KIT). Co-Director: J. Blumer
 Topic: *Generación de rayos cósmicos en ambientes de alta metalicidad.*
- In progress Lic. Eduardo Gutierrez
 Director de Tesis Doctoral (FCAGLP/UNLP)
 Tema: *Investigaciones sobre procesos físicos en la vecindad de agujeros negros acretantes*
- In progress Lic. Luciano Combi
 Director de Tesis Doctoral (FCE/UNLP)
 Tema: *Investigaciones sobre efectos locales de procesos cosmológicos.*
- In progress Lic. Pablo Sotomayor Checa
 Director de tesis de Doctoral en Astronomía (FCAGLP/UNLP). Co-director: L. Pellizza
 Tema: *Micorquasars de Población III*

Dirección de Becarios

- 2000-2002 Dr. Diego F. Torres
Director de beca postdoctoral tipo A del CONICET
Tema: *Astrofísica de objetos compactos y procesos energéticos*
- 2003-2004 M.Sc. M.M. Marina Kaufman Bernadó
Director de beca CONICET (2002-2004) y director de beca Antorchas
Tema: *Gamma-Ray Emission from Microquasars*
- 2002-2006 Lic. Ileana Andruchow
Director de beca CONICET
Tema: *Estudios fotopolarimétricos de microvariabilidad en blazares*
- 2002-2004 Lic. Mariana Orellana
Director de beca Antorchas
Tema: *Fuentes de rayos gamma*
- 2004-2008 Lic. Mariana Orellana
Director de beca interna de postgrado CONICET
Tema: *Fuentes binarias de rayos gamma*
- 2008-2009 Dra. Mariana Orellana
Director de beca postdoctoral CONICET
Tema: *Fuentes de rayos gamma y cascadas electromagnéticas*
- Verano de 2005 Srta. Anabella T. Araudo
Director de beca de verano de la Asociación Argentina de Astronomía
Tema: *Microvariabilidad extrema de blazares*
- 2006-2009 Lic. Anabella T. Araudo
Director de beca interna postgrado tipo I CONICET
Tema: *Estudios teóricos en astrofísica de fuentes de rayos gamma galácticas*
- 2009-2011 Lic. Anabella T. Araudo
Director de beca interna postgrado tipo II CONICET
Tema: *Estudios teóricos en astrofísica de fuentes de rayos gamma galácticas*
- 2006-2007 Dr. Leonardo Pellizza
Director de beca de reingreso al país, CONICET
Tema: *Astrofísica de altas energías*
- 2006-2008 Dra. Ileana Andruchow
Director de beca postdoctoral CONICET
Tema: *Estudios fotopolarimétricos de microvariabilidad en blazares*
- 2009-2011 Dr. Matías Reynoso
Director de beca postdoctoral CONICET
Tema: *Astrofísica de fuentes de neutrinos*
- Verano de 2007 Srta. Gabriela S. Vila
Director de beca de verano de la Asociación Argentina de Astronomía
Tema: *Radiación sincrotrónica de protones relativistas en jets de microquasares*

- 2007-2010 Lic. Gabriela S. Vila
 Director de beca interna postgrado tipo I de CONICET
 Tema: *Estudios teóricos de procesos radiativos en fuentes compactas de rayos gamma*
- 2010-2012 Lic. Gabriela S. Vila
 Director de beca interna postgrado tipo II CONICET
 Tema: *Estudios teóricos de procesos radiativos en fuentes compactas de rayos gamma*
- 2009-2012 Lic. Florencia Vieyro
 Director de beca interna postgrado tipo I de CONICET
 Tema: *Interacciones de partículas relativistas en el entorno de agujeros negros acretantes*
- 2009 Dra. M. Clementina Medina
 Director de beca postdoctoral Milstein MinCyT
 Tema: *Procesos hadrónicos en AGNs*
- 2009 Sr. Federico García
 Director de beca de estudio de la Comisión de Investigaciones Científicas (CIC) de la Provincia de Buenos Aires
 Tema: *Atenuación de campos magnéticos en estrellas de neutrones acretantes*
- 2010 Dra. M. Clementina Medina
 Director de beca postdoctoral Houssay, CONICET
 Tema: *Procesos hadrónicos en AGNs*
- Verano de 2011 Sr. Federico García
 Co-Director de beca de verano de la Asociación Argentina de Astronomía
 Tema: *Decaimiento del campo magnético en estrellas de neutrones con acreción*
- 2011-2014 Lic. Daniela Pérez
 Director de beca interna postgrado tipo I de CONICET
 Tema: *Astrofísica de agujeros negros*
- 2011-2014 Lic. Florencia Teppa Pannia
 Co-Director de beca interna postgrado tipo I de CONICET
 Tema: *Cosmología inhomogénea*
- 2011 Dra. M. Clementina Medina
 Director de beca postdoctoral Milstein MinCyT
 Tema: *Procesos leptohadrónicos en AGNs*
- 2011-2013 Dra. Anabella T. Araudo
 Director de beca postdoctoral CONICET
 Tema: *Procesos radiativos en fuentes de altas energías*
- 2012-2013 Dra. Gabriela S. Vila
 Director de beca postdoctoral CONICET
 Tema: *Estudios teóricos de procesos radiativos en fuentes compactas de rayos gamma*

- 2012-2014 Lic. Florencia Vieyro
 Director de beca interna postgrado tipo II de CONICET
 Tema: *Interacciones de partículas relativistas en el entorno de agujeros negros acretantes*
- 2013-2014 Sr. Federico López Armengol
 Director de Beca de Entrenamiento de la CIC
 Tema: *Agujeros negros y la Segunda Ley de la Termodinámica*
- 2014-2016 Lic. Daniela Pérez
 Director de beca interna postgrado tipo II de CONICET
 Tema: *Astrofísica de agujeros negros*
- 2014-2016 Lic. Florencia Teppa Pannia
 Co-Director de beca interna postgrado tipo II de CONICET
 Tema: *Cosmología inhomogénea*
- 2014-2016 Dra. María Victoria del Valle
 Director de beca postdoctoral CONICET
 Tema: *Estudios radiativos e hidrodinámicos de la interacción de estrellas masivas con el medio interestelar*
- 2014-2016 Dra. Florencia L. Vieyro
 Director de beca postdoctoral CONICET
 Tema: *Efectos de partículas relativistas en el entorno de agujeros negros*
- 2014-2016 Dra. Carolina Pepe
 Director de beca postdoctoral CONICET
 Tema: *Investigación sobre los efectos del impacto de jets ultrarelativistas en el medio interestelar*
- 2014-2017 Lic. Santiago del Palacio
 Co-Director de beca interna postgrado tipo I de CONICET
 Tema: *Fuentes de rayos gamma y estrellas de gran masa*
- 2015-2020 Lic. Federico López Armengol
 Director de beca interna postgrado de CONICET
 Tema: *Investigaciones sobre agujeros negros en contextos astrofísicos y cosmológicos*
- 2016-2018 Dra. Daniela Pérez
 Director de beca postdoctoral CONICET
 Tema: *Astrofísica de agujeros negros*
- 2016-2020 Lic. Ana Laura Müller
 Director de beca doctoral CONICET. Co-Director: Markus Roth
 Topic: *Generación de rayos cósmicos en ambientes de alta metalicidad*
- 2016-2020 Lic. Eduardo Gutierrez
 Director de beca doctoral CONICET.
 Topic: *Investigaciones sobre procesos físicos en la vecindad de agujeros negros acretantes*

- 2016-2020 Lic. Luciano Combi
 Director de beca doctoral CONICET.
 Topic: *Investigaciones sobre efectos locales de procesos cosmológicos.*
- 2017-2021 Lic. Pablo Sotomayor Checa
 Director de beca doctoral CONICET. Co-Director: Leonardo Pellizza
 Topic: *Microquasars de población III.*

Dirección de Investigadores de Carrera

- 2007-2010 Dr. Leonardo Pellizza
 Investigador Asistente, CONICET
- 2010-2013 Dra. Mariana Orellana
 Investigador Asistente, CONICET
- 2010-2015 Dr. Matías Reynoso
 Investigador Asistente, CONICET
- 2012-2015 Dra. M. Clementina Medina
 Investigador Asistente, CONICET
- 2013-2016 Dr. Matías J. Tueros
 Investigador Asistente, CONICET
- 2013-2017 Dra. Gabriela S. Vila
 Investigador Asistente, CONICET
- 2017-presente Dra. Florencia L. Vieyro
 Investigador Asistente, CONICET
- 2019-presente Dra. Daniela Pérez
 Investigador Asistente, CONICET

Actuación como Profesor Consejero

- Srta. Anabella T. Araudo (FCAG, UNLP)
- Srta. María Victoria del Valle (FCAG, UNLP)
- Srta. Florencia Anabella Teppa Pannia (FCAG, UNLP)
- Sr. Federico García (FCAG, UNLP)
- Srta. Alejandra Suárez (FCAG, UNLP)
- Srta. Ana Penacchioni (FCE, UNLP)
- Srta. Camila Anahí Correa (FCAG, UNLP)
- Sr. Federico López Armengol (FCAG, UNLP)
- Sr. Santiago del Palacio (FCAG, UNLP)
- Srta. Paula Kornecki (FCAG, UNLP)
- Srta. Ana Laura Müller (FCAG, UNLP)

Sr. Juan Corroccoli (FCAG, UNLP)
Sr. Gastón Escobar (FCAG, UNLP)
Sr. Giulio Mancuso (FCAG, UNLP)
Sr. Eduardo Mario Gutiérrez (FCAG, UNLP)
Sr. Pablo Sotomayor Checa (FCAG, UNLP)
Sr. Joaquin Pelle (FCAG, UNLP)
Srta. Camila Galante (FCAG, UNLP)
Sr. Lautaro Carvalho (FCAG, UNLP)
Sr. Enzo Saaverdra (FCAG, UNLP)
Srta. María Cristina Gallardo (FCAG, UNLP)
Srta. Estafanía Marcel (FCAG, UNLP)
Srta. Florencia Rizzo (FCAG, UNLP)
Srta. Yésica Gaggino (FCAG, UNLP)

Actuación en procesos evaluatorios y de referato

Actuación como referee

- Referee de revista nacional: *Revista Ciencia Hoy*
Asociación Ciencia Hoy, Argentina
Temas: Cosmología
- Referee de revista internacional: *Astronomy and Astrophysics*
Springer-Verlag, Heidelberg-New York (now EDP Sciences)
Temas: Unidentified gamma-ray sources, pulsars, blazars, optical microvariability, supernova remnants, cosmic rays, microquasars, gamma-ray bursts (no less than 50 reviews)
- Referee de revista internacional: *Astronomy and Astrophysics Letters*
Springer-Verlag, Heidelberg-New York (now EDP Sciences)
Temas: Supernova remnants, TeV gamma-ray sources, microquasars, SFXRT, physical processes (no less than 15 reviews)
- Referee de revista internacional: *The Astrophysical Journal*
Chicago University Press, Chicago
Temas: Gamma-ray bursts, AGNs, binary black holes, jet formation (no less than 20 reviews)
- Referee de revista internacional: *The Astrophysical Journal Letters*
Chicago University Press, Chicago

Temas: AGN microvariability, unidentified gamma-ray sources, microquasars, supernova remnants, TeV sources, X-ray binaries

- Referee de revista internacional: *Monthly Notices of the Royal Astronomical Society*

Blackwell Science, Oxford

Temas: AGN microvariability, electromagnetic cascades, TeV sources, pulsars, microquasars, positron excess, FRBs, galactic winds (no less than 30 reviews)

- Referee de revista internacional: *Astrophysics and Space Science*

Kluwer Academic Publishers, Dordrecht

Temas: TeV gamma-ray sources, microquasars, unidentified gamma-ray sources, WR binaries, molecular clouds, starbursts

- Referee de revista internacional: *Chinese Journal of Astronomy and Astrophysics*
Beijing University, Beijing

Temas: Microquasars

- Referee de revista internacional: *International Journal of Modern Physics D*

World Scientific, Singapur

Temas: Gamma-ray bursts, MHD, jet physics, gamma-ray instrumentation

- Referee de revista internacional: *Physical Review Letters*

IOP, Institute of Physics and IOP Publishing Limited

Temas: neutrinos

- Referee de revista nacional: *Boletín de la Asociación Argentina de Astronomía*

Temas: Remanentes de supernova, rayos cósmicos, gamma-ray bursts, fuentes de rayos gamma, discos de acreción, objetos estelares jóvenes, blazares

- Referee de revista nacional: *Invenio*

Temas: Filosofía de la Ciencia

- Referee de revista internacional: *Publications of the Astronomical Society of Japan (PASJ)*

Astronomical Society of Japan, Tokyo

Temas: Blazars

- Referee de revista internacional: *The Open Astronomy and Astrophysics Journal (TOAAJ)*

Tema: Rayos cósmicos

- Referee Cambridge University Press, IAU Symposia Series

IAU Symposium No. 275: "Jets at all Scales"

Tema: Jets

- Referee de revista internacional: *The Journal of Astronomy and Astrophysics*

Tema: Blazares

- Referee de revista internacional: *Astroparticle Physics*

- Elsevier, Holland
Temas: Neutrinos, microquasars, AGNs, Cherenkov telescopes
- Referee de revista internacional: *Science and Education*
Springer, Berlin
Temas: Dimensional analysis, Theory change, relativity
- Referee de revista internacional: *Central European Journal of Physics*
Springer, Berlin
Temas: Wormholes
- Referee de revista internacional: *Philosophia*
Temas: Cosmological Argument
- Referee de revista internacional: *Foundations of Science*
Springer, Berlin
Temas: Zeno's paradoxes, quantum mechanics, axiomatic method, time travel
- Referee de revista internacional: *ASTRA Proceedings - An Open Access Journal for Refereed Proceedings in Extraterrestrial Research*
Copernicus Publications, Goettingen
Temas: Colliding wind binaries
- Referee de revista internacional: *Philosophy of Science*
The University of Chicago Press, Chicago
Temas: Supertasks, classical stability, rigidity in mechanics
- Referee de revista internacional: *European Physical Journal C*
Springer, Berlin
Temas: Radio galaxies
- Referee de revista internacional: *Classical and Quantum Gravity*
IOP Science, Bristol, UK
Temas: Electromagnetic jets, black holes
- Referee de revista internacional: *Synthese*
Springer, Berlin
Temas: Supertasks
- Referee de revista internacional: *Metatheoria*
UTF, Buenos Aires
Temas: Epistemology
- Referee de revista internacional: *Astrophysics and Space Science*
Springer, Berlin
Temas: Blazars
- Referee for international journal: *Advances in High Energy Physics*
Hindawi Publishing Corporation

Topics: Stability of wormholes

- Referee for international journal: *Journal of Cosmology and Astroparticle Physics*
- *JCAP*

IOP and SISSA

Topics: Neutrino detection

- Referee for international journal: *Modern Physics Letters A*
World Scientific

Topics: Bel-Robinson tensor

- Referee for international journal: *Research in Astronomy and Astrophysics*
IOP

Topics: Blazars

- Referee for international journal: *Rendiconti Lincei*
Springer

Topics: Gamma-ray binaries

- Reviewer of more than 300 papers

Evaluación de libros

- Reviewer for international publisher: *World Scientific*

Book: *A Tale of Two Twins. The Langevin Experiment of the Traveler to a Star*
by L.G. Benguigui.

Topics: Physics and philosophy

- Reviewer for international publisher: *Cambridge Scholars Publishing Ltd*

Book: *The Scientific Stance* by Mario Bunge.

Topics: Physics and philosophy

Actuación como Jurado de Tesis Doctorales

Noviembre 2002 Jurado (titular, Vocal del Tribunal) de tesis doctoral

Tesis: *Discovery and study of the microquasar LS 5039 and search for new microquasars* by Marc Ribó Gomis

Universitat de Barcelona, Barcelona, España

Diciembre 2002 Jurado (titular) de tesis doctoral

Tesis: *Evolución de enanas blancas de masas bajas e intermedias* por Aldo M. Serenelli

Facultad de Ciencias Astronómicas y Geofísicas de la Universidad de La Plata,
La Plata

Febrero 2003 Jurado (titular) de tesis doctoral

- Tesis: *Estudo das variações de brilho em blazares* por Tânia Pereira Dominici
Universidade de São Paulo, São Paulo, Brasil
- Marzo 2004 Jurado (titular) de tesis doctoral
Tesis: *Estudio óptico y en rayos X de estrellas tipo O en la nebulosa de Carina*
por Juan Facundo Albacete Colombo
Facultad de Ciencias Astronómicas y Geofísicas de la Universidad de La Plata,
La Plata
- Abril 2006 Jurado (titular, Vocal del Tribunal) de tesis doctoral
Tesis: *Broadband emission from high-energy processes in microquasars* by Valenti
Bosch-Ramon
Universitat de Barcelona, Barcelona, España
- Agosto 2006 Jurado (titular) de tesis doctoral
Tesis: *Evolución estelar en sistemas binarios* por María Alejandra de Vito
Facultad de Ciencias Astronómicas y Geofísicas de la Universidad de La Plata,
La Plata
- Abril, 2007 Jurado (titular) de tesis doctoral
Tesis: *Detectores de superficie y la composición química de los rayos cósmicos*
por Alberto D. Supanitsky
Facultad de Ciencias Exactas y Naturales, Departamento de Física, Universidad
de Buenos Aires, Buenos Aires
- Noviembre, 2007 Jurado (titular) de tesis doctoral
Tesis: *El Observatorio Pierre Auger a bajas energías: Análisis de sus capacidades
y posibles mejoras* por María Clementina Medina
CNEA, Universidad Nacional de General San Martín, Buenos Aires
- Mayo 2009 Jurado (titular, Presidente del Jurado) de tesis doctoral
Tesis: *Variación de la constante de estructura fina y la masa del electrón en el
universo primitivo* por Claudia Scóccola
Facultad de Ciencias Astronómicas y Geofísicas de la Universidad de La Plata,
La Plata
- Octubre 2009 Jurado (titular, Vocal del Tribunal) de tesis doctoral
Tesis: *Microquasar jets and their interaction with the medium* by Pol Bordas
Coma
Universitat de Barcelona, Barcelona, España
- Abril 2010 Jurado (titular) de tesis doctoral
Tesis: *Optical behaviour of selected XBLs* by Bidzina Kapanadze
Ilia State University, Tbilisi, Georgia
- Marzo 2011 Jurado (titular, Presidente del Tribunal) de tesis doctoral
Tesis: *The keV-TeV connection in gamma-ray binaries* by Victor Zabalza de Torres
Universitat de Barcelona, Barcelona, España
- Marzo 8, 2012 Jurado (titular) de tesis doctoral
Tesis: *Estudio de las direcciones de arribo de los rayos cósmicos de ultra-alta
energía del Observatorio Pierre Auger* by Geraldina T. Golup

- Instituto Balseiro, Universidad Nacional de Cuyo, CNEA, Argentina
- Diciembre 7, 2012 Jurado (titular) de tesis doctoral
Tesis: *O estudo de AGNs na Era do Fermi* por Pedro Paulo Bonetti Beaklini
Universidade de São Paulo, São Paulo, Brasil
- Junio 17, 2013 Jurado (titular) de tesis doctoral
Tesis: *Observación del espectro de energía de rayos cósmicos con el Infill del Observatorio Pierre Auger* por Diego Ravignani Guerrero
CNEA, Universidad Nacional de General San Martín, Buenos Aires
- Marzo 13, 2014 Jurado (titular, Presidente del Jurado) de tesis doctoral
Tesis: *Perturbaciones al espaciotiempo de Kerr y Conjetura de Censura Cósmica* por Ignacio Ranea Sandoval
Facultad de Ciencias Astronómicas y Geofísicas de la Universidad de La Plata, La Plata
- Marzo 28, 2014 Jurado (titular, Presidente del Tribunal) de tesis doctoral
Tesis: *High-energy Processes in Young Stellar Objects and X-ray Binaries* by Pere Munar Adrover
Universitat de Barcelona, Barcelona, España
- Marzo 25, 2015 Jurado (titular) de tesis doctoral
Tesis: *Soluciones de Einstein de materia y energía oscura asintóticamente de Sitter* por Iván Eduardo Sánchez García
Facultad de Ciencias Exactas y Naturales, Departamento de Física, Universidad de Buenos Aires, Buenos Aires
- Noviembre 28, 2019 Jurado (titular, Presidente del Tribunal) de tesis doctora) de tesis doctoral
Tesis: *Modelos cosmológicos alternativos al Modelo Cosmológico Estándar: test locales y cosmológicos* por Carolina Soledad Negrelli
Facultad de Ciencias Astronómicas y Geofísicas de la Universidad de La Plata, La Plata
Jurado Titular de numerosas tesis de licenciatura

Actuación como Evaluador

- 2004-presente Par consultor de la Comisión Asesora en Astronomía del CONICET
Años: 2004 (Promociones en la Carrera del Investigador), 2005 (Proyectos de Investigación), 2008 (Ingresos a la Carrera del Investigador Científico, promociones), 2009 (Ingresos a la Carrera del Investigador Científico, promociones), 2017 (promociones), 2018 (ingresos)
- 2007-presente Par consultor de la Comisión Asesora en Física del CONICET
Años: 2007, 2010, 2012, 2016, 2018 (Ingresos y promociones, Carrera del Investigador Científico)
Miembro de Comisiones Asesoras para la provisión de cargos docentes por concurso en la FCAGLP, UNLP

- 2008-2009 Evaluador de Megaproyectos (Proyecto No. 55155 - HAWC -) del CONANCyT, México
- 2009 Evaluador, PhD Thesis Prospectus by Bidzina Kapanadze. Title of the Thesis: *Optical Photometry of X-ray selected BL Lacertae objects*
Ilia Chavchavadze Tbilisi State Univerity, Georgia
- 2009 Evaluador, full time First Assistant position in Space Sciences at the Département d'Astrophysique, de Géophysique et d'Océanographie, University of Liège (Belgium)
- 2009, 2010 Evaluador de proyectos PICT 2008, 2009 de la Agencia Nacional de Promoción Científica y Tecnológica
- 2009 Evaluador (suplente). Concurso cargo Director del Instituto de Astrofísica Teórica y Experimental (IATE), CONICET
- 2010 Evaluador de proyectos de apoyo a la investigación, Universidad de Buenos Aires (UBA)
- 2010 Evaluador de proyectos de apoyo a la investigación, FAPESP, São Paulo, Brazil
- 2011 Miembro del Jurado del Premio J.L. Sérsic de la Asociación Argentina de Astronomía
- 2011 Miembro Coordinador del Jurado del Premio Houssay, Premio Houssay a la Trayectoria, y Premio al Investigador de la Nación. Ministerio de Ciencia, Tecnología, e Innovación Productiva (MinCyT)
- 2011, 2012, 2013 Evaluador de publicaciones, Cherenkov Telescope Array Consortium
- 2013 Reviewer of proposal 200763 Reg. No: 2012/07/B/ST9/04423 (High-energy astrophysics) of the National Science Centre, ul. Królewska 57, 30-081 Kraków, Poland
- 2014 Evaluador de proyectos de apoyo a la investigación, FAPESP, São Paulo, Brazil (Proceso: 2012/00800-4)
- 2015 Reviewer of proposal for University Research Fellowships of The Royal Society, UK
- 2015 Evaluador de becas de doctorado, UNLP
- 2015 Evaluador de proyectos para los telescopios MAGIC, España
- 2016 Evaluador de proyectos para la Templeton Fundation, USA. Project: The Black Hole Center - Harvard University. Solicited funds: USD 7 M.
- 2016 Miembro Permanente del Directorio de Evaluadores Externos de la Pontificia Universidad Católica del Perú (PUCP).
- 2017 Evaluador de proyectos para la Netherlands Organization for Scientific Research, The Netherlands. Project: Disentangling the radio emission of high-energy binaries and transient sources. Solicited funds: Euros 180.000.
- 2018 Jurado del concurso de Profesor Adjunto Regular de Cosmología de la FCEyN, UBA.
- 2019 Jurado del concurso de Profesor Adjunto Ordinario de Radioastronomía de la FCAyG, UNLP.
- 2019 Jurado del concurso de Profesor Titular Ordinario de Inglés de la FCAyG, UNLP.
- 2019 Jurado del concurso de Profesor Titular Ordinario de Radiointerferometría de la FCAyG, UNLP.

Trabajo como editor de revistas y libros

- 2004 Guest Editor, *Boletín de la Asociación Argentina de Astronomía*, Vol. **47**, 2004
- 2005 Guest Editor, *Astrophysics and Space Science Journal*, Vol. **297**, No.1-4, Springer Netherlands, 2005
- 2005 Guest Editor, *Boletín de la Asociación Argentina de Astronomía*, Vol. **48**, 2005
- 2008 Guest Editor, *International Journal of Modern Physics D*, Vol. **17**, No. 9 & 10, 2008
- 2008-presente Member of the Editorial Board, *Invenio*, Revista de Investigación Académica de la Universidad del Centro Educativo Latinoamericano, desde 2008
- 2010 Guest Editor, *International Journal of Modern Physics D*, Vol. **19**, No. 6, 2010
- 2010-2011 Member, Editorial Board, *IAU SYMPOSIUM PROCEEDINGS SERIES*
- 2012-presente Member, Editorial Board, *Conference Papers in Astronomy and Astrophysics*
<http://www.cpis.com/journals/aa/>
- 2012 Guest Editor, *Boletín de la Asociación Argentina de Astronomía*, Vol. **55**, 2012
- 2012 Guest Editor, *International Journal of Modern Physics CS*, Vol. **8**, 2012
- 2012 Member of the Editorial Board, *Dataset Papers in Science: Astrophysics*, Hindawi Publishing Corporation, desde 2012.
- 2014 Guest Editor, *International Journal of Modern Physics CS*, Vol. **28**, 2014.
- 2016 Guest Editor, *Proceedings of the High Energy Phenomena in Relativistic Outflows V*, Asociación Argentina de Astronomía, Book series, 2016.
- 2016 Guest Editor, *Diferencias*, revista de la Facultad de Ciencias Sociales de la UBA, número especial dedicado al “tiempo”, Nro. 4, Mayo 2017.
- 2017-presente Member of the Editorial Board, *Revista Mexicana de Física E (Rev. Mex. Fis. E)*, <http://rmf.smf.mx/page/rmf-e>.
- 2016-presente Member of the Editorial Board, *Anales AFA: Revista de la Asociación Física Argentina*, ISSN: 1850-1168.
<https://anales.fisica.org.ar/journal/index.php/analesafa/about/editorialTeam>.

Algunas estadías en instituciones extranjeras

- Dic. 1992 Instituto de Astrofísica de Canarias (IAC)
- Jun-Jul 1993 Vatican Observatory, Castel Gandolfo, Italy
- Mayo-Jun. 1996 Institute for Cosmoparticle Physics, Moscow, Russia
- 1998-presente Instituto Astronômico e Geofísico (IAG), USP, São Paulo, Brazil, numerosas estadías entre 1998 y la actualidad
- 2001-presente Department of Physics, The University of Hong Kong, China, varias estadías desde 2001
- 2001/2003/2015 Center for Astrophysics, Guangzhou University, Guangzhou, China, estadías en abril de 2001, noviembre de 2003, octubre-noviembre de 2015
- Abril 2001 Department of Physics, Yunnan University

- Abril 2001 Shanghai Astronomical Observatory, Shanghai, China
- 2001-presente Max-Planck-Institut für Kernphysik, Heidelberg, Germany, numerosas estadias a partir de 2001 (categoría de Regular Senior Visitor)
- 2002-2003 Max-Planck-Institut für Radioastronomie, Bonn, Germany, estadias en octubre de 2002 y mayo de 2003
- Jun. 2002 Institut d'Astrophysique, Université de Liège, Liège, Belgium,
- 2001-presente Service d'Astrophysique, CEA/Saclay, France, numerosas estadias a partir de 2001
- 2001-presente Facultat de Física, Universitat de Barcelona, numerosas estadias a partir de 2001
- 2002-presente Centro Brasileiro de Pesquisas Físicas (CBPF), Rio de Janeiro, Brazil, marzo de 2002, julio 2009, diciembre de 2009, agosto 2012, agosto 2013, and many more since
- Abril 2002 Princeton University, Princeton, USA
- Mar. 2002 INAOE, Tonantzintla, Puebla, Mexico
- Jun. 2004 Tsinghua University, Beijing
- 2004 Instituto di Astrofisica Spaziale e Física Còsmica (IASF), Bologna, Italy
- 2004-presente Universidad de Jaen, Jaen, Spain, visita y estadia en noviembre de 2004. Idem febrero 2009, marzo 2011, nov.-dic. 2014
- Mayo 2006 Faculty of Physics and Chemistry, University of Lodz, Lodz, Poland
- Abril 2007 Departamento de Física, Universidade Estadual de Campinas -UNICAMP, Campinas, Brazil
- Nov.-Dic. 2008 l'Observatoire de Paris, LUTH, France, visita y estadia
- Dic. 2008 Institute "Anton Pannekoek", University of Amsterdam, The Netherlands, visita y estadia
- Jul. 2012 International Center for Relativistic Astrophysics (ICRA), Pescara, Italy, visita y estadia
- Marzo 2013 Centro de Radioastronomía y Astrofísica (CRyA), UNAM, Morelia, Mexico. Idem marzo 2015, idem junio de 2016.
- Marzo 2013 Instituto de Astronomía Universidad Nacional Autónoma de Mexico Sede Ensenada Baja California, Mexico
- Jul. 2013 Faculty of Physics, University of Tübingen, Tübingen, Germany
- Nov-Dic. 2013 Lab IMS, Université de Paris Diderot, Paris VII, Paris, France
- Oct.-Nov. 2014 Karlsruhe Institute of Technology (KIT). Karlsruhe, Germany
- Oct.-Nov. 2015 Guangzhou University, Guangzhou, China
- Nov. 2015 International Space Science Institute ISSI, Bern, Switzerland
- Oct.-Dec. 2017 Karlsruhe Institute of Technology (KIT). Karlsruhe, Germany
- Jan.-Feb. 2018 Institut of Cosmos Sciences, University of Barcelona, Catalonia, Spain.
- Nov.-Dec. 2018 Karlsruhe Institute of Technology (KIT). Karlsruhe, Germany
- Jan. 2019 Institut of Cosmos Sciences, University of Barcelona, Catalonia, Spain.
- Oct. - Nov. 2019 Department of Physics, Universidade do Estado de Rio de Janeiro (UERJ), Rio de Janeiro, Brazil

Algunas conferencias invitadas en universidades o instituciones de prestigio internacional

- Junio 2000 *Gamma-ray sources in the Galaxy*
G.E. Romero
Instituto Astronômico e Geofísico (IAG), Universidade de São Paulo, Brazil
- April 2001 *Unidentified gamma-ray sources near the Galactic plane*
G.E. Romero
Department of Physics, The University of Hong Kong, HK, China
- April 2001 *Microvariability of AGNs*
G.E. Romero
Guangzhou University, Guangzhou, China
- April 2001 *Binary QSOs*
G.E. Romero
Guangzhou University, Guangzhou, China
- April 2001 *Astronomical facilities in Argentina*
G.E. Romero
Guangzhou University, Guangzhou, China
- April 2001 *Microvariability of AGNs*
G.E. Romero
Shanghai Astronomical Observatory, Shanghai, China
- April 2001 *Microvariability of AGNs*
G.E. Romero
Department of Physics, Yunnan University, China
- October 2001 *Unidentified GeV gamma-ray sources in the Galaxy*
G.E. Romero
Service d'Astrophysique, CEA/Saclay, France
- October 2001 *The origin of unidentified galactic EGRET sources*
G.E. Romero
Max-Planck-Institut für Kernphysik, Heidelberg, Germany
- November 2001 *Recent evidence for a supernova remnant origin of the hadronic galactic cosmic rays*
G.E. Romero
Facultat de Física, Universitat de Barcelona, Spain
- November 2001 *Unidentified EGRET sources*
G.E. Romero
Instituto de Estudios Espaciales de Cataluña, Spain
- March 2002 *The origin of galactic cosmic rays*
G.E. Romero
Centro Brasileiro de Pesquisas Físicas, Ríó de Janeiro, Brazil
- June 2002 *Variable gamma-ray sources*

- G.E Romero
Institut d’Astrophysique, Université de Liège, Liège, Belgium
- October 2002 *Galactic gamma-ray sources and microquasars*
G.E Romero
Max-Planck-Institut für Radioastronomie, Bonn, Germany
- November 2002 *Models for variable gamma-ray sources*
G.E. Romero
Facultat de Física, Universitat de Barcelona, Spain
- April 2003 *Gamma-rays and stellar systems: from binaries to starbursts*
G.E Romero
Max-Planck-Institut für Kernphysik, Heidelberg, Germany
- October 2003 *A glimpse of the gamma-ray universe*
G.E Romero
Department of Physics, The University of Hong Kong, HK, China
- October 2003 *Microquasars*
G.E Romero
Department of Physics, The University of Hong Kong, HK, China
- November 2003 *The gamma-ray universe*
G.E Romero
Guangzhou University, Guangzhou, China
- November 2003 *Black holes in the Galaxy*
G.E Romero
Guangzhou University, Guangzhou, China
- November 2004 *High-energy emission of hadronic origin from microquasars*
G.E Romero
Facultat de Física, Universitat de Barcelona, Spain
- November 2004 *Unidentified gamma-ray sources and microquasars*
G.E Romero
Istituto di Astrofisica Spaziale e Física Còsmica (IASF), Bologna, Italy
- November 2004 *Models for variable gamma-ray sources in the Galaxy: alternatives to microquasars*
G.E Romero
Istituto di Astrofisica Spaziale e Física Còsmica (IASF), Bologna, Italy
- May 2006 *Microquasars as gamma-ray sources*
G.E Romero
Faculty of Physics and Chemistry, University of Lodz, Lodz, Poland
- October 2007 *Massive stars and gamma-rays*
G.E Romero
Facultat de Física, Universitat de Barcelona, Spain
- October 2007 *Gamma-ray binaries and microquasars: Some recent theoretical processes*
G.E Romero
IFAE—Institut de Física d’Altes Energies, Spain

- November 2008 *Black holes and related astrophysics*
G.E Romero
ICCUB—Institut de Ciències del Cosmos, Facultat de Física, Universitat de Barcelona, Spain
- November 2008 *Hadronic models for microquasar jets*
G.E Romero
l’Observatoire de Paris - LUTh, Meudon, France
- November 2008 *Hadronic models for gamma-ray emitting microquasars*
G.E Romero
Institut d’Astrophysique de Paris, Paris, France
- December 2008 *Lepto/hadronic models for microquasars: application to GX 339-4*
G.E Romero
Institute “Anton Pannekoek”, University of Amsterdam, The Netherlands
- December 2008 *Lepto/hadronic models for accreting black hole binaries*
G.E Romero
Service d’Astrophysique, CEA/Saclay, France
- December 2009 *The problem of the anisotropy of time*
G.E Romero
Centro Brasileiro de Pesquisas Físicas - CBPF -, Rio de Janeiro, Brazil
- November 2010 *Irreversibility and cosmology*
G.E Romero
ICCUB—Institut de Ciències del Cosmos, Facultat de Física, Universitat de Barcelona, Spain
- March 2011 *A model for the broadband electromagnetic radiation of microquasars’ jets*
G.E. Romero
Departamento de Física, Universidad de Jaén, Spain
- March 2011 *A model for jets of microquasars*
G.E. Romero
Service d’Astrophysique, CEA/Saclay, France
- March 2011 *Irreversibility and cosmic horizons*
G.E. Romero
Service d’Astrophysique, CEA/Saclay, France
- March 2012 *Physics around black holes*
G.E. Romero
Instituto Balseiro, Centro Atómico Bariloche, Argentina
- March 2012 *What are space and time?*
G.E. Romero
Centro Atómico Constituyentes, CNEA, San Martín, Argentina
- May 2012 *Non-thermal processes around black holes*
G.E. Romero
Service d’Astrophysique, CEA/Saclay, France

- July 2012 *Physics around accreting black holes*
G.E. Romero
International Center for Relativistic Astrophysics (ICRA), Pescara, Italy
- March, 2013 *Philosophy and Cosmology*
G.E. Romero
Centro de Radioastronomía y Astrofísica (CRyA), UNAM, Morelia, Mexico
- March, 2013 *High-Energy Flares From Black Holes and the Cherenkov Telescope Array*
G.E. Romero
Instituto de Astronomía, Universidad Nacional Autónoma de Mexico, Sede Ensenada Baja California, Mexico
- July, 2013 *Gamma-ray bursts as sources of neutrinos and gravitational waves*
G.E. Romero
BKC Lecture, Facultat de Física, Universitat de Barcelona, Spain
- July, 2013 *f(R)-astrophysics*
G.E. Romero
Faculty of Physics, University of Tübingen, Tübingen, Germany
- Nov, 2013 *Collapsars as sources of neutrinos*
G.E. Romero
Colloquium APC Lab de AstroParticule and Cosmologie, Paris VII, Paris, France
- Nov, 2014 *Stellar bowshocks and non-thermal radiation*
G.E. Romero
Departamento de Física, Universidad de Jaén, Spain.
- March 2015 *Cosmic rays injected by runaway stars in open clusters*
G.E. Romero
Centro de Radioastronomía y Astrofísica (CRyA), UNAM, Morelia, Mexico.
- November 2015 *Research on astronomy and astrophysics in Argentina*
G.E. Romero
University of Guangzhou, Guangzhou, China.
- November 2017 *QUBIC: The quest for primordial B-modes in the CMB*
G.E. Romero
Karlsruher Institut für Technologie (KIT), Karlsruhe, Germany
- November 2017 *Gravitational waves: origins, detections, implications.*
G.E. Romero
Institut d'Astrophysique, Université de Liège, Liège, Belgium
- February 2018 *QUBIC: The search for primordial gravitational waves*
G.E. Romero
ICCUB–Institut de Ciències del Cosmos, Facultat de Física, Universitat de Barcelona, Spain
- February 2018 *The nature of space and time*
G.E. Romero
IFAE–Institut de Física d'Altes Energies, Bellaterra, Spain

- February 2018 *Ciencia, Filosofía, e Ideología*
G.E Romero
Facultat de Filosofia, Universitat de Barcelona, Spain
- October 2019 *open issues in the physics of relativistic astrophysical jets*
G.E Romero
Department of Physics, Universidade do Estado de Rio de Janeiro (UERJ), Rio de Janeiro, Brazil
- November 2019 *The origin of mass charge in relativistic jets*
G.E Romero
Centro Brasileiro de Pesquisas Físicas - CBPF -, Rio de Janeiro, Brazil

Organización de reuniones científicas.

- November 2003 I Jornada de Astrofísica Relativista, Instituto Argentino de Radioastronomía
Villa Elisa, Argentina
Organizadores: P. Benaglia, G.E. Romero
- June 2004 The Multiwavelength Approach to Unidentified Gamma-Ray Sources
Hong Kong University, China
Organizadores: K.S. Cheng and G.E. Romero
- Abril 2006 Astronomía Observacional en la Argentina: Problemas y Prespectivas, un Workshop auspiciado por la Asociación Argentina de Astronomía
Facultad de Ciencias Astronómicas y Geofísicas, UNLP, La Plata, Argentina
Organizadores: M. Abadi, P. Benaglia, S.A. Cellone, S.A. Cora, H. Muriel, G.E. Romero
- Mayo 2007 Astronomía Teórica en la Argentina: Problemas y Prespectivas, un Workshop auspiciado por la Asociación Argentina de Astronomía
Observatorio Astronómico de Córdoba, Córdoba, Argentina
Organizadores: M. Abadi, P. Benaglia, S.A. Cellone, S.A. Cora, H. Muriel, G.E. Romero
- September 2007 Gamma-ray Phenomena Associated with Relativistic Outflows
Dublin Institute for Advanced Studies, Dublin, Ireland
Organizadores: F.A. Aharonian, J.M. Paredes, and G.E. Romero
- Mayo 2008 Historia de la Astronomía Argentina, un Workshop auspiciado por la Asociación Argentina de Astronomía
Facultad de Ciencias Astronómicas y Geofísicas, UNLP, La Plata, Argentina
Organizadores: M. Abadi, P. Benaglia, S.A. Cellone, S.A. Cora, H. Muriel, G.E. Romero
- October 2009 Gamma-ray Phenomena Associated with Relativistic Outflows II
Buenos Aires, Argentina
Organizadores: F.A. Aharonian, J.M. Paredes, and G.E. Romero
- September 2010 Jets at all Scales, IAU Symposium No. 275

- Buenos Aires, Argentina
Organizador: G.E. Romero
- October 2011 1er Encuentro Argentino-Brasileño de Gravitación, Astrofísica Relativista y Cosmología
Foz de Iguazú, Brasil
Organizadores: Nelson Pinto Neto, S.E. Pérez Bergliaffa, and G.E. Romero
- June 2013 German-Argentinean Workshop on Astroparticle Physics
Facultad de Ciencias Astronómicas y Geofísicas, UNLP, La Plata, Argentina
Organizadores: A. Etchegoyen, A. Gattone, and G.E. Romero
- April 2014 2do Encuentro Argentino-Brasileño de Gravitación, Astrofísica Relativista y Cosmología
Buenos Aires, Argentina
Organizadores: Nelson Pinto Neto, S.E. Pérez Bergliaffa, and G.E. Romero
- October 2015 Gamma-Ray Phenomena Associated with Relativistic Outflows V, an international meeting held in Buenos Aires, Argentina
Organizadores: G.E. Romero and G.S. Vila
- Sept. 2015 Primer Encuentro Latinoamericano de Filosofía Científica, held in Buenos Aires, Argentina
Organizadores: R. Kreimer, G.E. Romero, J. Primero, J. López de Casenave, F. Aisenberg, M. Castro, G. Garay, F. López Armengol

Organización de escuelas científicas internacionales.

- March 2008 First La Plata International School on Astronomy and Geophysics: Compact Objects and their Emission
Observatory, UNLP, La Plata
Dean of the School: Gustavo E. Romero
LOC: I. Andruchow, A.T. Araudo, P. Benaglia, P. Cincotta, M. Orellana, G.E. Romero, G.S. Vila.

Participación en comités de reuniones científicas.

- 1996 The Pierre Auger Project Collaboration Meeting, Valle Grande, Argentina
Comité Científico: M.T. Dova, C. Escobar, P. Mantsch, L. Masperi, **G.E. Romero**, A. Watson
- 1998 III Reunión de la Colaboración Argentina del Proyecto Pierre Auger
La Plata
Comité Organizador: I.N. Azcárate, J.A. Combi, S.E. Perez-Bergliaffa, **G.E. Romero**
- October 2000 The Nature of Galactic High Energy Gamma-Ray Sources

- International workshop at INAOE, Tonantzintla
Comité Científico: A. Carraminana, O. Reimer, K. Brazier, G. Kanbach, D. Thompson, M. Baring, M. Catanese, **G.E. Romero**, R. Romani, Dale Frail
- June 2004 The Multiwavelength Approach to Unidentified Gamma-Ray Sources
International workshop at Hong Kong University, China
Comité Científico: F. Aharonian, A. Carraminana, K.S. Cheng, O. de Jager, I. Grenier, R. Manchester, S. Mereghetti, **G.E. Romero**, D. Thompson, H. Völk
- July 2003 Tenth Marcel Grossmann Meeting on General Relativity
Rio de Janeiro
Member of the LOC
- Septiembre 2004 47^a Reunión Anual de la Asociación Argentina de Astronomía
Complejo Astronómico El Leoncito, San Juan
Comité Científico: Pablo Cincotta, Gloria Dubner (Presidente), Stella Malaroda, Cristina Mandrini, Hernán Muriel, **Gustavo E. Romero** y Rubén Vázquez
- August 2005 IAU Symposium No. 230: Populations of High-Energy Sources in Galaxies
Dublin, Ireland
Comité Científico: E.J.A. Meurs, G. Fabbiano, L. Bassani, B. McBreen, H.-Y. Chu, C. Done, G. Hassinger, G. Koenigsberger, K. Koyama, V. Lipunov, M. Mas-Hesse, Th. Montmerle, **G.E. Romero**, Z. Wang
- Septiembre 2005 48^a Reunión Anual de la Asociación Argentina de Astronomía
Instituto Argentino de Radioastronomía, La Plata
Comité Científico: M. Arnal, A. Brunini, J.J. Clariá, J.C. Forte, D. García Lambas, D. Gómez, **G.E. Romero (Presidente)**
- Abril 2006 Astronomía Observacional en la Argentina: Problemas y Perspectivas
Workshop auspiciado por la Asociación Argentina de Astronomía, realizado en la Facultad de Ciencias Astronómicas y Geofísicas, UNLP, La Plata, Argentina
Comité Científico: M. Abadi, P. Benaglia, S.A. Cellone, S.A. Cora, H. Muriel, **G.E. Romero**
- Mayo 2007 Astronomía Teórica en la Argentina: Problemas y Perspectivas
Workshop auspiciado por la Asociación Argentina de Astronomía, realizado en el Observatorio Astronómico de Córdoba, Córdoba, Argentina
Comité Científico: M. Abadi, P. Benaglia, S.A. Cellone, S.A. Cora, H. Muriel, **G.E. Romero**
- July 2006 The multi-messenger approach to high energy gamma-ray sources
International conference at Barcelona University, Spain
Comité Científico: Felix A. Aharonian, K.S. Cheng, Chuck Dermer, Rob Fender, Thomas Gaisser, Neil Gehrels, Francis Halzen, Alan Marscher, Thiery Montmerle, Josep M. Paredes, Olaf Reimer, **Gustavo E. Romero**, Marco Tavani, David J. Thompson, Diego F. Torres
- September 2007 Gamma-ray Phenomena Associated with Relativistic Outflows
International workshop at Dublin Institute for Advanced Studies, Dublin, Ireland

- Comité Científico: Felix Aharonian, Katherine Blundell, Paolo Coppi, Luke Drury, Peter Duffy, Peter Meszaros, Josep M. Paredes, Tom Ray, **Gustavo E. Romero**, Guy Pelletier, Marek Sikora, Marco Tavani
- Mayo 2008 Historia de la Astronomía Argentina
Workshop auspiciado por la Asociación Argentina de Astronomía, realizado en la Facultad de Ciencias Astronómicas y Geofísicas, UNLP, La Plata, Argentina
Comité Científico: M. Abadi, P. Benaglia, S.A. Cellone, S.A. Cora, H. Muriel, **G.E. Romero**
- July 2008 4th Heidelberg International Symposium on High Energy Gamma Ray Astronomy
Heidelberg, Germany
Comité Científico: F.Aharonian (MPIK, Heidelberg and DIAS, Dublin), J.Arons (UC, Berkeley), J.Buckley (Washington University, St.Louis), C.Cesarsky (ESO, Garching), K.S.Cheng (Hong Kong), P.Coppi (Yale), T.Courvoisier (ISDC, Versoix), L.Drury (DIAS, Dublin), A.Fabian (Cambridge), B.Gaensler (Sydney), N.Gehrels (GSFC, Goddard), J.Grindlay (Harvard-Smithsonian), W.Hofmann (MPIK, Heidelberg), W.Hermsen (SRON, Utrecht), G.Hasinger (MPE, Garching), T.Kifune (Tokyo), L.Maraschi (Milan), P.Meszaros (Penn State), K.Menten (MPIfR, Bonn), J.M.Paredes (Barcelona), J.Paul (Saclay), G.Pelletier (Grenoble), V.Ptuskin (Moscow), **G.E.Romero** (La Plata), M.Sikora (Warsaw), J.Silk (Oxford), G.Sinnis (Los Alamos), C.Spiering (Zeuthen), R.Sunyaev, (MPIA, Garching), T.Takahashi (ISAS/JAXA), M.Tavani (Rome), M.Teshima (MPI, Munich), D.Thompson (GSFC, Goddard), H.Voelk (MPIK, Heidelberg)
- February 2009 High Energy Phenomena in Massive Stars
International meeting held in Jaen, Spain
Comité Científico: Sylvain Chaty, Sean Dougherty, Josep Marti Ribas, Felix Mirabel, Therry Montmerle, Stan Owocki, Josep M. Paredes, **Gustavo E. Romero**
- October 2009 Gamma-ray Phenomena Associated with Relativistic Outflows II
International workshop held in Buenos Aires
Comité Científico: Zulema Abraham, Felix Aharonian, J. Arons, G. Bisnovatyi-Kogan, Paolo Coppi, Arieh Koenigl, Laura Marachi, Peter Mészáros, Josep M. Paredes, **Gustavo E. Romero (Chair)**, Guy Pelletier, Marek Sikora, Marco Tavani
- 2009 Neutron stars: timing in extreme environments, a Joint Discussion at the IAU General Assembly 2009
Rio de Janeiro, Brazil.
Comité Científico: Tomaso M Belloni, Michiel van der Klis, Duncan Lorimer, **Gustavo E. Romero**, Dany Page, Marat Gilfanov, Chengmin Zhang, Andreas Reisenegger, Donald Melrose, Didier Barret, Jorge Horvath, Vicky Kaspi, Mariano Méndez, Deepto Chakrabarty, Ali Alpar
- September 2010 Jets at all scales
International IAU Symposium held in Buenos Aires

- Comité Científico: Tomaso Belloni, Alberto Castro-Tirado, Stephane Corbel, Elisabete G. Dal Pino, Elena Gallo, Marat Gilfanov, Jochen Greiner, Emrah Kalemci, Amir Levinson, Sera Markoff, S. Mineshige, Josep M. Paredes, **Gustavo E. Romero (Chair)**, Rashid Sunyaev, Joern Wilms
- July 2010 39th Liège International Astrophysical Colloquium: The multi-wavelength view of hot, massive stars
of hot, massive stars
A Colloquium held in Liège, Belgium
Comité Científico: Ronny Blomme, Dany Vanbeveren, Doug Gies, Alex Fullerton, Rosie Chen, **Gustavo E. Romero**, Michael De Becker, Eric Gosset, Damien Hutsemekers, Yaël Nazé, Peredur Williams, Gregor Rauw
- October 2010 IAU Regional Meeting 2010
Morella, Mexico
Comité Científico: Luis F. Rodríguez, **Gustavo E. Romero**, Zulema Abraham, Rene Mendez, Vladimir Avila-Reese, Kathy Vivas, Gonzalo Tancredi
- July 2010 The Transient X-/Gamma-ray sky: Recent results and future directions
Event E16, 38th Cospar General Assembly, Bremen, Germany
Comité Científico: A. Bazzano, A. King, L. Bassani, Josh Grindlay, Kevin Hurley, J.P. Lasota, L. Piro, M. Tavani, M. Masaru, Neil Gehrels, Peter F. Michelson, Pietro Ubertini, **G.E. Romero**
- Sept. 2010 Multiwavelength Variability of Blazars
Guangzhou, China
Comité Científico: Margo Aller, Jiansheng Chen, Junhui Fan (Chair), Gabrielle Ghisellini, Alok Gupta, Omar Kurtanidze, TongXu Hua, Alan Marscher, **Gustavo E. Romero co-chair**, Zhiqiang Shen (co-chair), Aimo Sillanpaa, Leo Takalo, C. Meg. Urry, Massimo Villata, Stefan Wagner, Gang Zhao, Youyuan Zhou
- June 2011 Gamma-ray Phenomena Associated with Relativistic Outflows III
Barcelona, Spain
Comité Científico: Felix Aharonian, J. Arons, G. Bisnovatyi-Kogan, Paolo Coppi, J.L. Gómez,, Arieh Koenigl, Laura Marachi, Peter Mészáros, I.F. Mirabel, Josep M. Paredes, **Gustavo E. Romero**, Guy Pelletier, Marek Sikora, Marco Tavani
- October 2011 1er Encuentro Argentino-Brasileño de Gravitación, Astrofísica Relativista y Cosmología
Foz de Iguazú, Brasil
Comité Científico: Rafael Ferraro, Mario Novello, Oscar Reula, and **Gustavo E. Romero (chair)**
- July 2012 MG XIII - Marcel Grossmann Meeting on General Relativity- MG 13
Stockholm University in Stockholm, Sweden
Member of the INTERNATIONAL COORDINATING COMMITTEE
- August 2012 IAU Symposium 290: Feeding Compact Objects: Accretion on all Scales
Beijing, China
Member of the SOC
- July 2012 Radio Meets Hard X-rays: Two Skies in Comparison
Event E1, 39th Cospar General Assembly, Mysore, Karnataka, India

- Comité Científico: Angela Malizia, Pietro Ubertini, Stephen P. Reynolds, Andrea Merloni, Fabio La Franca, Jennifer Sokoloski, Tony Bird, Alan Marscher, **Gustavo E. Romero**, GianLuca Israel, Hans Krimm, Richard Mushotzky
- July 2012 5th International Symposium on High-Energy Gamma-Ray Astronomy (Gamma2012)
Heidelberg, Germany
Member of the SOC
- December 2012 26th Texas Symposium on Relativistic Astrophysics
Sao Paulo, Brazil
Comité Científico: Odylio Aguiar, Felix Aharonian, Roger Blandford, J. Richard Bond, Catherine J. Cesarsky, George Ellis, Valeria Ferrari, Joshua Frieman, Carlos O. Escobar, Jose Antonio de Freitas Pacheco, Gabriela Gonzalez, Jorge Horvath, Victoria Kaspi, Edward Kolb, Avi Loeb, Richard Manchester, **Gustavo E. Romero**, Mario Novello, Angela Olinto, Thanu Padmanabhan, Dany Page, Tsvi Piran, Martin Rees, Ronald Remillard, Joe Silk, Susan Scott, Alexei Starobinsky, Thaisa Storchi-Bergmann, Virginia Trimble, Clifford Will
- Septiembre 2012 55^a Reunión Anual de la Asociación Argentina de Astronomía
Instituto Argentino de Radioastronomía, Mar del Plata
Comité Científico: C. Cappa, P. Cincotta, A. Córscico, M. López Fuentes, F. González, N. Morrel, H. Muriel, **G.E. Romero (Presidente)**
- November 2012 Galactic and extra-galactic cosmic-ray and neutrino observatories. The multi messenger perspective: CTA and the origin of cosmic rays. Link to the Pierre Auger Observatory and other experiments
Buenos Aires, Argentina
Comité Científico: Felix Aharonian, Angela Bazzano, Johannes Bluemer (Chair), Juan Cortina, Sera Markoff, Silvia Mollerach, Rene Ong, Tsvi Piran, **Gustavo E. Romero**, Ronald Shellard, Masahiro Teshima
- December 2012 Variability of Blazars: from Jansky to Fermi
Guangzhou, China
Comité Científico: Margo Aller, Denis Bastieri, Jiansheng Chen, Junhui Fan (Chair), Alok Gupta, Omar Kurtanidze, TongXu Hua, Alan Marscher, **Gustavo E. Romero**, Zhiqiang Shen (co-chair), Aimo Sillanpaa, C. Meg. Urry, Stefan Wagner, Paul Wiita, Gang Zhao, Youyuan Zhou
- July 2013 Gamma-ray Phenomena Associated with Relativistic Outflows IV
Heidelberg, Germany
Comité Científico: F. Aharonian (Chair), E. Amato, M. Begelman, G.S. Bisnovatyi-Kogan, S. Bogovalov, P. Coppi, D. Khangulyan, J.G. Kirk, Y. Lyubarsky, L. Maraschi, A. Marscher, P. Meszaros, J.M. Paredes, G. Pelletier, F.M. Rieger, **G.E. Romero**, M. Tavani
- Junio 2014 1st Scientific ICRA Net Meeting in Armenia: Black Holes: the Largest Energy Sources in the Universe
Yerevan, Armenia
Miembro del Comité Científico
- October 2015 Gamma-ray Phenomena Associated with Relativistic Outflows V

La Plata

Comité Científico: F. Aharonian, E. Amato, M. Begelman, G.S. Bisnovatyi-Kogan, V. Bosch-Ramon, K.S. Cheng, P. Coppi, D. Khangulyan, S. Lizano, Y. Lyubarsky, A. Marscher, P. Meszaros, J.M. Paredes, **G.E. Romero (Chair)**, Y. Uchiyama

September 2015 Primer Encuentro Latinoamericano de Filosofía Científica
Buenos Aires, Argentina

Comité Académico: G.E. Romero (Chair), R. Kreimer, G. Primero, J. López de Casenave, P. Jacovkics, C. Mársico

July 2016 6th International Symposium on High-Energy Gamma-Ray Astronomy (Gamma2016)

Heidelberg, Germany

Member of the SOC

July-August 2016 Event E1.20, “Cherenkov Telescope Array: the Ground-based Eyes to Observe the Gamma-ray Universe” (41th COSPAR Scientific Assembly)

Istanbul, Turkey

Member of the SOC

September 2017 Gamma-ray Phenomena Associated with Relativistic Outflows VI
Moscow, Russia

Member of the SOC

December 2017 Texas Symposium on Relativistic Astrophysics

Cape Town, South Africa

Member of the SOC

September 2018 International Conference on Black Holes as Cosmic Batteries: UHECRs and Multimessenger Astronomy

Foz do Iguazu, Brazil

Member of the SOC

July 2019 Gamma-ray Phenomena Associated with Relativistic Outflows VII

Barcelona, Catalonia, Spain

Member of the SOC

July 2020 5th International Symposium on High-Energy Gamma-Ray Astronomy (Gamma2020)

Barcelona, Catalonia, Spain

Member of the SOC

September 2020 IWARA2020 - 9th International Workshop on Astronomy and Relativistic Astrophysics

México ciyu, México

Member of the International Advisory Committee

Conferencias invitadas en reuniones científicas internacionales

1999 *Ultra-high energy cosmic rays from Cen A*

- II International Conference on Cosmoparticle Physics, Moscú, Rusia, 1999
- 2000 *Low-latitude gamma-ray sources: correlations and variability*
Workshop on the Nature of Unidentified Galactic Gamma-Ray Sources, Tonantzintla, Puebla, Mexico, 2000
- 2001 *Supernova remnants and unidentified EGRET source*
Science with H.E.S.S., an international workshop held at Ringberg, Germany, November 2001
- 2002 *The battle around the SNR RX J1713.7-394*
Pulsars, SNRs, and High Energies – an international meeting held at Université de Paris VII, Paris, France, June 2002
- 2003 *EGRET unidentified source*
Tenth Marcel Grossmann Meeting on General Relativity
Río de Janeiro, Brazil, July 2003
- 2004 *Microquasars and unidentified gamma-ray sources*
The Fifth Microquasar Workshop
Beijing, China, June 2004
- 2004 *High-energy emission from microquasars: the theoretical view*
Magic Mini-Workshop on SNRs and Microquasars
Barcelona, Spain, November 2004
- 2006 *Jet interactions in massive X-ray binarie*
Massive Stars: Fundamental Parameters and Circumstellar Interactions
Cariló, Argentina, December 2006
- 2007 *Radio astronomy and high-energy astrophysic*
Square Kilometer Array 17th ISSC Meeting
San Juan, Argentina, March 2007
- 2008 *Hadronic processes in binary system*
Non-thermal Hadronic Processes in Galactic Sources, First Heidelberg Workshop
Max-Planck-Intitute für Kernphysik, Heidelberg, Germany, January 2008
- 2008 *Gamma rays from star forming region*
4th Heidelberg International Symposium on High Energy Gamma Ray Astronomy
Heidelberg, Germany, July 2008
- 2008 *Models for high-energy emission in galactic binaries*
37th COSPAR Scientific Assembly
Montreal, Canada , July 2008
- 2008 *High-energy processes at the base of magnetized, baryon loaded jets*
Very High Energy Gamma Rays, Cosmic Rays and Neutrinos & Hadronic AGN Emission Models
Observatoire de Paris, Paris, December 2008
- 2008 *Astroparticle Phycis I*
XV Jorge André Swieca Summer School
Brazilian Physical Society, Campos de Jordão, January 16-23, 2008

- A series of 5 lectures
- 2009 *Massive stars and high-energy neutrinos*
High Energy Phenomena in Massive Stars
Jaen, Spain, February, 2009
- 2009 *Gamma-ray emission from star-forming region*
Multifrequency Behaviour of High Energy Cosmic Sources
Vulcano, Italy, May, 2009
- 2009 *Cosmic rays, neutrinos and gamma-rays from microquasars*
Searching for the Origins of Cosmic Rays
Trondheim, Norway, June, 2009
- 2009 *Gamma-ray emission from pulsar/massive-star binarie*
IAU XXVII General Assembly, JD # 3 Neutron stars: timing in extreme environment
Rio de Janeiro, Brazil, August, 2009
- 2009 *Astroparticle*
V Escola de Cosmologia e Gravitação, Centro Brasileiro de Pesquisas Física
Rio de Janeiro, Brazil, 27/07/2009-31/07/2009
A series of 5 lecture
- 2010 *Philosophical problems of space-time theories*
XIV Brazilian School of Cosmology and Gravitation, Hotel Portobello
Rio de Janeiro, Brazil, 30/08/2010-11/09/2010
A series of 2 lecture
- 2010 *Very high-energy radiation from black hole binaries*
International Conference on Accretion and Outflow in Black Hole Systems
Kathmandu, Nepal, October 11-15, 2010
- 2010 *Very high-energy emission from microquasars*
Variable Galactic Gamma-Ray Sources
Heidelberg, Germany, November 30th - December 3rd, 2010
- 2011 *Inhomogeneous jet models*
AGN Physics in the CTA Era
Toulouse, France, May 16th - May 17th, 2011
- 2011 *High energy emission from star forming regions*
Dublin Summer School on High Energy Astrophysics, University College Dublin (UCD)
Dublin, Ireland, 4/07-15/07, 2011
A series of 2 lectures
- 2011 *Microquasars*
The LLAMA Project Evaluation Workshop
FAPESP, São Paulo, Brazil, August 8-9, 2011
- 2011 *An overview of relativistic astrophysics*

- 1er Encuentro Argentino-Brasileiro de Gravitación, Astrofísica Relativista y Cosmología
Foz de Iguazú, Brasil, October 2011
- 2011 *The nature of the ‘present’*
1er Encuentro Argentino-Brasileiro de Gravitación, Astrofísica Relativista y Cosmología
Foz de Iguazú, Brasil, October 2011
- 2011 *Perspectives for ground based gamma-ray astronomy in Argentina*
First Joint DIAS-OKC Workshop: Multi-GeV Astrophysics with Ground-Based Detectors
Dublin, Ireland, December 12-14, 2011
- 2012 *Rapid non-thermal variability in AGNs*
Workshop: AGN and CTA
Observatoire de Paris, Paris, France, May 21st - May 22nd, 2012
- 2012 *The ontology of space-time singularities*
Mario Novello’s 70th Anniversary Symposium
CBPF, Rio de Janeiro, Brazil, August 15 - August 17, 2012
- 2012 *Particle physics around black holes*
XV Brazilian School of Cosmology and Gravitation, Hotel Portobello
Rio de Janeiro, Brazil, 19/08-1/09, 2012
- 2012 *The ontology of General Relativity*
XV Brazilian School of Cosmology and Gravitation, Hotel Portobello
Rio de Janeiro, Brazil, 19/08-1/09, 2012
- 2012 *High-Energy Emission from Young and Massive Stellar Objects*
Exploring the Non-Thermal Universe with Gamma Rays. On the occasion of Felix Aharonian 60th birthday
Universitat de Barcelona, Barcelona, Spain, November 6th - November 9th, 2012
- 2013 *Non-thermal gas in black hole coronae*
Frontiers in Contemporary Astrophysics
Centro de Radioastronomía y Astrofísica (CRyA), UNAM
Morelia, Mexico, March 18-20, 2013
- 2013 *Variable gamma-ray emission from runaway stars*
Variable Galactic Gamma-Ray Sources
Universitat de Barcelona
Barcelona, April 16-18, 2013
- 2013 *Research on astroparticle physics in Argentina*
German-Argentinean Workshop on Astroparticle Physics
Facultad de Ciencias Astronómicas y Geofísicas, UNLP
La Plata, Argentina, June 12, 2013
- 2013 *Pre-Socratic and Buddhist cosmologies: a comparative study*
Mitos Cosmogónicos
Centro Brasileiro de Pesquisas Físicas

- Rio de Janeiro, Brazil, August 29-30, 2013
- 2014 *Event ontology and the foundations of space-time*
ICRA10
Centro Brasileiro de Pesquisas Físicas
Rio de Janeiro, Brazil, April 7 - April 12, 2014
- 2014 *Centaurus A across the electromagnetic spectrum and beyond*
40 Years of Research in Radioastronomy
A Workshop in honor of Zulema Abraham
São Paulo, Brazil, May 12-13, 2014
- 2014 *Extragalactic and Galactic jet synergies*
IAU Symposium No. 313: Extragalactic Jets from every Angle
Puerto Ayora, Galápagos, Ecuador, September 15-19, 2014
- 2015 *Particle interactions around black holes*
Grav15
La Falda, Córdoba, Argentina, April 13-17, 2015
- 2015 *High-energy particles injected by bow-shocks in open clusters*
Variable Galactic Gamma-Ray Sources III
Max-Planck-Haus, Heidelberg
Heidelberg, May 4-16, 2015
- 2015 *Ontological problems of General Relativity*
GR100 in Rio - Centenary of General Relativity
Centro Brasileiro de Pesquisas Físicas
Rio de Janeiro, Brazil, July 27 - 31, 2015
- 2015 *Truth and relevancy*
Primer Encuentro Latinoamericano de Filosofía Científica
Centro Paco Urondo, FFyL, UBA
Ciudad Autónoma de Buenos Aires, Argentina, September 23 - 26, 2015
- 2015 *Misaligned blazars: Insights from microquasars and radio galaxies*
Workshop on Observations and Data Analysis of Blazars
Conghua, Gunagzhou, China, October 29 - 31, 2015
- 2015 *Radio emission from relativistic jets: lessons from nearby AGNs and micorquasars*
ISSI Workshop on Jets and Winds in Pulsar Wind Nebulae, Gamma-Ray Bursts, and Blazars: Physics of Extreme Energy Release
International Space Science Institute ISSI, Bern, Switzerland, November 16 - 20, 2015
- 2016 *Fast radio bursts*
Latin American Regional Meeting of the International Astronomical Union
Cartagena, Colombia, October 3 -7, 2016.
- 2017 *X-ray emission mechanism*
COSPAR XV Capacity Building Workshop
Universidad Nacional de Río Negro, a series of 3 lectures

- Viedma, Argentina, February-March, 2017
- 2017 *Coherent flares from non-pulsar galactic sources*
Workshop on Variable Galactic Gamma-Ray Sources (IV)
Rikkyo University, Tokyo, Japan, July 4-7 2017
- 2017 *QUBIC: a new experiment to test models of the early universe*
Quantum Cosmology and Bouncing Models – Celebrating Nelson Pinto Neto’s
60th Birthday
CBPF, Rio de Janeiro, Brazil, September 28 - 29, 2017
- 2017 *Gamma Rays from Colliding Winds in Massive Binaries: Status and Prospects*
A DECADE OF AGILE: RESULTS, CHALLENGES AND PROSPECTS OF
GAMMA-RAY ASTROPHYSICS
Accademia dei Lincei, Palazzina dell’Auditorium, Rome, December 11-13, 2017
- 2018 *The First Microquasars*
International Conference on Black Holes Cosmic Batteries: UHECRs and Multi-
messenger Astronomy
Hotel Golden Park Internacional, Foz do Iguacu, Brazil, September 12- 14, 2018
- 2019 *High-energy astrophysics around black holes*
International School on Astroparticle Physics 2019
Pierre Auger Observatory, Malargue, Argentina, March 2019
- 2019 *Outflows in super-critical binaries*
Workshop on Variable Galactic Gamma-Ray Sources (VII)
ICC, UB, Barcelona, Catalonia, Spain, September 2019
- 2019 *Non-standard galactic sources of MeV-GeV radiation*
International Workshop on High-Energy Processes in Space Objects: Fundamental
Physics and New Technologies)
Uzkoe, Russian Academy of Sciences, Russia, September 16-20, 2019
- 2019 *Radio Astronomy and Cosmology*
Primer Workshop Internacional CART
OAFa, San Juan, AZrgentina, October 15-18, 2019

Conferencias invitadas en reuniones científicas nacionales

- 1996 *Fenómenos violentos en quasars*
25a Reunión Bianual de Relatividad y Gravitación
Rosario, Santa Fe, Diciembre 1996
- 2003 *Progresos recientes en astronomía de rayos gamma*
46a Reunión de la Asociación Argentina de Astronomía
La Plata, Septiembre 2003
- 2004 *El universo en rayos gamma*
Academia Nacional de Ciencias, conferencia invitada al ser entregado el premio E.
Gaviola

- Córdoba, Mayo 2004
- 2004 *La astronomía de altas energías en la Argentina*
Exposición invitada en el panel de discusión sobre el futuro de la astronomía en Argentina 4
7a Reunión de la Asociación Argentina de Astronomía
San Juan, Septiembre 2004.
- 2006 *Agujeros negros en el Universo*
Clase Magistral, Planetario de la Ciudad Autónoma de Buenos Aires
Ciudad Autónoma de Buenos Aires, Octubre 2006
- 2007 *Reflexiones sobre la relación entre la teoría y la observación en la investigación astrofísica*
Workshop Astronomía Teórica en la Argentina: Problemas y Perspectivas
Observatorio Astronómico de Córdoba, Córdoba, Argentina, Mayo 2007
- 2009 *High-energy emission from binaries with Be stars*
VII Jornadas de Atmósferas Estelares
FCAyG - UNLP, La Plata, Mayo 2009
- 2009 *La anisotropía del tiempo y la dinámica del Universo*
52a Reunión de la Asociación Argentina de Astronomía
La Plata, Septiembre 2009
- 2010 *Astronomía gamma y su impacto científico*
Primera Reunión de la Colaboración Argentina de CTA/AGIS
Buenos Aires, Argentina, Marzo 2010
- 2010 *Changes in the theory of change*
Actualidad en Física de Partículas, Cosmología y Mecánica Cuántica
Facultad de Ciencias Astronómicas y Geofísicas de La Plata, Noviembre de 2010.
- 2011 *Problemas filosóficos relacionados con el espacio y el tiempo*
Seminario de Filosofía de la Ciencia, dirigido por Mario Bunge
UBA, FCEyN, Buenos Aires, Argentina, Septiembre 2011
- 2012 *Cosmología y Filosofía*
Seminario de Filosofía de la Ciencia, dirigido por Mario Bunge
UBA, FCEyN, Buenos Aires, Argentina, Septiembre 2012
- 2014 *Agujeros Negros, Stephen Hawking, y la ética de los científicos*
Seminario de Filosofía de la Ciencia, dirigido por Mario Bunge
UBA, FCEyN, Buenos Aires, Argentina, Septiembre 2014
- 2014 *Cosmología científica: estructura y evolución del universo*
Congreso CONECTAR II
Planetario de la Ciudad de La Plata, UNLP, La Plata, Argentina, Octubre 2014
- 2015 *La Relatividad General y el espacio-tiempo*
Congreso CONECTAR III
Paraninfo, Universidad de la República, Montevideo, Uruguay, Septiembre 2015
- 2015 *Black holes: fundamentals and controversies*

- 58a Reunión de la Asociación Argentina de Astronomía
La Plata, Septiembre 2015
- 2015 *Einstein y la metafísica del tiempo*
Seminario de Filosofía de la Ciencia, dirigido por Mario Bunge
UBA, FCEyN, Buenos Aires, Argentina, Septiembre 2015
- 2016 *Black holes mimickers*
Workshop on Gravitational Waves, Cosmology, and Compact Objects
Observatorio Astronómico de La Plata, La Plata, March 2016
- 2016 *El desarrollo de la astrofísica relativista en Argentina y el rol del IAR*
Radioastronomía en la Argentina: 50 años del IAR
CCT La Plata, CONICET, La Plata, March 2016
- 2016 *Gravitational waves: history, detection, and prospects*
6th Friends of Friends Meeting.
Observatorio de Córdoba, Córdoba, March 2016
- 2016 *Ondas gravitacionales: su naturaleza y detección*
TOPFOT/EEOF 2016: Fotónica y óptica en la Ingeniería
Facultad de Ingeniería, UBA, May 2016
- 2016 *Cosmología Pre-Socrática: Oriente y Occidente*
III Workshop de Epistemología e Historia de la Astronomía
Facultad de Ciencias Sociales, Universidad Nacional de Quilmes, October 2016
- 2016 *The Carb flaring mystery: how a young supernova remnant can double its flux in less than a day*
III Workshop sobre vínculos entre supernovas y sus remanentes
Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, November 2016.
- 2018 *Filosofía Científica: ¿Qué es la verdad y por qué importa?*
Tercera Jornada de Investigación en Ciencias Económicas.
Facultad de Ciencias Económicas, Universidad Nacional de La Plata, November 2018.
- 2019 *Ciencia, libertad y ética*
Congreso CONECTAR VII
Planetario de la Ciudad de La Plata, UNLP, La Plata, Argentina, Octubre 2019
- 2018 *Esbozo de Mario Bunge*
IV Jornada de Investigación en Ciencias Económicas.
Facultad de Ciencias Económicas, Universidad Nacional de La Plata, November 2019.

Trabajos presentados en reuniones científicas

1992-presente 250+ presentations in more than 20 countries and 150+ conferences

Organizaciones científicas

- 1990-1996 Asociación Física Argentina, Miembro Activo
- 1992-1998 International Society on General Relativity and Gravitation, Miembro Activo
- 1992-presente Asociación Argentina de Astronomía, Miembro Activo
- 1995 New York Academy of Sciences, Miembro Activo
- 1995-2000 British Society for the Philosophy of Science, Miembro Activo
- 1996-2000 The Pierre Auger Project, Miembro del Collaboration Board
- 1997-1999 The National Geographic Society, Miembro Activo
- 1997-presente International Astronomical Union, Miembro Activo
- 2008-presente Committee on Space Research (COSPAR), individual Associate
- 2010-2014 The Cherenkov Telescope Array (CTA), Miembro del Collaboration Board
- 2000-presente Grupo de Astrofísica Relativista y Radioastronomía (GARRA), Miembro fundador
- 2014-presente Centro de Difusión e Investigación Astronómica (CEDIA), Miembro Honorario
- 2016-presente Société Royale des Sciences de Liège, Corresponding Member

Observaciones astronómicas

- 1988-1991 Operador bajo contrato del receptor de continuo de la Antena II del Instituto Argentino de Radioastronomía desde el 01-10-88 al 01-09-91
- Astrónomo Observador, Instituto Argentino de Radioastronomía, numerosas veces entre 1992 y la fecha
- Astrónomo Visitante, Complejo Astronómico El Leoncito, San Juan, 01-09-97 al 04-09-97
- Astrónomo Visitante, Complejo Astronómico El Leoncito, San Juan, 24-04-98 al 29-04-98
- Astrónomo Visitante, Complejo Astronómico El Leoncito, San Juan, 02-11-99 al 08-11-99
- Astrónomo Visitante, Complejo Astronómico El Leoncito, San Juan, 19-12-00 al 24-12-00
- Astrónomo Visitante, Complejo Astronómico El Leoncito, San Juan, 10-12-01 al 13-12-01
- Complejo Astronómico El Leoncito, San Juan, PI o co-PI en numerosas propuestas luego de 2001
- 1996-1998 Green Bank 43-m radio telescope, observations in 1996 y 1998 (performed by J.A. Combi & I. Azcárate), PI
- 1997-1998 Itapetinga radio observatory (Brazil), multiple observations in 1997 and 1998
- Chandra X-Ray Observatory, DDT 5 ksec exposure of Cygnus region, August 2002, co-I
- Chandra X-Ray Observatory, Cycle 5 15 ksec exposure of 1WGA J1346.5-6255, Proposal ID: 05400245, scheduled 2004, co-I

- Chandra X-Ray Observatory, Cycle 5 50 ksec exposure of Cygnus OB2 North West, Proposal ID: 05200474, scheduled 2004, co-I
- 2003 INTEGRAL satellite, 200 ksec exposure of Eta-Carinae, "Grade A" level proposal, Proposal ID: 0120039, scheduled 2003, co-I
- 2003 INTEGRAL satellite, 500 ksec exposure of Cygnus region, Proposal ID: 0120067, scheduled 2003, co-I
- 2003 INTEGRAL satellite, amalgamated exposure of Wolf Rayet stars, Proposal ID: 0120088, scheduled 2003, co-I
- 2003 Westerbork radio observatory (The Netherlands), 39 hours to observe 3EG J1928+1733 and 3EG J2035+4441 in search for variable radio sources, Proposal ID: R03b002, 2003, co-I
- 2004 INTEGRAL satellite, 300 ksec exposure of GRO 1411-64, "Grade A" level proposal, Proposal ID: 0220008, scheduled 2004, co-I
- 2004 INTEGRAL satellite, 420 ksec exposure, Proposal ID: 0220004, "An INTEGRAL investigation of non-thermal phenomena in the stellar winds of early-type stars", "Grade B", scheduled 2004, co-I
- 2001 Australian Telescope Compact Array, observations of Wack WR star, 2001, co-I
- 2005 GMRT (India), 27 hours to observe variable radio sources with potential high-energy counterparts, Proposal ID: 07JMP01 - 'Identifying variable gamma-ray sources through multi-epoch radio observations', 2005, co-I
- 2005 2.2m-telescope at Calar Alto (Spain), 7 nights to observe polarization in blazars, November 2005, Proposal: 'Study of microvariability in the optical polarization of AO 0235+164', co-I
- 2006 1m-telescope at Calar Alto (Spain), 7 nights per month to observe variability in blazars, 2006, Proposal: 'Study of microvariability in blazars I', co-I
- 2007 1m-telescope at Calar Alto (Spain), 7 nights per month to observe variability in blazars, 2007, Proposal: 'Study of microvariability in blazars II', co-I
- 2007 XMM-Newton satellite, 65k s observation allocated to study an unidentified TeV source, 2007, Proposal ID: 055235, 'Searching for the engine powering the TeV source MGRO J2019+37', co-I
- 2008 AGILE satellite AO-1 Guest Observer, 2008. Proposal: 'Identification of the colliding wind binary WR 140 as a gamma-ray source', co-I
- 2008 AGILE satellite AO-1 Guest Observer, 2008. Proposal: 'Searching for the engine powering the TeV source MGRO J2019+37', co-I
- 2008 Very Large Array (VLA), configuration C, 2008, Proposal Code: VLA/08B-128, Legacy ID: AM951, Proposal: 'Search for non-thermal emission from a stellar bow shock I', co-I
- 2008 Very Large Array (VLA), configuration D, 2008, Proposal Code: VLA/AM951, Proposal: 'Search for non-thermal emission from a stellar bow shock II', co-I
- 2008 2.2m-telescope at Calar Alto (Spain), 7 nights to observe polarization in blazars, November 2008, Proposal: 'Polarization microvariability study of the blazar PG 1553+113', co-I
- 2009 Australian Telescope Compact Array, observations of Westerlund 2 star forming region, 2009, co-I

- 2009 XMM-Newton satellite, 43k s, observation allocated to the proposal ID: 065369, Title: "An X-ray exploration of a wind bowshock from a single star", 2009, co-I
- 2010 AGILE satellite AO-3 Guest Observer, 2010. Proposal: 'Are highly variable EGRET unidentified sources connected with microquasars?', co-I
- 2011 2.2m-telescope at Calar Alto (Spain), 7 nights to observe polarization in blazars, April 2011, Proposal: 'Polarization microvariability study of blazars', co-I
- 2011-presente Numerosas propuestas a instrumentos radioastronómicos, ópticos, y satelitales. La lista es demasiado extensa para enumerarla.

Actividades de extensión

Entrevistas en radio, medios gráficos, y TV sobre temas científicos. Ver lista de artículos de divulgación en la lista de publicaciones. Además, se han dictado las siguientes conferencias para público general (anteriormente a 2007 no se llevó registro; se dictaron varias decenas de conferencias)

- 2007 *Agujeros negros*
FCAG, UNLP, octubre 2007
- 2007 *Algunas reflexiones sobre Dios y la cosmología*
FCAG, UNLP, diciembre 2007
- 2008 *Sobre la posibilidad física de viajar en el tiempo*
FCAG, UNLP, septiembre 2008
- 2009 *Cuatrocientos años de astronomía: de Galileo a los agujeros negros*
Centro de convenciones de Malargue, Mendoza, marzo 2009 (actividad relacionada con el IYA 2009)
- 2009 *Viajar en el tiempo: ciencia y ficción*
FCAG, UNLP, abril 2009
- 2009 *Ciencia y Biblia - Descubriendo Universos - Camino al bicentenario*
Diálogos sobre la representación científica y religiosa del universo
Conversatorio con Gustavo E. Romero y Ariel Álvarez Valdés
FCAG, UNLP, septiembre 2009
- 2009 *Cuatrocientos años de astronomía: de Galileo a los agujeros negros*
Colegio Nacional Bartolomé Mitre, Tucumán, septiembre 2009 (actividad relacionada con el IYA 2009)
- 2010 *¿Es posible viajar en el tiempo? Ciencia y ficción*
INIFTA, CONICET, Proyecto de Divulgación de la Cultura Científica, marzo 2010
- 2010 *¿Es posible viajar en el tiempo?*
Tenaris, Campana, conferencia abierta al público, 800 asistentes, marzo 2010
- 2010 *Viajar en el tiempo: ciencia y ficción*
FCAG, UNLP, mayo 2010
- 2010 *Ciencia, tecnología e ideología*

- Ciclo de Charlas Debate sobre Política Científica
FCAG, UNLP, septiembre 2010
- 2011 *Paradojas del espacio y el tiempo*
FCAG, UNLP, junio 2011
- 2012 *¿Son compatibles la ciencia y la religión?*
FCAG, UNLP, junio 2012
- 2013 *El infinito*
FCAG, UNLP, octubre 2013
- 2014 *Radioastronomía y la teoría del Big Bang*
Centro de Difusión e Investigación Astronómica (CEDIA), Atyrá, Paraguay, junio 2014
- 2014 *Agujeros negros y el futuro del universo*
Centro de Difusión e Investigación Astronómica (CEDIA), Atyrá, Paraguay, junio 2014
- 2015 *Estructura y evolución del universo*
Club del Progreso, Ciudad Autónoma de Buenos Aires, julio 2015
- 2015 *Crisis y reconstrucción de la física actual*
Club astronómico Ing. Felix Aguila, Martínez, Buenos Aires, agosto 2015
- 2015 *Génesis de la Relatividad General*
Pre-CONNECTAR III
Planetario de la Ciudad de La Plata, UNLP, La Plata, Argentina, agosto 2015
- 2016 *Orgén y naturaleza de la filosofía científica*
Pre-CONNECTAR IV
Planetario de la Ciudad de La Plata, UNLP, La Plata, Argentina, September 2016
- 2018 *¿Qué es el infinito?*
Planetario de la Ciudad de La Plata, UNLP, La Plata, Argentina, October 2018
- 2018 *Radioastronomía y los primeros instantes del universo*
Jorndada de Radioastronomía
Facultad de Ciencias Astronómicas y Geofísicas, UNLP, La Plata, Argentina, November 2018
- 2019 *La Relatividad General a prueba: a cien años de la expedición de Eddington*
Planetario de la Ciudad de La Plata, UNLP, La Plata, Argentina, May 2019

Enseñanza universitaria

- 1988-1989 Cargo: Ayudante Alumno ad-honorem
Cátedra: ANALISIS MATEMATICO I, Facultad de Ciencias Exactas (UNLP)
Período: 13-10-88 al 01-06-89
Modo de acceso: concurso
- 1989 Cargo: Ayudante Alumno rentado

- Cátedra: ANALISIS MATEMATICO I, Facultad de Ciencias Exactas (UNLP)
 Período: 01-06-89 al 01-12-89
 Modo de acceso: Ordenanza 127
- 1989-1991 Cargo: Ayudante Alumno Ordinario, dedicación simple
 Cátedra: ALGEBRA I, Facultad de Ciencias Exactas (UNLP)
 Período: 01-12-89 al 01-09-91
 Modo de acceso: concurso
- 1991 Cargo: Ayudante Alumno, dedicación simple
 Cátedra: MATEMATICA, Curso de Ingreso 1991, Facultad de Ciencias Exactas (UNLP)
 Modo de acceso: concurso
- 1991-1992 Cargo: Ayudante Diplomado Interino, dedicación simple
 Cátedra: ALGEBRA I, Facultad de Ciencias Exactas (UNLP)
 Período: 01-08-91 al 01-02-92
 Modo de acceso: concurso
- 1992 Cargo: Jefe de Trabajos Prácticos, dedicación semi-exclusiva
 Cátedra: MATEMATICA, Curso de Ingreso 1992, Facultad de Ciencias Exactas (UNLP)
 Modo de acceso: concurso
- 1992 Cargo: Ayudante Diplomado Interino, dedicación simple
 Cátedra: FISICA I, Facultad de Ingeniería (UNLP)
 Período: 01-04-92 al 15-11-92
 Modo de acceso: concurso
- 1993-1996 Cargo: Ayudante Diplomado Ordinario, dedicación simple
 Cátedra: ALGEBRA I, Facultad de Ciencias Exactas (UNLP)
 Período: 01-04-93 al 20-10-96
 Modo de acceso: concurso
 Con licencia sin goce de sueldo desde el 16-03-94 al 20-10-96
- 1994 Cargo: Jefe de Trabajos Prácticos, dedicación semi-exclusiva
 Cátedra: MATEMATICA, Curso de Ingreso 1994, Facultad de Ciencias Exactas (UNLP)
 Modo de acceso: concurso
- 1994 Cargo: Jefe de Trabajos Prácticos, dedicación semi-exclusiva
 Cátedra: ALGEBRA I, Facultad de Ciencias Exactas (UNLP)
 Período: 16-03-94 al 26-10-94
 Modo de acceso: Ordenanza 127
- 1994-1997 Cargo: Jefe de Trabajos Prácticos Interino, dedicación semi-exclusiva
 Cátedra: ALGEBRA I, Facultad de Ciencias Exactas (UNLP)
 Período: 26-10-94 al 15-05-97
 Modo de acceso: concurso
- 1997-2002 Cargo: Jefe de Trabajos Prácticos Ordinario, dedicación simple

- Cátedra: ALGEBRA I, Facultad de Ciencias Exactas (UNLP)
 Período: 01-08-97 al 01-03-02. Con licencia desde el 01-03-01
 Modo de acceso: concurso
- 2001-2002 Cargo: Profesor Adjunto, dedicación simple
 Cátedra: ALGEBRA I, Facultad de Ciencias Exactas (UNLP)
 Período: 01-03-01 al 01-03-02
 Modo de acceso: Ordenanza 127
- 2002 Cargo: Visiting Full Professor
 Cátedra: *Astrofísica de Altas Energías*, Université de Paris VII, Paris, France
 Período: Junio-Julio, 2002
 Modo de acceso: Concurso.
- 2005 Cargo: Profesor Visitante, dedicación exclusiva
 Cátedra: *Introducción a la Astrofísica de muy Altas Energías* (curso de postgrado)
 , Facultat de Física, Universitat de Barcelona, Barcelona, España
 Período: Febrero - Marzo, 2005.
 Modo de acceso: Concurso.
- 2005-2007 Cargo: Profesor Adjunto Ordinario, dedicación simple
 Cátedra: *Introducción a la Astrofísica Relativista*, Facultad de Ciencias Astronómicas y Geofísicas (UNLP).
 Período: 01-05-05 al 01-02-07.
 Modo de acceso: Concurso.
- 2007-2010 Cargo: Profesor Asociado Ordinario, dedicación simple
 Cátedra: *Introducción a la Astrofísica Relativista*, Facultad de Ciencias Astronómicas y Geofísicas (UNLP)
 Período: 1-03-07 al 01-06-10
 Modo de acceso: Concurso
- Cursos dictados *Introducción a la Astrofísica Relativista*: 2005, 2006, 2007, 2008, 2009 / *Introducción a la Astrofísica de Agujeros Negros*: 2009, 2010
- 2010 Cargo: Profesor Titular Interino, dedicación simple
 Cátedra: *Introducción a la Astrofísica Relativista*, Facultad de Ciencias Astronómicas y Geofísicas (UNLP)
 Período: 01-06-10 al 14-09-2010
 Modo de acceso: Designación Decano
- Cursos dictados *Introducción a la Astrofísica Relativista*: 2010 / *Introducción a la Astrofísica de Agujeros Negros*: 2010
- 2007 Cargo: Profesor Visitante, dedicación exclusiva
 Cátedra: *Introduction to high-energy astrophysics* (curso de postgrado) , Universidade Estadual de Campinas -UNICAMP, Campinas, Brazil
 Período: Abril, 2007
 Modo de acceso: invitación
- 2007 Cargo: Profesor Visitante, dedicación exclusiva

- Cátedra: *Astrofísica de Altas Energías* (postgrado) , Facultat de Física, Universitat de Barcelona, Barcelona, España
 Período: Octubre - Noviembre, 2007
 Modo de acceso: invitación
- 2009 Cargo: Profesor Visitante, dedicación exclusiva
 Cátedra: *Astrofísica de Altas Energías* (postgrado) , Facultat de Física, Universitat de Barcelona, Barcelona, España
 Período: Octubre - Noviembre, 2009
 Modo de acceso: invitación
- 2010 Cargo: Profesor Visitante, dedicación exclusiva
 Cátedra: *Astrofísica de Agujeros Negros* (postgrado) , Facultat de Física, Universitat de Barcelona, Barcelona, España
 Período: Noviembre, 2010
- 2013 Cargo: Profesor Visitante, dedicación exclusiva
 Curso: *Introduction to gamma-ray astronomy and astrophysics*
 Centro de Radioastronomía y Astrofísica (CRyA), UNAM
 Morelia, Mexico
 Período: 4/03/2013-14/03/2013. A series of 6 lectures
 Modo de acceso: invitación
- 2014 Cargo: Profesor Visitante, dedicación exclusiva
 Curso: *Black hole astrophysics*
 Karlsruhe Institute of Technology -KIT
 Karlsruhe, Germany
 Período: Nov.-Dec. 2014. A series of 11 lectures
 Modo de acceso: invitación
- 2015 Cargo: Profesor Visitante, dedicación exclusiva
 Curso: *Scientific Philosophy*
 Centro de Radioastronomía y Astrofísica (CRyA), UNAM
 Morelia, Mexico
 Período: 1/03/2015-15/03/2015. A series of 8 lectures
 Modo de acceso: invitación
- 2015 Cargo: Profesor Visitante, dedicación exclusiva
 Curso: *Black holes and jets*
 Center for Astrophysics, Guangzhou University
 Guangzhou, China
 Período: 1/011/2015-15/11/2015. A series of 4 lectures
 Modo de acceso: invitación
- 2016 Cargo: Profesor Visitante, dedicación exclusiva
 Curso: *Particle acceleration*
 Centro de Radioastronomía y Astrofísica (CRyA), UNAM
 Morelia, Mexico

- Período: 1/06/2016-15/06/2016. A series of 6 lectures
 Modo de acceso: invitación
- 2016 Cargo: Profesor Visitante, dedicación exclusiva
 Curso: *Scientific Philosophy*
 Departamento de Física, UNSAM
 San Martín, Buenos Aires, Argentina
 Período: July 2016. A series of 10 lectures
 Modo de acceso: invitación
- 2017 Cargo: Profesor Visitante, dedicación exclusiva
 Curso 1: *Scientific Philosophy*
 Curso 2: *Particle Acceleration in Astrophysics*
 Karlsruhe School of Elementary Particle and Astroparticle Physics: Science and
 Technology (KSETA)
 Karlsruhe Institute of Technology -KIT
 Karlsruhe, Germany
 Período: October 2017. A series of 7 lectures
 Modo de acceso: invitación
- 2010-presente Cargo: Profesor Titular Ordinario, dedicación simple
 Cátedra: *Introducción a la Astrofísica Relativista*, Facultad de Ciencias As-
 tronómicas y Geofísicas (UNLP)
 Período: 14-09-2010 al presente
 Modo de acceso: Concurso
- Cursos dictados *Introducción a la Astrofísica Relativista*: 2010, 2011, 2012, 2013, 2014, 2015, 2016,
 2017, 2018 / *Introducción a la Astrofísica de Agujeros Negros*: 2011, 2012, 2013,
 2015, 2017 / *Filosofía Científica*: 2016, 2018.
- 2019 Cargo: Profesor Visitante, dedicación simple
 Curso: *Filosofía Científica*
 Facultad de Ciencias Económicas, UNLP
 La Plata, Buenos Aires, Argentina
 Período: April 2019 - may 2019. A series of 8 lectures / 30 h
 Modo de acceso: Res. Consejo Directivo.
- 2019 Cargo: Profesor Visitante, dedicación simple
 Curso: *Filosofía Científica*
 Facultad de Ciencias Exactas, UBA
 Buenos Aires, Argentina
 Período: junio 2019. A series of 6 lectures with practical works/ 30 h
 Modo de acceso: Res. Consejo Directivo.

Textos docentes

Radioastronomía en la Argentina

G.E. Romero, J.A. Combi

Lengua y Comunicación: Activa 6 (EGB)

Puerto de Palos, Buenos Aires, 1999, p.65

Introducción a la Astrofísica Relativista

G.E. Romero

Notas del curso dictado en la FCAGLP, UNLP, 2005

Versión actualizada y electrónica: 2014

Introduction to Black Hole Astrophysics

G.E. Romero

Notas del curso dictado en la FCAGLP, UNLP, 2009

Versión actualizada y electrónica: 2013, 2018

Trabajos científicos publicados en revistas internacionales con referato

1. *Axiomatic foundations of nonrelativistic Quantum Mechanics: A realistic approach*
S.E. Perez Bergliaffa, G.E. Romero, H. Vucetich
Int. J. Theor. Phys. **32**, 1507-1522, 1993
2. *Polarization variability of extragalactic radio sources at 1435 MHz*
H. Luna, R. Martínez, J.A. Combi, G.E. Romero
Astron. Astrophys. **269**, 77-82, 1993
3. *Strong intraday variability in the southern blazar PKS 0537-441 at 1.42 GHz*
G.E. Romero, J.A. Combi, F.R. Colomb
Astron. Astrophys. **288**, 731-737, 1994
4. *1435 MHz continuum observations of Upper-Scorpius*
J.A. Combi, J.C. Testori, G.E. Romero, F.R. Colomb
Astron. Astrophys. **296**, 514-522, 1995
5. *Flicker of southern extragalactic radio sources at 1.42 GHz*
G.E. Romero, P. Benaglia, J.A. Combi
Astron. Astrophys. **301**, 33-40, 1995
6. *Rapid radio variability in PKS 0537-441: superluminal microlensing caused by small masses in a foreground galaxy?*
G.E. Romero, G. Surpi, H. Vucetich
Astron. Astrophys. **301**, 641-649, 1995
7. *On the origin of the γ -ray fields in the Ara region*
J.A. Combi, G.E. Romero.
Astron. Astrophys. **303**, 872-880, 1995
8. *Rapid variability in the southern blazar PKS 0521-365*
G.E. Romero, J.A. Combi, H. Vucetich
Astrophys. Space Sci. **225**, 183-204, 1995
9. *Variability in the southern blazars PKS 1921-293 and PKS 2155-152*
G.E. Romero, J.A. Combi
Astrophys. Space Sci. **229**, 23-32, 1995
10. *Fine scale structure in relativistic jets and rapid variability in blazars*
G.E. Romero
Astrophys. Space Sci. **234**, 49-55, 1995
11. *Axiomatic foundations of Quantum Mechanics revisited: the case for systems*
S.E. Perez Bergliaffa, G.E. Romero, H. Vucetich
Int. J. Theoret. Phys. **35**, 1805-1819, 1996
12. *The gravitational microlensing scenario for PKS 0537-441*
G. Surpi, G.E. Romero, H. Vucetich
Rev. Mex. Astron. Astrofis. **32**, 153-159, 1996

13. *A model for the soft γ -ray variability in MeV blazars*
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 Disponible en: <http://www.iar.unlp.edu.ar/prensa/2004-06-04-Microsemanario.pdf>.
2. *Preguntas y Respuestas Astronómicas*
 Un reportaje por Martín Varsavsky, Jueves, 5 de Octubre de 2006
 Disponible en: <http://spanish.martinvarsavsky.net/general/preguntas-y-respuestas-astronomicas.html>.
3. *Cumbre de astrónomos en el Sur*
 Diario UNO de Mendoza, Martes 18 de Septiembre de 2007

4. Disponible en: <http://www.diariouno.com.ar/edimpresa/2007/09/18/nota159351.html>
Astrónomos del mundo estudian el universo desde La Plata
 Diario El Día, martes 18.03.2008
 Disponible en: <http://www.eldia.com.ar/catalogo/20080318/informaciongeneral3.html>.
5. *Los cuatro astrónomos*
 La Voz del Interior - Córdoba (17-05-2009)
 Disponible en: <http://www.lavoz.com.ar/>.
6. *Galileo, Dios y la vida extraterrestre*
 La Voz del Interior - Córdoba (17-05-2009)
 Disponible en: <http://www.lavoz.com.ar/>.
7. *Un universo invisible*
 Canal 2, España, emitido en mayo de 2009 (productora CEDECOM S.L.)
 Disponible en: <http://www.youtube.com/watch?v=0RmvAQiSKQ0>.
8. *Expertos explican los secretos del Universo*
 La Voz del Interior - Córdoba (31-05-2009), Sección: Sociedad. Página A19
 Disponible en: <http://www.lavoz.com.ar/09/05/31/Expertos-explican-secretos-Universo.html>.
9. *Premian a investigador de la UNLP*
 Diario El Día, sábado 22.08.2009
 Disponible en: <http://www.eldia.com.ar/>
10. *Recurso Natural: Exo-biología*
 Canal 7, Argentina, emitido en septiembre de 2009 (Conducción: Eduardo De La Puente).
11. *Premian a otro investigador platense*
 Diario El Día, sábado 03.02.2010
 Disponible en: <http://www.eldia.com.ar/>
12. *Una charla para saber si es posible viajar en el tiempo*
 Diario El Día, sábado 27.03.2010
 Disponible en: <http://www.eldia.com.ar/>
13. *Recurso Natural: El Origen del Universo*
 Canal 7, Argentina, emitido en mayo de 2010 (Conducción: Eduardo De La Puente).
14. *Viajar a través del tiempo: un sueño realmente imposible? - Gustavo Romero, científico de la UNLP, habló sobre la posibilidad que tiene la ciencia de viajar al futuro.*
 Diario Hoy - La Plata (viernes 04 de junio de 2010)
 Disponible en: <http://www.diariohoy.net/>
15. *Radio Almuerzos: Los Premios Houssay*
 LR11 Radio Universidad de La Plata, Argentina, emitido en mayo de 2010 (Conducción: Mario Sarlangue).
16. *Investigar para Encontrar Respuestas*
 La Palabra Universitaria, UNLP, abril de 2010

- Disponible en <http://www.lapalabra.unlp.edu.ar/?p=458/>
17. *Orgullo en la UNLP por premio Houssay a investigadores.* (Dr. Gustavo Romero). Diario El Día, 19 de agosto de 2010
<http://www.eldia.com.ar/edis/>
 18. *Máxima distinción para investigadores de la Universidad platense.* (Dr. Gustavo Romero). Diario Hoy, 18 de agosto de 2010
<http://www.diariohoy.net/>
 19. *Otorgaron los premios Houssay a 16 científicos sobresalientes.* (Dr. Gustavo Romero). Diario La Nación, 18 de agosto de 2010
<http://www.lanacion.com.ar/>
 20. *Cuatro docentes platenses fueron distinguidos con el Premio Houssay.* (Dr. Gustavo Romero). Diario Diagonales, 18 de agosto de 2010
<http://www.elargentino.com/>
 21. *Entrevista al Dr. Gustavo Romero acerca del Premio Houssay.* "Sector II". Radio Universidad Nacional La Plata, 18 de agosto de 2010
 22. *Radio Pandora: ¿Es posible viajar en el tiempo?*
Entrevista radial, Santa Fe, Argentina, emitida el 14 de septiembre de 2011
 23. *Entrevista al Dr. Gustavo E. Romero.* Diario El Día, 22 de enero de 2012
<http://www.eldia.com.ar/>
 24. *Entrevista al Dr. Gustavo E. Romero.* Radio FM Capital 93.1 (Neuquen), 18 de abril de 2012
<http://www.fmcapitalnqn.com.ar/>
 25. *Entrevista al Dr. Gustavo E. Romero.* Radio Universidad AM 1390 (La Plata), 21 de abril de 2012
<http://www.radiouniversidad.unlp.edu.ar/content/am-1390/>
 26. *Entrevista al Dr. Gustavo Romero acerca de la caída de un meteorito.* Telenoche, Canal 13, febrero de 2013 (entrevistadores: M. L. Santillán y Santo Biasatti).
 27. *Entrevista al Dr. Gustavo E. Romero.* Radio Vorterix FM 103.3 (Buenos Aires), 30 de octubre de 2013 (entrevistador Mario Pergolini)
<http://vorterix.com/micrositios/cientificosvtx/#>
 28. *Más cerca de conocer los primeros tiempos del Universo*
Entrevista al Dr. Gustavo E. Romero
Boletín 345, FACGLP, UNLP
19 de abril de 2014.
 29. *Astrofísico argentino visitará Paraguay.* Entrevista publicada por el diario ABC de Asunción, 20 de mayo de 2014.
<http://www.abc.com.py/edicion-impres/a/ciencia-y-tecnologia/astrofisico-argentino-visitara-paraguay-1246905.html>
 30. *Para entender el mundo se debe invertir mucho más en investigación.* Entrevista extensa a Gustavo E. Romero realizada por Eduardo Quintana, publicada por el diario ABC de Asunción, 10 de junio de 2014.

<http://www.abc.com.py/edicion-impres/a/ciencia-y-tecnologia/para-entender-el-mundo-se-debe-invertir-mucho-mas-en-investigacion-1253765.html>

31. *Discurso en honor a Mario Bunge*
Presentación del libro *Memorias. Entre dos Mundos* por Mario Bunge, Editoriales EUDEBA y Gedisha
Salón Rojo, Facultad de Derecho, UBA, Buenos Aires, Argentina, 1 de octubre de 2014
<http://www.radiouniversidad.unlp.edu.ar/content/am-1390/>
32. *La cosmología no debería ser un circo (reflexiones en torno al señor Stephen Hawking)*
Gustavo E. Romero
Factor 302.4
<http://factorelblog.com/2014/06/11/la-cosmologia-no-deberia-ser-un-circo-hawking/>
33. “*Sin políticas globales preveo una derrota de las sociedades abiertas*” - *Entrevista.*
Gustavo E. Romero
Factor 302.4
<http://factorelblog.com/2015/01/10/gustavo-e-romero-sin-politicas-globales-preveo-una-derrota-de-las-sociedades-abiertas/>
34. *Metafísica exacta del espacio tiempo: Gustavo E. Romero.*
Entrevista a Gustavo E. Romero realizada por Silvio Sánchez Mújica/México/Lunes 13 de Abril, 2015.
Gustavo E. Romero
El astrofísico argentino visita México para impartir un curso de Filosofía Exacta a estudiantes del CRYA en Morelia, Michoacán. Una jornada intensiva de semántica, epistemología, ontología y filosofía moral dieron cuenta de una visión lúcida y profunda en filosofía científica
<http://epistemologic.jimdo.com/2015/04/13/metafisica-exacta-del-espacio-tiempo-gustavo-e-romero/>
<http://factorelblog.com/2015/05/21/irreversibilidad-caos-y-tiempo/>
35. *Entrevista a Gustavo Romero: Un Anaximandro del Siglo XX.*
Entrevista a Gustavo E. Romero realizada por Guillermo Mattei, 03/06/2015.
Gustavo E. Romero
Nexciencia.exactas.uba.ar, Noticias de Ciencia y Tecnología argentinas.
<http://nexciencia.exactas.uba.ar/un-anaximandro-del-siglo-xxi>
36. *El Reencuentro* por Guillermo Mattei
Exactamente, Revista de la FCEyN del la UBA, No. 58, pp. 38-52, julio 2015
Artículo sobre física y filosofía basado en una entrevista a G.E. Romero
37. *La clave para entender el Universo se encuentra en los agujeros negros.* Entrevista extensa a Gustavo E. Romero realizada por Eduardo Quintana, publicada por el diario ABC de Asunción, 1 de septiembre de 2015.
<http://www.abc.com.py/edicion-impres/a/ciencia-y-tecnologia/la-clave-para-entender-el-universo-se-encuentra-en-los-agujeros-negros-1403310.html>

38. *La filosofía hoy puede contribuir enormemente a la ciencia.* Entrevista extensa a Gustavo E. Romero realizada por Eduardo Quintana, publicada por el diario ABC de Asunción, 7 de septiembre de 2015.
<http://www.abc.com.py/edicion-impresa/ciencia-y-tecnologia/la-filosofia-hoy-puede-contribuir-enormemente-a-la-ciencia-afirman-1405285.html>
39. *El Modelo Estándar de la Cosmología (primera parte).* Una entrevista exclusiva al PhD. en Ciencias Físicas Gustavo Esteban Romero. Entre los temas tratados se encuentran: una breve historia de la Cosmología Moderna, el Modelo Lambda-CDM, el espacio-tiempo de De Sitter, el Big Bang y las Fluctuaciones Cuánticas, la Constante Cosmológica, la Materia Oscura, la Energía Oscura, los Agujeros Negros, los Quasars, los Blazars, la Radiación Cósmica de Fondo, la polarización de modo-B y modo-E, la radiación de Cherenkov, otras teorías Cosmológicas, la Teoría M, la divulgación de la Cosmología en medios, los aportes de la Filosofía y sobre sus trabajos de investigación en la actualidad. Realizado por Magazine de Ciencia (<http://www.magazinedeciencia.com.ar>).
<http://www.magazinedeciencia.com.ar/el-modelo-estandar-de-la-cosmologia-1>
40. *El Modelo Estándar de la Cosmología (segunda parte).* Una entrevista exclusiva al PhD. en Ciencias Físicas Gustavo Esteban Romero. Entre los temas tratados se encuentran: una breve historia de la Cosmología Moderna, el Modelo Lambda-CDM, el espacio-tiempo de De Sitter, el Big Bang y las Fluctuaciones Cuánticas, la Constante Cosmológica, la Materia Oscura, la Energía Oscura, los Agujeros Negros, los Quasars, los Blazars, la Radiación Cósmica de Fondo, la polarización de modo-B y modo-E, la radiación de Cherenkov, otras teorías Cosmológicas, la Teoría M, la divulgación de la Cosmología en medios, los aportes de la Filosofía y sobre sus trabajos de investigación en la actualidad. Realizado por Magazine de Ciencia (<http://www.magazinedeciencia.com.ar>).
<http://www.magazinedeciencia.com.ar/el-modelo-estandar-de-la-cosmologia-2>
41. *El Origen del Universo.* Ciclo de reportajes con discusión abierta al público. Participantes: G.E. Romero y J.C. Hamilton.
 Café con Ciencia. MinCyT. Godoy Cruz 2230, CABA. April 13, 2016.
<https://www.youtube.com/watch?v=E1GFwBDdPUY>
42. *Entrevista al Dr. Gustavo E. Romero sobre física, astrofísica, y cosmología. Programa de una hora de duración.*
 Radio Univ. Belgrano (FMUB909). Programa: ADN. April 26, 2016.
43. *La Filosofía Científica.* Una entrevista exclusiva al Doctor en Ciencias Físicas Gustavo Esteban Romero. Entre los temas tratados se encuentran: una introducción a la filosofía científica, la semántica filosófica, la ontología, la epistemología, la axiología, la ética, la axiomática, ontología del espacio-tiempo, filosofía de la mecánica cuántica, el ficcionalismo: una filosofía de las matemáticas y sobre sus trabajos de investigación en filosofía. Realizado por Magazine de Ciencia (<http://www.magazinedeciencia.com.ar>).
<https://www.youtube.com/watch?v=VXYOVxc9Q7I>
44. *Gustavo Romero: “La ciencia está ajena al gran público y eso me preocupa mucho”.* Un reportaje sobre ciencia y política a Gustavo E. Romero por Esteban Sargiotto. La Vanguardia, 5 de abril de 2017.

<http://www.lavanguardiadigital.com.ar/index.php/2017/04/05/gustavo-romero-la-ciencia-esta-ajena-al-gran-publico-y-eso-me-preocupa-mucho/>

45. *Diálogo sobre la Mecánica Cuántica*. Un diálogo exclusivo entre el Dr. Gustavo Esteban Romero y el Dr. Santiago Esteban Perez-Bergliaffa, donde abordan los siguientes temas: el desarrollo de la Mecánica Cuántica, el referente de la Mecánica Cuántica, la interpretación de Copenhague, la Teoría Cuántica de Broglie-Bohm, la interpretación literal de Mario Bunge, la interpretación del Multiverso, la paradoja EPR, la Teoría Cuántica de Campos y sobre sus trabajos de investigación en la actualidad. Realizado por Magazine de Ciencia

<https://www.youtube.com/watch?v=VJWYsMnw2dI&t=2961s>

46. *Entrevista a Gustavo E. Romero: “El arte no es ciencia, pero su estudio sí”: hacia una teoría científica de la estética*. Un reportaje sobre ciencia y estética a Gustavo E. Romero por Ariel Insaurralde Alviso.

Ciencia del Sur, diciembre 14, 2017

<https://cienciadelsur.com/2017/12/09/teoria-cientifica-de-la-estetica-arte/>

47. *Entrevista a Gustavo E. Romero: Argentina busca recuperar liderazgo en astronomía, según nuevo director del IAR-CONICET*. Un reportaje sobre ciencia y tecnología a Gustavo E. Romero por Eduardo Quintana.

Ciencia del Sur, julio 11, 2018

<https://cienciadelsur.com/2018/07/11/argentina-busca-liderazgo-en-astronomia-segun-iar-conicet/>

48. *Gustavo E. Romero nuevo director del IAR*. Nota sobre la designación del nuevo Director del IAR y su proyecto institucional.

A. Agostinelli

Factor 302.4, julio 2018

<http://factorelblog.com/2018/07/11/el-iar-renace/>

49.

Who's who

2010-2013 *Who's who in the World*. Edition 2010. Edition 2013.

Estadísticas

Número total de publicaciones

I. Con referato: 450 artículos y reviews, 12 libros, 11 capítulos de libros

II. Sin referato formal: 61 artículos y resúmenes

Citas

Número de citas según la base ADS (cubre sólo las principales revistas de Astronomía y algunas revistas de Física): ca. 7300 (al 01/10/2019)

Número de citas según Google Scholar: ca. 7000 (al 06/1/2020)

Parámetro h: 44 (ADS) - 40 (Google Scholar)

Reads: 104.117 (ADS)

Average citations per refereed paper: 24.5

Research Gate Score: 45.55

Tizchang Seddigheh

Position: visitor- Post-Doctoral Research Fellow
Period covered: 5 th to 19 th of November 2019

I Scientific Work

CMB and laser photon polarization in presence of new physics.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

ICRANet weekly seminar, Probing the effect of background fields on the polarization of photons from CMB to lasers, Friday November 15th, 2019.

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2019 List of Publication

Circular polarization of cosmic photons due to their interactions with Sterile neutrino dark matter, M.Haghighat, S.Mahmoudi, R.Mohammadi, S.Tizchang, S.S Xue, arXiv:1909.03883.

Sergio Torres

Position: Senior Researcher
Centro Internacional de Física, Bogotá, Colombia

Period covered: 2019

I Scientific Work

Leading a research group studying cosmological models and analysis of cosmic background radiation data;

H_0 Tension data analysis & model testing. Currently analyzing galaxy catalogs to understand potential asymmetric bias in distance calibrators (that could explain the reported H_0 tension).

Principal investigator (1995) of the Galactic Emission Mapping (GEM) project in Colombia, consisting of an international collaboration to survey the galactic radiation in the 408 – 5000 MHz range.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

Cosmology Workshop, Universidad Nacional de Colombia, Bogotá, Colombia

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2016 List of Publication

G. Chaparro-Molano, J.C. Cuervo, O.A. Restrepo, S. Torres, "Predicting extragalactic distance errors using Bayesian inference in multi-measurement catalogs", *Month. Not. Royal Acad. Soc.*, 485, 3, pp. 4343-4358, May 2019.

G. Chaparro, O. Restrepo, J. C. Cuervo, S. Torres, "Bayesian Estimation of Uncertainties for Redshift Independent Distance Measurements in the NED-D Catalog", *Revista Mexicana de Astronomía y Astrofísica Conference Series*, **50**, 63, 2018.

Vallejo Peña Sergio Andrés

Position: Visiting Scientist from University of Antioquia
Period at ICRANet: 9th of July 2018 – 7th of September 2018



I Scientific Work

I have done scientific research about:

- Cosmological perturbations theory and its applications to early Universe cosmology.
- The effects of local inhomogeneities on local cosmological observations. Modeling the local structure with the Lemaitre-Tolman-Bondi exact solution of Einstein's field equations of General Relativity.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- II Workshop on Current Challenges in Cosmology
29th of October – 2nd of November 2018, Bogotá, Colombia.
- XV Marcel Grossmann Meeting
1st – 7th of July 2018, Rome, Italy.
- School on Open Problems in Cosmology
17th - 28th of July 2017, São Paulo, Brazil.
- First Colombian Meeting on High Energy Physics
28th of November – 2nd of December 2016, Medellín, Colombia.

II d Other Teaching Duties

Relativity and Gravitation, undergraduate course during 2019.

Institute of Physics, University of Antioquia, Colombia.

III. Service activities

III a. Within ICRANet

Seminars:

- The MESS of cosmological perturbations.
- The effects of anisotropy and non-adiabaticity on the evolution of the curvature perturbation.

2019 List of Publication

- Vallejo-Peña, S. A. and Romano, A. E. *Are primordial black holes produced by entropy perturbations in single field inflationary models?*, *JCAP* 1911 (2019) no.11, 015, e-Print: arXiv:1806.01941
- Naruko, A., Romano, A. E., Sasaki, M. and Vallejo-Peña, S. A. *The effect of anisotropic stress and non-adiabatic pressure perturbations on the evolution of the comoving curvature perturbation*, *Class.Quant.Grav.* 37 (2020) no.1, 017001, e-Print: arXiv:1804.05005

International Relativistic Astrophysics Ph. D.

Becerra Vergara, Eduar Antonio



Position: Ph.D. Student

Period covered: 2018 - present

I Scientific Work

In the development of the Ph.D., my main research field focuses on the creation, emission and annihilation of neutrinos-antineutrinos pairs around compact objects under the model of induced gravitational collapse (IGC) and their connection with the generation long-duration gamma-ray bursts (LGRBs). I have been studying the annihilation rate as well as the energy deposition of neutrino-antineutrino pairs and their influence on the luminosity of LGRBs.

I have recently dabbled in the topic of dark matter studying the physics of self-gravitational objects, as well as the orbits of massive particles, in the field of general relativity, in space-time generated by such objects.

I have also studied the effects of anisotropy on mass-radius diagrams and the resulting maximum mass on quark and neutron stars using an interacting quark equation of state. The anisotropy is presented as the difference between the radial and the tangential pressure in the hydrostatic equilibrium equation which is obtained solving the Einstein field equations for the interior of the star.

I have studied the stability of static axisymmetric relativistic thin disks in general relativity, by introducing a first-order perturbation into the energy-momentum tensor of the fluid in order to characterize astrophysically relevant galactic or accretion disks models.

II Conferences and educational activities

II a - Conferences and Other External Scientific Work

- 6th Italian-Korean Symposium on Relativistic Astrophysics – July 1 to 5, 2019. *Assistant*
- Open Universe International Doctoral School "The discovery of BlackHoles" How the discovery of a Black Hole in GRB 190114C and in M87 is modifying the human outlook from planet Earth. – June 10 to 14th, 2019 in ICRANet Seat at Villa Ratti – Nice (France). Talk: *The geodesics motion of S_2 and G_2 as a test of the fermion dark matter constituency of our galactic core.*
- XXIV Iberoamerican Congress of Catalysis, Medellin - Colombia, September 15 to 19th, 2014. Talk: *Influence of the support and the ratio $Co/(Co+Mo)$ in the selectivity HDS/HIDO of catalysts for FCC naphtha HDT.*
- XXIII Iberoamerican Congress of Catalysis, Santa Fe - Argentina, September 2 to 7th, 2012. Talk: *Study of effect the inhibition by aromatic compounds on the hydrodesulfurization reaction of dibenzothiophene.*

- XXVI Colombian Congress of Chemical Engineering, Barrancabermeja - Colombia, September 1 to 4th, 2011. Talk: *Innuence of aromatics and temperature on the desulfurization of a heavy cut for diesel production.*

II b - Seminars

- Quantum-systems investigations vs optical-systems ones, November 7th, Pescara, Italia. *Assistant*
- Probing the effect of background fields on the polarization of photons from CMB to lasers, November 15th, Pescara, Italia. *Assistant*
- Magnetars, Magnetized Black Holes and Laboratory Astrophysics, September 12th, Pescara, Italia. *Assistant*
- Higgs inflation with a running kinetic term, June 25th, Pescara, Italia. *Assistant*
- Technical Project Management with Standard PMI, October – November, 2011. *Assistant*

III. Service activities

III a. Within ICRANet

III b. Outside ICRANet

- Lecturer. March 2015 to July 2018. Lecture: *Waves and particles*. Physics Department, Universidad Industrial de Santander – UIS.
- Lecturer. February to July 2016. Lectures: *Differential Calculus*. Basic Science Department, Universidad Santo Tomas.
- Lecturer. February to July 2016. Lectures: *Mathematics with applications in economics*. Basic Science Department, Universidad Santo Tomas.
- Lecturer. November 2013 - September 2014. Lecture: *Transport phenomena*. Physics Department, Universidad Industrial de Santander – UIS.

2019 List of Publication

- E. A. Becerra-Vergara, C.R. Argüelles, A. Krut, J. A. Rueda, and R. Ruffini, *The geodesic motion of S2 and G2 as a test of the fermion dark matter constituency of our galactic core*, Submitted for publication in Astronomy & Astrophysics.
- E. A. Becerra-Vergara, Sindy Mojica, F. D. Lora-Clavijo, and Alejandro Cruz-Osorio, *Anisotropic quark stars with an interacting quark equation of state*, Phys. Rev. D 100, 103006 (2019).



Bedić Suzana

Position: IRAP PhD Student, ICRANet, University of Rome la Sapienza

Period covered: November 2016 onwards

I Scientific Work

- deformed spacetime symmetries, relative locality, doubly special relativity
- quantum gravity phenomenology; modified dispersion relation in context of Lorentz Invariance Violation and deformed relativity symmetries, signatures of quantum gravity effects in gamma-ray bursts data
- spacetime from quantum theory; quantum relativity perspective, phase space as a fundamental model
- relativistic quantum mechanics, non-unitary state space with indefinite inner product
- noncommutative spacetimes, Hopf-algebra approach to quantum gravity
- geometric operators in noncommutative spacetimes; spinning spacetime
- inflation in Loop Quantum Cosmology, phase space probability measure
- PhD supervisor: Giovanni Amelino-Camelia, Università degli Studi di Napoli Federico II

II Conferences and educational activities

Visiting National Central University of Taiwan to collaborate with professor Otto C.W. Kong, Jan - April 2019

15th Marcel Grossmann Meeting, July 1-7, 2018, Rome, Italy; given talk "Loop Quantum Cosmology and Probability of Inflation"

*Conference on Symmetries, Geometry and Quantum Gravity
18-22 June 2018, Primošten, Croatia*

*Bayrischzell Workshop on Noncommutativity and Physics:
Hopf algebras in Noncommutative Geometry, April 20-23 2018, Bayrischzell, Germany*

Observers in quantum gravity, January 22-23, 2018, Rome, Italy

*The Sixth Physics and Philosophy Meeting in Conjunction with the summer school, 4-7 July,
2017, Split, Croatia*

III Publications

SB and Otto C.W. Kong *Analysis on Complete Set of Fock States with Explicit Wavefunctions
for the Covariant Harmonic Oscillator Problem,*
Symmetry 2020, 12, DOI:10.3390/sym12010039

SB and Gregory Vereshchagin *Probability of inflation in loop quantum cosmology,*
Phys. Rev. D 99, 043512, DOI:10.1103/PhysRevD.99.043512



Belvedere Riccardo

Position: Faperj-COSMO Post Doc at Brazilian Center for Research in Physics (CBPF)

Period covered: 2016 - 2019

I Scientific Work

In the last years I worked on Delta matter, to study its effects on the Equation of State of Neutron Stars, in the context of Relativistic Mean Field Theory. Currently, I am working to improve the constraints on Delta matter's coupling constants, in the framework of Relativistic Mean Field Theory. The reason to face this problem is to apply this upgraded constraints on the Neutron Stars EOS, both for stars with local and global charge neutrality, and analyse the astrophysical consequences .

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- 22nd Capra Meeting on Radiation Reaction in General Relativity, Centro Brasileiro de Pesquisas Físicas (CBPF), Rio de Janeiro, Brazil, June 17 - 21, 2019
- XL Encontro Nacional de Física de Partículas e Campos (ENFPC) e XLII Reunião de Trabalho sobre Física Nuclear no Brasil (RTFNB), Campos do Jordão, Brazil, September 1 - 5, 2019

II b Work With Students

- Student supervisor in the context of the Iniciação Científica program (Program of scientific initiation) for undergraduate students. Project title: "Rotating Neutron Stars and Rotating Hybrid Stars in the Mean Field Approximation". Student: Marco Aurelio Laversveiler Paiva. CBPF, Rio de Janeiro, Brazil, September 2018 - in progress.

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc..) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2019 List of Publication

IN PREPARATION:

- R. Belvedere, C. E. Cedeño M. and S. B. Duarte. New constraints on nuclear delta-matter's coupling constants.
- R. Belvedere, C. E. Cedeño M. and S. B. Duarte. Slowly and rapidly rotating neutron stars with extended hadronic nuclear models with delta-resonances.



Micol Benetti

Curriculum Vitae

Personal Informations

Place of Birth Rome (Italy)
Date of Birth 01/02/1983
Nationality Italian
Email address benettim@na.infn.it, micol.benetti@gmail.com
Competences Physics, Astrophysics, Cosmology, Astronomy, Mathematics
Main Research Interests Theoretical and Observational Cosmology, General Relativity, Cosmological Models and Inflationary Theory, Extended Theories of Gravity, Cosmography, Cosmological data, Data analysis and parameters constraint, Bayesian inference, Boltzmann solver codes (CAMB and CLASS), Data analysis codes (COSMOMC and MULTINEST), Informatics and programming languages (FORTRAN, PYTHON, C++)

Employment

Current position

05/2018– Present **Postdoc position**, *University of Naples "Federico II", department of Physics.*
Department Research fellowship.

Past fellowship

06/2015– 04/2018 **Postdoc position**, *National Observatory of Rio de Janeiro, COAA (Coordenação de Astronomia e Astrofísica) group.*
Postdoctoral FAPERJ fellowship (Programa Pós-doutorado Nota 10 - 2015).
08/2014– 05/2015 **Postdoc position**, *National Observatory of Rio de Janeiro, COAA (Coordenação de Astronomia e Astrofísica) group.*
Postdoctoral PCI-DA fellowship (Programa de Capacitação Institucional do MCTI, CNPq program).

Education

- 2014 **Ph.D. degree in Relativistic Astrophysics IRAP**,
University of Rome "La Sapienza" - Department of Physics
Thesis: "Constraints on the primordial spectrum and inflationary potential from cosmological observations".
Advisor: Prof. A. Melchiorri, Co-Advisor: Dr. M. Lattanzi
Thesis available in: hdl.handle.net/10805/2392 .
- 2010 **Master degree in Astronomy and Astrophysics**,
University of Rome "La Sapienza" - Department of Physics
Thesis: "Cosmological constraints on primordial oscillations in the inflationary perturbations spectrum", final mark 110/110.
- 2006 **Degree in Physics and Astrophysics**,
University of Rome "La Sapienza" - Department of Physics
Thesis: "Inflationary Theories".

Publications

Published and submitted

- ▷ **Probing the Weak Gravity Conjecture in the Cosmic Microwave Background** M. Winkler , M. Gerbino, M. Benetti
Submitted in *Physical Review D*. [ArXiv:1911.11148](https://arxiv.org/abs/1911.11148)
- ▷ **Connecting early and late epochs by $f(z)$ CDM cosmography**
M. Benetti, S. Capozziello
JCAP, Journal of Cosmology and Astroparticle Physics **12** 008 (2019)
[ArXiv:1910.09975](https://arxiv.org/abs/1910.09975)
- ▷ **Looking for interactions in the cosmological dark sector**, M. Benetti, W. Miranda, H. A. Borges, S. Carneiro, C. Pigozzo, J. S. Alcaniz
JCAP, Journal of Cosmology and Astroparticle Physics **12** 023 (2019)
[ArXiv:1908.07213](https://arxiv.org/abs/1908.07213)
- ▷ **Observational Constraints on Warm Inflation in Loop Quantum Cosmology**, M. Benetti, L. Graef and R. Ramos
JCAP, Journal of Cosmology and Astroparticle Physics **10** 066 (2019)
[ArXiv:1907.03633](https://arxiv.org/abs/1907.03633)
- ▷ **Swampland conjecture in $f(R)$ gravity by the Noether Symmetry Approach**
M. Benetti, S. Capozziello and L. L. Graef
Physical Review D. **100**, 084013 (2019). [ArXiv:1905.05654](https://arxiv.org/abs/1905.05654)
- ▷ **Primordial gravitational waves and the H_0 -tension problem**
L. L. Graef, M. Benetti, J. S. Alcaniz
Physical Review D. **99**, 043519 (2019). [ArXiv:1809.04501](https://arxiv.org/abs/1809.04501)
- ▷ **Constraining quantum collapse inflationary models with current data: The semiclassical approach**
M. P. Piccirilli, G. Leon, S. J. Landau, , M. Benetti, D. Sudarsky
Int. J. Mod. Phys. D Vol. 28, No. 2 (2019) 195004. [ArXiv:1709.06237](https://arxiv.org/abs/1709.06237)

- ▷ **The H_0 and σ_8 tensions and the scale invariant spectrum**
M. Benetti, L.L. Graef, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics* **07** 066 (2018).
[ArXiv:1712.00677](#)
- ▷ **Observational constraints on Gauss-Bonnet cosmology**
M. Benetti, S. Costa, S. Capozziello, J. S. Alcaniz, M. de Laurentis
Int. J. Mod. Phys. D 1850084 (2018). [ArXiv:1803.00895](#)
- ▷ **Dynamical analysis on f(R,G) cosmology**
S. Costa, F. Roig, J. S. Alcaniz, S. Capozziello, M. de Laurentis, M. Benetti
Class. Quantum Grav. **35** 075013 (2018). [ArXiv:1802.02572](#)
- ▷ **Measuring the transversal baryonic acoustic scale from the SDSS DR11 galaxies**, G. C. Carvalho, A. Bernui, M. Benetti, J. C. Carvalho, J. S. Alcaniz
Submitted in MNRAS, *Monthly Notices of the Royal Astronomical Society*
[ArXiv:1709.00271](#)
- ▷ **CMB constraints on β -exponential inflationary models**
M. A. dos Santos, M. Benetti, J. S. Alcaniz, F. A. Brito, R. Silva
JCAP, *Journal of Cosmology and Astroparticle Physics* **03** 023 (2018).
[ArXiv:1710.09808](#)
- ▷ **A Bayesian analysis of inflationary primordial spectrum models using Planck data**, S. Costa, M. Benetti, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **03** 004 (2018).
[ArXiv:1710.01613](#)
- ▷ **Testing non-minimally coupled inflation with CMB data: a Bayesian analysis** , M. Campista, M. Benetti, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **09** 010 (2017).
[ArXiv:1705.08877](#)
- ▷ **Constraining the Break of Spatial Diffeomorphism Invariance with Planck Data** , L. L. Graef, M. Benetti, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **07** 013 (2017).
[ArXiv:1705.01961](#)
- ▷ **Do joint CMB and HST data support a scale invariant spectrum?**
M. Benetti, L. L. Graef, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **04** 003 (2017).
[ArXiv:1702.06509](#)
- ▷ **Warm inflation dissipative effects: Predictions and constrains from the Planck data** , M. Benetti, R. Ramos
Physical Review D 26 **95**, 023517 (2017). [ArXiv:1610.08758](#)
- ▷ **Constraining quantum collapse inflationary models with CMB data**
M. Benetti, S. J. Landau, J. S. Alcaniz
JCAP, *Journal of Cosmology and Astroparticle Physics*, **12** 035 (2016).
[ArXiv:1610.03091](#)
- ▷ **Bayesian analysis of inflationary features in Planck and SDSS data**
M. Benetti, J. S. Alcaniz, *Physical Review D* **94**, 023526 (2016). [ArXiv:1604.08156](#)

- ▷ **Baryon Acoustic Oscillations from the SDSS DR10 galaxies angular correlation function**
G. C. Carvalho, A. Bernui, M. Benetti, J. C. Carvalho, J. S. Alcaniz
Physical Review D **93**, 023530 (2016). [ArXiv:1507.08972](#)
- ▷ **Primordial Non-Gaussianities of inflationary step like models**
Camila P. Novaes, M. Benetti, A. Bernui, [ArXiv:1507.01657](#)
- ▷ **Updating constraints by Planck data on inflationary features model**
M. Benetti, Physical Review D **88**, 087302 (2013). [ArXiv:1308.6406](#)
- ▷ **Cosmological data and indications for new physics**
M. Benetti, M. Gerbino, W. H. Kinney, E. W. Kolb, M. Lattanzi, A. Melchiorri, L. Pagano, A. Riotto
JCAP - *Journal of Cosmology and Astroparticle Physics*, **10** 030 (2013).
[ArXiv:1303.4317](#)
- ▷ **Featuring the primordial power spectrum: new constraints on interrupted slow-roll from CMB and LRG data**
M. Benetti, S. Pandolfi, M. Lattanzi, M. Martinelli, A. Melchiorri
Physical Review D **87**, 023519 (2013). [ArXiv:1210.3562](#)
- ▷ **Features in the primordial spectrum: new constraints from WMAP7+ACT data and prospects for Plank**
M. Benetti, M. Lattanzi, E. Calabrese, A. Melchiorri
Physical Review D **84**, 063509 (2011). [ArXiv:1107.4992](#)

In preparation

- ▷ **Constraints on radiative Corrections in Non-Minimal Inflationary Models with Seesaw Mechanism**
J. G. Rodrigues, M. Benetti, M. Campista, J. Alcaniz
- ▷ **Non minimal coupling in β -inflation model**
S. Costa, M. Benetti, J. S. Alcaniz
- ▷ **Extended Electromagnetism**
F. Bajardi, S. Capozziello, M. Benetti
- ▷ **Cosmological Heisenberg's principle and H0 tension**
S. Capozziello, M. Benetti, A. D. A. M. Spallicci
- ▷ **Designer Hybrid metric Palatini gravity**
N. Frusciante, M. Benetti
- ▷ **f(T) in BBN**
M. Benetti, S. Capozziello, G. Lambiase
- ▷ **Cosmography at early times with different dark energy models**
M. Benetti, S. Capozziello, O. Luongo
- ▷ **Quartic Chaotic Inflation in the strong coupling regime**
M. Campista, M. Benetti, J. Alcaniz, S. Capozziello

Proceeding

- ▷ **Cosmic microwave background and large scale structure constraints on primordial inflation**
M. Benetti J. S. Alcaniz, Parallel Session of the "Fourteenth Marcel Grossmann Meeting on General Relativity" held in Rome, 2015, Italy. Published by World Scientific, PART C. pp. 2109-2114 (2017) DOI: [10.1142/97898132266090233](https://doi.org/10.1142/97898132266090233)
- ▷ **Recent results and perspectives on cosmology and fundamental physics from microwave survey**
Burigana, Battistelli, Benetti *et al.*, Parallel Session of the "Fourteenth Marcel Grossman Meeting on General Relativity" held in Rome, 2015, Italy. Published by Int. J. Mod. Phys. D **25** no. 06, 1630016 (2016) [ArXiv:1604.03819](https://arxiv.org/abs/1604.03819)
DOI: [10.1142/S0218271816300160](https://doi.org/10.1142/S0218271816300160), [10.1142/97898132266090031](https://doi.org/10.1142/97898132266090031)
- ▷ **Features in the Early Universe**
M. Benetti, for the "2nd Cesar Lattes Meeting" held in Rio de Janeiro, 2015, Brazil. Published by AIP Conference Proceedings **1693**, 050004 (2015).
DOI: [10.1063/1.4937197](https://doi.org/10.1063/1.4937197)
- ▷ **Features in the primordial spectrum: new constraints by Planck**
M. Benetti, for the "New Horizons for Observational Cosmology" held in Varenna, 2013, Italy. Published by IOS Press, **186**, 416 (2014).
DOI: [10.3254/978-1-61499-476-3-243](https://doi.org/10.3254/978-1-61499-476-3-243)
- ▷ **New constraints on features in the primordial spectrum**
M. Benetti, for "The third Galileo- Xu Guangqi meeting" held in Beijing, 2011, China. Published by Int. J. Mod. Phys. Conf. Ser., **23**, 345 (2013).
DOI: [10.1142/S2010-194513011598](https://doi.org/10.1142/S2010-194513011598)

Chapter of book

- ▷ **Gravity and the Quantum**, *Pedagogical Essays on Cosmology, Astrophysics, and Quantum Gravity*
Springer, series *Fundamental Theories of Physics*, **187** (2017), Pages 11-19, edit to Jasjeet Singh Bagla, Sunu Engineer
Chapter title: *Measuring baryon acoustic oscillations with angular two-point correlation function*, J. S. Alcaniz, G. C. Carvalho, A. Bernui, J. C. Carvalho, M. Benetti. DOI: [10.1007/978-3-319-51700-1](https://doi.org/10.1007/978-3-319-51700-1)

Experience

Teaching

- 2019 **Lecturer**, *Lessons in "Complements of Cosmology" course for MSc students*, Regular professor: Salvatore Capozziello, University of Naples "Federico II", department of Physics, Naples, Italy.
- 2019 **Lecturer**, *Lessons in "Elements of General Relativity and Cosmology" course for graduate students*, Regular professor: Salvatore Capozziello, University of Naples "Federico II", department of Physics, Naples, Italy.
- 2017 **Lecturer**, *course of 10 hours on "Tools for data analysis in cosmology" for Ph.D students and Post-doc*, Federal University of Rio Grande do Norte - UFRN, Natal, RN, Brazil.

- 2017 **Lecturer**, course of 8 hours on “Data analysis in cosmology” for MSc students, University of Naples “Federico II”, department of Physics, Naples, Italy.
- 2017 **Lecturer**, course of 20 hours on “Code for Anisotropies in the Microwave Background I” for MSc students, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2017 **Member of Teaching Staff**, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2015 **Lecturer**, course of 10 hours on “CAMB: a code for cosmological theoretical predictions” for MSc and Ph.D. students, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2015 **Lecturer**, Lessons in “Cosmology” course for MSc students, Regular professor: Armando Bernui, Observatório Nacional, Rio de Janeiro, RJ, Brazil.

Supervision of Students

- 2017-2019 **Ph.D. student Co-Advisor**, *Simony Costa*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2019 **Undergraduate student Co-Advisor**, *Filippo Bouché*, University of Naples “Federico II”, department of Physics, Naples, Italy.
- 2018 **Undergraduate student Co-Advisor**, *Davoud Ahmadi*, University of Naples “Federico II”, department of Physics, Naples, Italy.
- 2018 **Undergraduate student Co-Advisor**, *Alberto Tortora*, University of Naples “Federico II”, department of Physics, Naples, Italy.

Examination board

- Jul-Sept 2019 **Member of exam commission**, *MSc course of Cosmology*, Regular professor: Salvatore Capozziello, University of Naples “Federico II”, department of Physics, Naples, Italy.
- Jul-Sept 2019 **Member of exam commission**, *Graduation course of Elements of General Relativity and Cosmology*, Regular professor: Salvatore Capozziello, University of Naples “Federico II”, department of Physics, Naples, Italy.
- Mar 2019 **Member of Ph.D examination board**, *Ph.D student Simony Santos Das Costas*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- Nov 2017 **Member of Qualify examination board**, *Ph.D student Isaac Mendonça Macedo*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- Oct 2017 **Member of Ph.D examination board**, *Ph.D student Welber Leal de Araújo Miranda*, Federal University of Bahia, Salvador, BA, Brazil.
- Nov 2016 **Member of examination board**, *Annual Astronomy Postgraduate Seminars*, Jornada da Pós Graduação em Astronomia, Observatório Nacional, Rio de Janeiro, RJ, Brazil.

Reviewed Journals

The following peer review contributions are verified by Publons.com, [see this link](#).

The Astrophysical Journal (ApJ), *American Astronomical Society (AAS)*, ISSN 1538-4357, 2018 Impact Factor: 5.580.

MDPI Mathematics Journal, ISSN 2227-7390, 2018 Impact Factor: 1.105.

Organization of Events

- 2020 **Local Organizing Committee**, *Italian Society for General Relativity and Gravitation (SIGRAV) PhD school 2019*, held in Feb 2019, Vietri sul Mare, Italy.
- 2019 **Seminars Coordinator**, *Astrophysics group Lunch Talk*, weekly meeting, Federico II University, Physics department, Naples, Italy.
- 2017 **Local Organizing Committee**, *XXII Special Courses (CCE)*, Ph.D school held in Aug 21-24 2017, Observatório Nacional of Rio de Janeiro, RJ, Brazil.
- 2016 **Local Organizing Committee**, *IV Rio de Janeiro cosmology and gravitation meeting*, held in Apr 18-20 2016, Observatório Nacional of Rio de Janeiro, RJ, Brazil.

Visiting Fellow

- 03/2019 **Laboratoire de Physique et Chimie de l' Environnement et de l' Espace, Orléans**, Inviting professor: Alessandro Spallicci.
- 11/2018 **Astrophysics Institute of Lisbon University, Lisbon**, Inviting: Noemi Frusciante.
- 2012 **Ludwigs Maximilians University, Munich**, Inviting professor: Jochen Weller.
- 2011 **Irvine, University of California**, Inviting professor: Asantha Cooray.

Outreach

- 2019 **Futuro Remoto 2019**, *scientific festival*, adviser in the *Physics in Space* section for INFN initiatives, exposed in *Cittá della scienza* of Naple, Italy.
- 2018 **Oggiscienza.it**, *SISSA medialab online magazine*, Interview on "[The univese after the big bang](#)".
- 2015 **Escola de inverno 2015**, *scientific festival*, talk on *The early universe*, Observatório Nacional, Rio de Janeiro, RJ, Brazil.
- 2009 **"L'Universo" Festival delle Scienze 2009**, *scientific festival*, planned and presented popular science events in an inflatable planetarium, exposed in *Auditorium of Rome*, Italy.
- 2008 **Astronomical explainer course**, *Rome planetarium*, outreach training for the 2009 International Year of Astronomy events.

Other

- 2018 **Winner of CANTATA Short Term Scientific Missions (STSM) grant**, *project: Investigating Hybrid-gravity modification of gravity with the EFT approach and cosmological constraints*.
- 2018 **24 university credits (CFU)**, *related to basic skills in anthropo-psycho-pedagogical disciplines and in teaching methodologies and technologies*.
- 2012 **Winner of Sapienza grant "Avvio alla ricerca 2012"**, *project: "Study and analysis of the constraints of cosmological parameters and features in the inflationary primordial spectra, forecast for future experiments. Cosmological model-free analysis of the state equation dynamics of dark energy"*.

Affiliations

- 2018-now **INFN**, *Istituto Nazionale di Fisica Nucleare*, Naples Section.
- 2014-now **SDSS-IV**, *eBOSS*, Sloan Digital Sky Survey.

- 2014-now **J-PAS**, *Javalambre Physics of the Accelerating Universe Astrophysical Survey*.
- 2010-2014 **SDSS-III**, *Sloan Digital Sky Survey*.
- 2010-2014 **Euclid Consortium**.
- 2010-2014 **INFN**, *Istituto Nazionale di Fisica Nucleare*, Rome Section.
- 2010-2014 **ICRAnet**, *International Center for Relativistic Astrophysics Network*.

Computer Skills

- General Microsoft Windows and Linux OSs, Office Packages, L^AT_EX
- Programming languages FORTRAN (Certificate CASPUR course of Fortran 95), PYTHON, IDL, C++
- Scientific Data analysis Software (Origin), Mathematica, Software packages and analysis tools (as COSMOMC, MULTINEST, MONTE PYTHON, CAMB, CLASS codes)

Languages

- Italian **Mother tongue**
- English **Good command**
 - *Two years course in The New British Center Institute, Rome*
 - *English summer Course in "St. Mary School" (Shaftesbury, Dorset)*
 - *English summer Course in Malta*
- Brazilian Portuguese **Good command**
 - *Brazilian Portuguese course in Brazilian Consulate, Rome*
 - *Brazilian Portuguese course in Hoy! Cultural center, Rome*

Main Collaborators and Academic References

- Prof. J. S. Alcaniz** *National Observatory of Rio de Janeiro - Brazil (alcaniz@on.br)*
- Prof. S. Capozziello** *University of Naples - Italy (capozziello@na.infn.it)*
- Prof. A. Melchiorri** *University of Rome - Italy (alessandro.melchiorri@gmail.com)*
- Prof. E. W. Kolb** *University of Chicago - USA (ekolb@uchicago.edu)*

Talks, posters and Seminars

- ▷ Presented talk in Connecting Cosmography at early times, annual national QGSky (INFN iniziativa specifica) *workshop*, Oct 17-18 2019, Trieste, Italy
- ▷ Presented seminary in the *Astrophysics Institute of Lisbon University*, Lisbon, Nov 16 2018, Lisbon, Portugal
- ▷ Presented talk in Tensions on Λ CDM cosmological model and model-independent constraints section of *XVth Marcel Grossmann Meeting* - International meeting, July 1-7 2018, Rome, Italy
- ▷ Presented talk in Extended Gravity and Quantum Cosmology section of *XVth Marcel Grossmann Meeting* - International meeting, July 1-7 2018, Rome, Italy
- ▷ Presented seminary in the *Valongo Observatory*, Rio de Janeiro, Apr 02 2018, Rio de Janeiro, RJ, Brazil
- ▷ Presented seminary for the *ARCOS group*, Federal University of Rio de Janeiro, Physics Institute (IF-UFRJ), March 29 2018, Rio de Janeiro, RJ, Brazil

- ▷ Presented seminary in the *International Institute of Physics*, Federal University of Rio Grande do Norte, Nov 7 2017, Natal, RN, Brazil
- ▷ Presented seminary in the *Physics Institute*, Federal University of Bahia, Oct 20 2017, Salvador de Bahia, BA, Brazil
- ▷ Presented seminary in the *COSMO-CBPF*, Brazilian Center of Physical Research, Aug 28 2017, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *IV CosmoSul - Cosmology and Gravitation in the Southern Cone* - International meeting, Jul 31-2nd Aug 2017, Sao Paulo, SP, Brazil
- ▷ Presented poster in *IVth Meeting on Fundamental Cosmology* - International meeting, Jun 15-17 2016, Barcelona, Spain
- ▷ Presented seminary for the *ARCOS group*, Federal University of Rio de Janeiro, Physics Institute (IF-UFRJ), Jun 02 2016, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *IVth Oficina Carioca de cosmologia e gravitação* - Local meeting, Apr 18-20 2016, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *XIVth Marcel Grossmann Meeting* - International meeting, July 12-18 2015, Rome, Italy
- ▷ Presented talk in *Meeting on Fundamental Cosmology* - International meeting, June 17-19 2015, Santander, Spain
- ▷ Presented talk in *VIth Workshop Challenges Of New Physics In Space* - International meeting, May 24-29 2015, Campos do Jordão, SP, Brazil
- ▷ Presented talk in *IInd Cesar Lattes Meeting* - International ICRAnet meeting, Apr 13-18 2015, Rio de Janeiro, RJ, Brazil
- ▷ Presented talk in *Xth J-PAS Collaboration Meeting* - International J-PAS meeting, Feb 9-13 2015, Paraty, RJ, Brazil
- ▷ Presented talk in *Theory Miniworkshop J-PAS collaboration* - National J-PAS meeting, Oct 15 2014, Rio de Janeiro, RJ, Brazil
- ▷ Presented poster in *New Horizons for Observational Cosmology* - Ph.D School, Jun 30 -July 6 2013, Varenna, Italy
- ▷ Presented poster in *Essential Cosmology for the Next Generation* - Ph.D School, Jan 16-21 2012, Cancun, Mexico
- ▷ Presented talk in *The third Galileo - Xu Guangqi meeting* - International Conference, Oct 9-15 2011, Beijing, China

Conferences participation

- ▷ Attended the *ASI/COSMOS Workshop on "LambdaCDM"* - International Meeting, May 28-29 2019, Rome, RM, Italy
- ▷ Attended the *First European Physical Society Conference on Gravitation* - International Meeting, Feb 19-21 2019, Rome, RM, Italy
- ▷ Attended the *Euclid & Beyond - The many faces of modern Cosmology* - National Meeting, Feb 11-14 2019, Rome, RM, Italy
- ▷ Attended the *School on Open Problems in Cosmology* - Ph.D School, Jul 17-28 2017, Sao Paulo, SP, Brazil
- ▷ Attended the *XIVth J-PAS Collaboration Meeting* - International J-PAS meeting, March 27-31 2017, Rio de Janeiro, RJ, Brazil

- ▷ Attended the *IVth Jayme Tiomno School of Cosmology* - Ph.D School, Aug 30 - 1st Sept 2016, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *XIIth J-PAS Collaboration Meeting* - International J-PAS meeting, Apr 11-15 2016, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *School of Theory of cosmological perturbations* - Ph.D School, Nov 12-14 2014, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *XIXth Cycle of Special Courses (CCE)* - Ph.D School, Nov 3-7 2014, Rio de Janeiro, RJ, Brazil
- ▷ Attended the *Ist School of Statistical Methods in Physics* - Ph.D School, Oct 6-10 2014, Goiania, GO, Brazil
- ▷ Attended the *XIth School of Cosmology, Gravitational Lenses: their impact in the study of galaxies and Cosmology* - Ph.D School, Sept 17-22 2012, Cargese, France
- ▷ Attended the *Euclid Mission Conference 2012* - International Conference, May 14-17 2012, Copenhagen, Denmark
- ▷ Attended the *Azores school on observational Cosmology* - Ph.D School, Sept 1-5 2011, Angra do Heroismo, Azores, Portugal
- ▷ Attended the *Sciences Fondamentales et Appliquées* - IRAP Ph.D Erasmus Mundus School, May 25-30 2011, Nizza, France
- ▷ Attended the *Neutrinos in Cosmology* - INFN Formation School, May 16-18 2011, Padova, Italy
- ▷ Attended the *Dark Energy probes - Dynamical evolution of globular clusters* - School of Astrophysics "Francesco Lucchin", May 8-13 2011, Bertinoro, Italy
- ▷ Attended the *From Nuclei to white Dwarfs and Neutron Stars* - IRAP Ph.D Erasmus Mundus Workshop, Apr 3-8 2011, Les Houches, France

Campion Stefano

Position: PhD. student
Period covered:2017-2020



I Scientific Work

- 1) Study of the neutrino production in proton-proton interaction in the BdHNe model;**
- 2) Study of the screening process of a strong magnetic field acted by electrons-positrons immersed in strong crossed electromagnetic field;**
- 3) Study on the electron/proton synchrotron emission in the BdHNe model;**

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- 1) Open Universe International Doctoral School (Nice (Fr),11-14 June 2019);*
- 2) SIF National Congress (L'Aquila (It),23-27 September 2019);*
- 3) 30th Texas Symposium (Portsmouth (GB), 16-20 December 2019);*

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2019 List of Publication

1)"Neutrino production from proton-proton interactions in binary-driven hypernovae" (submitted)

2) "On magnetic field screening in strong crossed electromagnetic fields" (in preparation)

3) On the determination of the mass and spin of the black hole in the "inner engine" of GRB 190114C (in preparation)

Carinci, Massimo Luca Emiliano

Position: IRAP PhD
Period covered: 2019



I Scientific Work

Dark matter and galaxy structure – Supermassive Black holes

My research activity is on Bose-Einstein condensate dark matter with numerical codes (RAR model) based on the so-called TOV approximation in the framework of general relativity, starting from the Gross-Pitaevskii equation, and obtaining, in particular, the density profiles. Furthermore, I'm studying the accretion of SMBHs in the center of galaxies, using the Eddington limit.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- *First European physical society conference on gravitation, Rome, Italy, February, 19-21, 2019.*
- *16th Italian-Korean Symposium on relativistic astrophysics, Pescara, Italy, July, 1-5, 2019.*

- *Snowflake modules for Lie Superalgebras, speaker: Maria Gorelik (Weizmann), Rome, Italy, April, 3, 2019*
- *Search of light Dark Matter with the CRESST III – Detector, Speaker: Paolo Gorla, Rome, Italy, July, 12, 2019*
- *Dark Matter, Speaker: Antonio Polosa, Rome, Italy, May, , 2019*
- *MATHUSLA: A new detector to probe the life-time frontier, Speaker: Henri Lubatti, Rome, Italy, July, 23, 2019*

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

- *Poster at First European Physical Society Conference on Gravitation, Rome, Italy, February, 19-21, 2019 with the title: ‘ $f(R)$ gravity, Palatini formalism and Mixmaster Model’.*

IV. Other

- *The group of two 2-spheres linked in 4-spaces, speaker: prof. Peter Teichner (MPI Bonn), Rome, Italy, February, 27, 2019*
- *Mirkovic-Vilonen cycles, preprojective algebra modules and Duistermaat-Heckman measures, speaker: prof. Joel Kamnitzer (Toronto), Rome, Italy, March, 6, 2019*
- *Rectangular multivariate modules of harmonic polynomials, speaker: Francois Bergeron (UQAM), Rome, Italy, March, 27, 2019*
- *Snowflake modules for Lie Superalgebras, speaker: Maria Gorelik (Weizmann), Rome, Italy, April, 3, 2019*

2019 List of Publication

- *Carinci, M., Montani, G. (2019). “Quantitative analysis of the inflationary model: reheating process”. Proceeding of the fifteenth Marcel Grossmann conference on the general relativity.*
- *Yunis, R., Argüelles, C., Mavromatos, N., Molinè, A., Krut, A., Carinci, M., Rueda, J., Ruffini, R. “Galactic center constraints on self-interacting sterile neutrinos from fermionic dark matter (‘ino’) models”. (2019), JCAP.*

Yen Chen Chen

Position: Ph.D. student
Period covered: 2016-2019



I Scientific Work

AGN, data analysis, deep learning

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- *Artificial Intelligence in Astronomy*, ESO Garching, July, 2019
- *The Open Universe International Doctoral School*, Nice, June, 2019
- *East-Asia AGN Workshop*, Taiwan, January, 2019

II b Work With Students

II c Diploma thesis supervision

Title: Classifying Seyfert galaxies with deep learning

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2019 List of Publication

- Chen, Yen-Chen and Chorng-Yuan Hwang. Emission line luminosity distributions of Seyfert 2 galaxies. *Monthly Notices of the Royal Astronomical Society*, 485(3): 3402-3408, Mar 2019.

- R. Ruffini, R. Moradi, J. A. Rueda, L. Becerra, C. L. Bianco, C. Cherubini, S. Filippi, Y. C. Chen, M. Karlica, N. Sahakyan, Y. Wang, and S. S. Xue. On the GeV emission of the type I BdHN GRB 130427A. *The Astrophysical Journal*, 886(2): 82, Nov 2019.
- R. Ruffini, R. Moradi, Y. Aimuratov, U. Barres, V. A. Belinski, C. L. Bianco, Chen, Y. C., C. Cherubini, S. Filippi, D. M. Fuksman, M. Karlica, L. Li, D. Primorac, J. A. Rueda, N. Sahakyan, Y. Wang, and S. S. Xue. GRB 190114C: A type 1 BdHN with TeV emission. *GRB Coordinates Network*, 23715:1, Jan 2019.



Lecian Orchidea Maria

Position: Postdoctoral Researcher, Professor.
Period covered: 2019

Sapienza University of Rome (Italy),

Faculty of Civil and Industrial Engineering, DICEA- Department of Civil, Constructional and Environmental Engineering, Via Eudossiana, 18- 00184 Rome, Italy.

Full Professor: Fundamentals of Physics.

Sapienza University of Rome (Italy),

Faculty of Medicine and Psychology,

Via dei Marsi, 78-00185 Rome, Italy.

Full Professor: Applied Physics.

I Scientific Work

Research in Theoretical Physics, General Relativity, Quantum Gravity, Applied Mathematics.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Seminars

O.M. Lecian, *Quantum-systems investigations vs optical-systems ones*, ICRANeT Seminars-International Center for Relativistic Astrophysics Network, Pescara (Italy), 7 November 2019.

Conferences attended

10- 12 April 2019: The fifth mini symposium of the Roman number theory association, University of Rome RomaTre, Rome, Italy.

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRA Net (e.g. teaching activities, conferences etc...) and outside ICRA Net (teaching activities in your university etc...]*

III a. Within ICRA Net

III b. Outside ICRA Net

Conference Organization

Organizing Committee Member

4th International Earth Science and Global Geology Conference

December 2-3, 2019, Kuala Lumpur, Malaysia.

TPC member

2019 International Conference on Management, Economics and Social Science (ICMESS2019)

August 30 to 31, 2019, Changsha, China.

TPC Member

2019 International Conference on Advanced Material Research and Processing Technology (AMRPT2019),

July 19-21, 2019, Wuhan, China.

Technical Program Committee member

2019 International Conference on Computer, Wireless Communication and Signal Processing (CWCSP2019),
July 19-21, 2019, Wuhan, China.

Technical Program Committee/Reviewer

2019 International Conference on Energy, Environmental and Civil Engineering (EECE2019)
June 23-24, 2019, Wuhan, China.

Technical Program Committee member

2019 International Conference on Social Science, Economics and Management Research (SSEMR2019),
May 26-27, 2019, Hangzhou, China.

Organizing Committee Member

Applied Physics 2019- 6th International Conference on Theoretical and Applied Physics,
May 16-17, 2019 Rome, Italy.

TPC member/reviewer

2019 International Conference on Education Reform, Management Innovation and Social Science (ERMIS2019),
March 24-25, 2019, Beijing, China.

Technical Program Committee

2019 International Conference on Computer Science, Communications and Big Data (CSCBD2019),
March 24-25, 2019, Beijing, China.

TPC member

2019 International Conference on Applied Mathematics, Modeling, Simulation and Optimization
(AMMSO2019)

April 21-22 2019, Guilin, China.

General Chair/Technical Committee

The Second International Conference on Sustainable Energy, Environment and Information
Engineering (SEEIE 2019),

24-25 March 2019, Beijing, China.

Technical Program Committee/Reviewer

2019 International Conference on Education, Management, Economics and Humanities
(ICEMEH2019),

February 27-28, 2019, Shenzhen, China.

International Scientific Committee

2019 International Conference on Modeling, Simulation, Optimization and Numerical
Techniques (SMONT2019),

February 27-28, 2019, Shenzhen, China.

International Scientific Committees/Technical Program Committee

2019 International Conference on Energy, Power, Environment and Computer Application
(ICEPECA2019),

January 20-21, 2019, Wuhan, China.

Committees Member, 2019 International Conference on Education, Management and
Information Technology Application (EMITA2019),

January 20-21, 2019, Wuhan, China.

IV. Other

Participation in research activities

e-CA COST Action CANTATA

Cosmology and Astrophysics Network for Theoretical Advances and Training e-Actions (CA15117)l

The String Theory Universe COST Action

-European Cooperation in Science and Technology.

Editorial Board Member

SCIREA Journal of Mechanical Engineering.

The Open Conference Proceedings Journal.

The Open Mathematics, Statistics And Probability Journal.

Special Issue Lead Editor

American Journal of Physics and Applications-

Special Issue 'New Probes for New Physics'.

Editorial Advisory Board

Journal on Systemics, Cybernetics and Informatics (JSCI).

Referee

Physical Science International Journal.

Symmetry.

Particles.

Journal of Engineering Research and Reports.

Asian Journal of Research and Review in Physics.

Asia-Pacific Conference on Applied Mathematics and Statistics.

International Astronomy and Astrophysics Research Journal.

Journal of Energy Research and Reviews.

Asian Journal of Physical and Chemical Sciences.

Asian Research Journal of Mathematics.

Current Journal of Applied Science and Technology.

Journal of Advances in Mathematics and Computer Science.

Mathematics.

Advances in Research.

Asian Journal of Advanced Research and Reports.

Asian Journal of Biology.

Asian Journal of Research in Computer Science.

Journal of Applied Physical Science International.

Journal of Geography, Environment and Earth Science International.

Journal of Scientific Research and Reports.

2019 List of Publication

V. Balek, OML, Constraints on modified dispersion relations, APUC- Acta Physica Universitatis Comenianae; Special Number dedicated to Prof. P. Presnajder's 70-th Anniversary, LIV (2019) 81.

OML, Alternative Uses for Quantum Systems and Devices, Symmetry- Special Issue "Cosmological Inflation, Dark Matter and Dark Energy", 11 (2019) no.4, 462.

Proceedings

OML, Modular structures and extended-modular-group-structures after Hecke pairs, J.Phys.Conf.Ser. 1194 (2019) no.1, 012067.

Sigismondi Costantino

Photo

Position: Professor

Period covered: 27/10/2018-22/01/2020

I Scientific Work

Calibration of the meridian line of S. Maria degli Angeli

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Liceo Galilei, Pescara, *La rifrazione in atmosfera*, 9 November 2018

Liceo Galilei, Pescara, *Il diametro del Sole ad Almucantarar zero*, Science by Night 19 January 2019

Sapienza Università di Roma, Fisica ed. Fermi, 23 gennaio 2019, *Diametro solare, definizioni e misure*

Pontifical Atheneum Regina Apostolorum, 19 february 2019, *L'origine dell'Universo e del tempo* conference

Società Geografica Italiana, Roma [26 february 2019 In Luna Sole et Stellis](#)

Basilica di s. Maria degli Angeli, Roma 21 march 2019 [New Astrometry on the Meridian Line](#)

Accademia dei Lincei, Roma 21 march 2019, Giornata dell'Acqua, [ultrasonic measurements of water level](#)

Pontifical Atheneum Regina Apostolorum, 5 april 2019, *La matrice cristiana della Rivoluzione Scientifica* (for the 10th anniversary of death of Ft. Stanley Jaki OSB)

Museo dell'Aeronautica, 5 aprile 2019 *Equinozi e viaggi spaziali* (conference for the Night of Geography)

Arciconfraternita dei Siciliani, Roma, 10 may 2019, XVII [Gerbertus Meeting](#)

Basilica di s. Maria degli Angeli, Roma 22 may 2019, [L'ingresso del Sole nei Gemelli](#)

ITIS G. Ferraris, Roma: aula magna, 29 may 2019, [100th year of Eddington Eclipse](#)

ICRANet Pescara, 5 july 2019 IK 16 meeting [on the high resolution of solar diameter measurement](#)

Osservatorio Astrofisico di Asiago, [July 18 2019](#), [Rapporto dalla Luna](#) (for the 50th of Moonlanding)

[ESA Workshop AIDA](#) Roma, Terme di Diocleziano 11-13 sept 2019

EPSC meeting in Geneva 20 sept 2019 on the [Transit of Mercury & General Relativity](#)

Basilica di s. Maria degli Angeli, Roma 23 september 2019 [The Pope and the Meridian Line](#)

SIF meeting in L'Aquila 23 sept 2019 on [Il Sole di Secchi abstract](#)

Società Geografica Italiana, Roma 2 october 2019 [Aldebaran and the foundation of Rome](#)

Ordine Dottori Agronomi e Forestali di Roma, 25 october 2019 [I Pollini e la loro diffusione](#)

ICRANet Pescara 11 november 2019 Transit of Mercury meeting [Mercurio in Sole Visu](#) **Chair**

Società Geografica Italiana, Roma 13 november 2019 [Astronomical forcing for the ice age](#)

Basilica di s. Maria degli Angeli, Roma [21 december 2019 On the Orbit of the Earth](#)

Basilica di s. Maria degli Angeli, Roma 23 december 2019 [Secular Variation of the Obliquity and the 220rs](#)

Sapienza Università di Roma, Fisica ed. Fermi, 7 gennaio 2020, *Diametro solare con tre tipi di transito*

Liceo Galilei, Pescara, *Lo storico Minimo di Betelgeuse*, Science by Night 18 January 2020

Società Geografica Italiana, Roma, 22 January 2020, *The (Hypogean) Meridian Line of Augustus*

II b Work With Students

Basic Physics for six classes of Technical Industrial Institute Galileo Ferraris of Rome (full time work)

Advanced Physics (Terrestrial Physics and Astrophysics) ITIS Galileo Ferraris PON 2014-2020 (ID 10.2.2A-FDRPOC-LA-2019-8)

II c Diploma thesis supervision

Thesis of Giorgio Rossi on Tycho Brahe at the Master Science and Faith, Pontifical Atheneum Regina Apostolorum, Roma.

II d Other Teaching Duties

Alternanza Scuola Lavoro with three classes of Galileo Galilei Lyceum of Pescara

Course of History of Astronomy at the Pontifical Atheneum Regina Apostolorum, Rome November 4 2019 - November 23 2019

Course of Laboratory of Astrophysics at Sapienza University 23 January 2019-4 July 2019

ASYAGO 2019 Asiago School for Young Astronomers with Galileo Observations 16 July 5 August 2019.

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Organization and chair of the International Meeting “Mercurio in Sole Visu” of the 11 november 2019 in collaboration with the Pontifical Atheneum Regina Apostolorum, Rome

Alternanza Scuola Lavoro with Galileo Galilei Lyceum in Pescara; conferences of January 19 2019 (the night of science) November 9 2018 (refraction in the atmosphere) October 4 2019 Solar diameter at almucantar at zero.

III b. Outside ICRANet

Alternanza Scuola Lavoro with Galileo Galilei Lyceum in Pescara;

Laboratory of Solar Physics Sapienza University of Rome

Conferences held at the Pontifical Atheneum Regina Apostolorum, Rome about GR projects

[October 15 2019](#) *New findings on the meridian line of s. Maria degli Angeli*

[October 22 2019](#) *Gravitation in the expanding Universe*

[November 13 2019](#) *Mercury transit*

[November 14 2019](#) *Sunset geometry and solar diameter*

ITIS G. Ferraris, 100th of the Eddington eclipse, 29 may 2019

<https://darkskies4all.org/events/details/2019-05-28-1702-100-years-from-eddingtons-eclipse->

IV. Other

*Photometric observations of Betelgeuse, alf Ori, a series of nearly 600 data from Jan 1, 2012. Identification of its historical minimum in December 2019: visual magnitude 1.11 on Dec 7-Dec 19 vs average value around 0.45. Referee report for MNRAS, paper of [Corbard et al. 2019](#) Referee report for *Advance in Space Research: Solar System**

2019 List of Publication

video list of meridian transits in S. Maria degli Angeli, Rome, 2018-2020 [web page ICRA](#)

video list of sea sunset at Ostia in 2019 [web page ICRA](#)

Sigismondi, C. *Lunar Impacts on January 21st* <https://arxiv.org/ftp/arxiv/papers/1902/1902.03137.pdf>

Sigismondi, C. *Danjon Index in partial eclipses* <https://arxiv.org/ftp/arxiv/papers/1910/1910.09291.pdf>

Presentazione al libro di Angelo Secchi, *Il Sole*, in edizione Italiana digitale (2019)

Sigismondi, C. *Mercury Transit strategies*, *Journal of Occultation Astronomy* 2019

Sigismondi, C., *Betelgeuse at the end of 2019* <https://arxiv.org/abs/1912.12539>

Siutsou Ivan



Position: senior research fellow, ICRANet-Minsk, Fundamental Interactions and Astrophysics Centre, B.I. Stepanov Institute of Physics, National Academy of Sciences, Minsk, Belarus
Period covered: 2019

I Scientific Work

In 2019 together with Mikalai Prakapenia and Gregory Vereshchagin we study the process of relaxation of non-degenerate and degenerate relativistic electron-positron-photon plasma in the approximation of Uehling-Uhlenbeck. Also a new system of “supercomputer-on-a-table” class with peak performance of 14 TFLOPS at double precision is constructed and simulation code was adapted for systems of this kind. Protons were included in the code to treat astrophysical plasma at extreme conditions.

Together with Aksana Kurguzava the problem of propagation of radiation in ultrarelativistically expanding shell was treated with inclusion of interaction of the outflow with interstellar medium of typical density. It will deposit additional energy inside the outflow, that will be radiated from the photosphere of optically thick outflow, changing its observable energy and temperature.

Together with Vlad Stefanov and Dmitriy Mogilevtsev we recovered an effect of dephasing induced by a weak gravitational field on the collective radiation dynamics of atomic system in timed single-photon Dicke states. We show that a photon absorbed by the stationary system of randomly placed stationary atoms is no more spontaneously emitted in the direction of the impinging photon. The influence of gravity leads to broadening of the angular distribution of emission.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Report on superluminal motion and time machines in General Relativity, Methodological seminar of the Institute of philosophy of the National Academy of Sciences of Belarus, 26/07/2019.

Report on modern cosmology, Methodological seminar of the Institute of philosophy of the National Academy of Sciences of Belarus, 31/07/2019.

II b Work With Students

Lecture courses on astrophysics, physical kinetics and nonlinear physics at the Graduate School of the National Academy of Sciences of Belarus.

II c Diploma thesis supervision

Supervision of master's thesis of Aksana Kurguzava «Propagation of radiation in ultrarelativistically expanding shell».

II d Other Teaching Duties

Supervision of a command of Gymnasium № 61 for the republican Young physicists' tournament.

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Supervision of Belarusian side of joint research project of ICRANet and the Belarusian Republican Foundation for Fundamental Research by grant №19Ф-ИКР001 «Relaxation of multicomponent optically thick relativistic plasma with quantum degeneracy».

Preparation of a project of law «О присоединении Республики Беларусь к Соглашению об учреждении Международной Сети Центров Релятивистской Астрофизики ICRANET в Пескаре, Италия» (On accession of Republic of Belarus to Agreement on the Establishment of the International Network of Centres for Relativistic Astrophysics ICRANET In Pescara, Italy), its reconciliation with the Ministries before sending to Council of Ministers of Republic of Belarus.

III b. Outside ICRANet

Member of scientific council on problems of fundamental interactions, nuclear physics and plasma physics of B.I. Stepanov Institute of Physics, National Academy of Sciences, academic secretary of subprogram «Microworld, plasma, and Universe» of State scientific research program «Convergence-2020».

IV. Other

Three interviews were published in Belarusian newspapers: «The Universe: from Big Bang to expansion» (7 Дней, (34):16–17, 22.08 2019), «National astrophysicists already have the first know-how» (Минск-новости, 20.10 2019), and «To touch the stars and catch a comet by the tail» (Настаўніцкая газета, 24.10 2019). Also Ivan Siutsou was one of three invited speakers on a public lecture about Nobel lectures and astrophysics on December 8th, 2019, and gave three comments on TV on time in physics (first) and cosmic weather (others), broadcasted correspondingly April 11th (Belarus 3, Science-mania), December 14th (ONT), December 21st (Belarus 3, Science-mania) of 2019.

2019 List of Publication

1. M.A. Prakapenia, I.A. Siutsou, G.V. Vereshchagin. Thermalization of electron–positron plasma with quantum degeneracy // Physics Letters A. – 2019. – V. 383. – № 4. – P. 306–310. – DOI: 10.1016/j.physleta.2018.10.013.

Surname Name

Vereshchagin Gregory

Position: professor
Period covered: 2019

Photo



I Scientific Work

The work is focused on the following aspects:

- Thermalization of relativistic plasma with quantum degeneracy (with I.A. Siutsou and N.O. Prakapenia)

We developed an efficient method to compute Uehling–Uhlenbeck collision integral for all two-particle and three-particle interactions in relativistic plasma with drastic improvement in computation time with respect to existing methods. The set of reactions consists of binary processes (Moeller, Bhabha and Compton scattering, two-photon pair production and annihilation) and triple processes (relativistic bremsstrahlung, double Compton scattering, radiative pair production and three-photon annihilation), which are computed from first principles, i.e. from the QED matrix elements. In our method exact energy and particle number conservation laws are fulfilled. Reaction rates are compared, where possible, with the corresponding analytical expressions and convergence of numerical rates is demonstrated. Thermalization timescales are computed as function of temperature reached in thermal equilibrium.

- Bose-Einstein condensation in relativistic plasma (with N.O. Prakapenia)

We consider the possibility of Bose-Einstein condensation of photons in relativistic plasma. The phenomenon of Bose-Einstein condensation is traditionally associated with and experimentally verified for low temperatures: either of nano-Kelvin scale for alkali atoms or room temperatures for quasi-particles or photons in two dimensions. In this work we demonstrate out of first principles that for certain initial conditions non-equilibrium plasma at relativistic temperatures of billions of Kelvin undergoes condensation, predicted by Zeldovich and Levich in their seminal work. It is found that necessary condition for the development of BEC is an excess of photon number over the equilibrium number, as well as initial distribution of photons not broader than Wien spectrum with the peak of the distribution located above the critical energy below which triple interactions

dominate over the binary ones. Broader initial distributions, even the Planck spectrum, contain too many photons at low energies, and triple interactions such as bremsstrahlung quickly eliminate excess photons, preventing the condensation. This is the reason why the cooling of photons by electrons proposed by Zeldovich and Levich does not lead to photon condensation.

- Inflationary measure in loop quantum cosmology (with S. Bedic)

We study the measure on the set of initial conditions in remote past for Loop Quantum Cosmology with massive scalar field motivated by various choices of the measure present in the literature. The main finding of the analysis is existence of an attractor at contracting phase of the universe, which, in addition to the well known attractor at expanding phase, predicts a very specific duration of inflationary stage with the number of e-foldings about 140.

- On the Role of a Cavity in the Hypernova Ejecta of GRB 190114C (with R. Ruffini and J.D. Melon Fuksman)

The binary-driven hypernova I (BdHN I) scenario considers a binary system composed of a massive carbon-oxygen core (CO_{core}), and a binary neutron star (NS) companion with a typical binary period of few minutes. It is assumed that at a certain moment the CO_{core} undergoes a supernova explosion with the creation of a new neutron star (vNS). At the same time hypercritical accretion onto the companion binary neutron star initiates and proceeds until it exceeds the critical mass for gravitational collapse. The formation of a black hole (BH) captures 10^{57} baryons by enclosing them within its horizon, and thus a cavity of approximately 10^{11} cm is formed around it with initial density 10^{-7} g/cm³. A further depletion of baryons in the cavity originates from the expansion of the electron-positron-photon ($e^+e^-\gamma$) plasma formed at the collapse, reaching a density of 10^{-14} g/cm³ by the end of the interaction. It is demonstrated here using an analytical model complemented by a hydrodynamical numerical simulation that part of the $e^+e^-\gamma$ plasma is reflected off the walls of the cavity. The consequent outflow and its observed properties are shown to coincide with the featureless emission occurring in a time interval of duration t_{rf} , measured in the rest frame of the source, between 11 and 20 s of the GBM observation. Moreover, similar features of the GRB light curve were previously observed in GRB 090926A and GRB 130427A, all belonging to the BdHN I class. This interpretation supports the general conceptual framework presented in (Ruffini et al., 2019) and guarantees that a low baryon density is reached in the cavity, a necessary condition for the operation of the "inner engine" of the GRB presented in an accompanying article.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Talk “On the role of a cavity in the hypernova ejecta of GRB 190114C”, The Open Universe International Doctoral School “The discovery of Black Holes”, Villa Ratti, Nice, France, June 10 - 14, 2019;
- talk "On Bose-Einstein condensation in relativistic plasma", 16th Italian-Korean Symposium on Relativistic Astrophysics, ICRANet, Pescara, Italy, 1-5 July, 2019;
- talk "Cavity in the hypernova ejecta of GRB 190114C", 105 Congress of the Italian Physical Society, Gran Sasso Science Institute, L'Aquila, Italy, 23-27 September 2019.

II b Work With Students

- David Melon Fuksman (IRAP PhD): asymmetric explosion in SN ejecta
- Nikolai Prakapenia (NASB): Bose-Einstein condensation in relativistic plasma
- Susana Bedic (IRAP PhD): inflationary measure in loop quantum cosmology
- Rafael Yunis (IRAP PhD): dark matter distribution and temperature evolution

II c Diploma thesis supervision

II d Other Teaching Duties

- lecture course on relativistic kinetic theory with applications in astrophysics and cosmology for the 4th year students of the department of theoretical physics and astrophysics at the Belarusian State University, 4-15 September 2019.

II e. Work With Postdocs

- Ivan Siutsou: relativistic plasma thermalization with quantum degeneracy; photospheric emission

III. Service activities *[activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)]*

III a. Within ICRANet

- Member of the IRAP PhD Faculty
- coordination of cooperation with the Belarusian State University
- coordination of cooperation with the National Academy of Sciences of Belarus
- coordination of activities in ICRANet-Minsk center
- organizational work for the Fourth Zeldovich Meeting

- supervision of the ICRA Net newsletter
- supervision of ICRA Net press releases

III b. Outside ICRA Net

- Co-PI of the scientific program “Relativistic astrophysical objects and phenomena” within the Belarusian state program “Convergence-2020”, subprogram “Microworld and Universe”;
- Co-PI of the joint ICRA Net-BRFFR research program “Relaxation of multicomponent optically thick relativistic plasma with quantum degeneracy” for 2019-2021.

IV. Other

- Public lectures “Contemporary astrophysics and its perspectives in Belarus”, Belarusian State University and Minsk Science Club, 4-15 September 2019.

2019 List of Publication

1. M. A. Prakapenia, I. A. Siutsou and G. V. Vereshchagin, "Thermalization of electron-positron plasma with quantum degeneracy", *Physics Letters A* 383 (2019) pp. 306-310.
2. G.V. Vereshchagin and S. Bedic, "Inflationary measure in loop quantum cosmology", *Phys. Rev. D* 99 (2019) 043512.
3. R. Ruffini, J. D. Melon Fuksman and G. V. Vereshchagin, "On the Role of a Cavity in the Hypernova Ejecta of GRB 190114C", *The Astrophysical Journal*, Vol. 884, Issue 1 (2019) article id. 191.
4. M. A. Prakapenia and G.V. Vereshchagin, "Bose-Einstein condensation in relativistic plasma", accepted for publication in *European Physics Letters*, 2019.

Yunis, Rafael Ignacio

Position: IRAP PhD Student
Period covered: 2019-2020



I Scientific Work

PhD on Relativistic Astrophysics (In course)

Currently enrolled at IRAP joint PhD program between Sapienza University in Rome and ICRA net, since April 2018. Currently working under Dr. Carlos Argüelles (UNLP) on selected topics on Dark Matter self-interactions and its effect on decoupling at the early universe and at structure formation. In collaboration with UNLP cosmology group. Current interests are on Cosmology, Structure Formation and out-of-equilibrium Thermodynamics.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Attendance at Advanced Workshop on Accelerating the Search for Dark Matter with Machine Learning

Attended workshop on selected topics about Machine Learning and its applications on Dark Matter related problems organized in ICTP-Trieste (Italy) from 8 April to 12 April 2019.

Attendance at Cosmology Workshop in Universidad Nacional de San Martin

Attended a series of conferences at Universidad de San Martin (Argentina) on selected topics on Baryogenesis and Neutrino Cosmology on December 20 2019.

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities [*activities carried out in collaboration with ICRA net (e.g. teaching activities, conferences etc...) and outside ICRA net (teaching activities in your university etc...)*]

III a. Within ICRA net

III b. Outside ICRA net

IV. Other

2019 List of Publications

Galactic Center constraints on self-interacting sterile neutrinos from fermionic dark matter (“ino”) models (Submitted for Review on Physics of the Dark Universe)

Authors: R. Yunis, C. R. Argüelles, Nick E. Mavromatos, A. Moliné, A. Krut, J. A. Rueda, R. Ruffini

Abstract: We discuss constraints on sterile neutrino dark matter (DM) within the context of an extension to the nuMSM framework, in which the DM candidates interact via a massive (axial) vector field. We explore the radiative decay channel of the sterile neutrino into X-rays, due to the Higgs portal interactions of the nuMSM, using the recently introduced Ruffini-Argüelles-Rueda (RAR) fermionic (“ino”) model for the distribution of DM in the Galaxy. The RAR DM model is based on a self-gravitating system of elementary neutral keV-fermions, including the effects of particle evaporation via a cut-off in the phase-space distribution, leading to finite-size DM halos. Self-interacting right-handed neutrinos (mediated by a massive vector field) were recently identified with the above RAR fermion masses, though ignoring the Higgs portal interactions as well as escape of particles effects. It is the aim of this work to take into account both RAR model extensions. In this respect, we show that such generalized RAR profiles are in good agreement with the overall Milky Way rotation curve, for a window of DM cross sections further satisfying bullet cluster constraints. We then perform an indirect detection analysis using X-ray observations from the Galactic center taken by the Nustar mission, to put constraints on the free parameters of such a nuMSM model extension. Finally, we show how the later can be produced by a novel generation mechanism in the early Universe through a vector-field decay, thus opening new strategies to study sterile neutrinos self-consistently within fermionic (“ino”) models.

IRAP Ph. D. Erasmus Mundus Students

Stahl Clément

Position: PostDoc in APC, Paris

Period covered: 2019-present

<https://cstahl.cicogna.fr/>



I Scientific Work

Large Scale Structures

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- 1) 25 january 2019: Relativistic cosmological large scale structures at one-loop, Centre de Physique Théorique, Marseille
- 2) 01 february 2019: Relativistic cosmological large scale structures at one-loop, Cosmology and astroparticle group, Geneva
- 3) 05 february 2019: Relativistic cosmological large scale structures at one-loop, Institut für Theoretische Physik, Heidelberg
- 4) 07 february 2019: QED and Schwinger effect in de Sitter spacetime, University of Basel
- 5) 15/19 july 2019: Dark Side of the Universe, Buenos Aires
- 6) 01/05 april 2019, Gravity at UCEN 2019, Santiago.
- 7) 13 november 2019: Primordial non-gaussianities or relativistic effects in Large Scale Structures?, Institut de Ciencies del Cosmos, Barcelona
- 8) 15 november 2019: Primordial non-gaussianities or relativistic effects in Large Scale Structures?, IRAP, Toulouse
- 9) 18 november 2019: Primordial non-gaussianities or relativistic effects in Large Scale Structures?, cosmology group meeting, APC, Paris
- 10) 25 november 2019: Relativistic cosmological large scale structures at one-loop, Institut d'Astrophysique de Paris

II c Diploma thesis supervision

I co-supervised the thesis of Lina Castiblanco and Juan Calles (PUCV, Chile) on structure formation.

IV. Other

V. 2019 List of Publication

- 1) L. Castiblanco, R. Gannouji, J. Noreña and C. Stahl, Relativistic cosmological large scale structures at one-loop, <https://arxiv.org/abs/1811.05452>, JCAP **1907** (2019) 030.
- 2) E. Bavarsad, S-P. Kim, C. Stahl, S-S Xue, Effect of Schwinger pair production on the evolution of the Hubble constant in de Sitter spacetime, <https://arxiv.org/abs/1909.09319>, proceeding of MG15
- 3) L. Castiblanco, R. Gannouji, and C. Stahl, Large scale structures: from inflation to today: a brief report, <https://arxiv.org/abs/1910.03931>, review for MG 15
- 4) J. Calles, L. Castiblanco J. Noreña and C. Stahl, From matter to galaxies: General relativistic bias for the one-loop bispectrum, <https://arxiv.org/abs/1912.13034>, to be submitted to JCAP

CAPES

Administrative, Secretarial and Technical Staff

	Survey of the competition sale prices Coordination of marketing plans and commercial budgets
Name and address of employer	Merker SpA - Trucks production
Date	1997 - 2000
Title of qualification awarded	Trainee at a Business Consultant
Principal subjects / occupational skills covered	Ordinary and simplified account. Fiscal fulfilments. European balance. Income tax return. Consultant office Dott. Vincenzo Micozzi - Pescara
Date	1997 - 31/03/2001
Principal subjects / occupational skills covered	Responsible for Quality Insurance (ISO UNI EN 9002) Management Assistance Purchase management Administrative and fiscal fulfilments Definition of Marketing plans and monitoring of mix marketing elements
Name and address of employer	Solaris Srl - Industrial Springs production
Date	1997 - 1997
Occupation or position held	Stageur
Main activities and responsibilities	Implementation of check systems management
Name and address of employer	Software House Polymatic - Chieti Scalo
<u>Education and training</u>	
Date	November 1991 - 16 July 1996
Title of qualification awarded	Degree in Economics – Economics of financial middleman
Name and type of organisation providing education and training	University L.U.I.S.S. - Guido Carli – Roma – Final marks: 105/110 – Thesis: “Tax incentive for the occupational development”
Dates	1986 - 1991
Title of qualification awarded	Secondary School Degree
Name and type of organisation providing education and training	Liceo Scientifico Leonardo Da Vinci - Pescara
Dates	1997 - 2000
Title of qualification awarded	Trainee at a Business Consultant
Main Subjects	Ordinary and simplified account. Fiscal fulfilments. European balance.

	Income tax return.
Name and type of organisation providing education and training	Consultant office Dott. Vincenzo Micozzi - Pescara
Date	1998 - 1998
Title of qualification awarded	Brief Master on Tax Law
Name and type of organisation providing education and training	University D'Annunzio - Pescara
Date	1998 - 1998
Title of qualification awarded	Postgraduate Course on “ European Union: institutional, juridical and economic aspects”
Name and type of organisation providing education and training	European Commission and University of Lyon: corse in Paris and Lyon. Success on final exams.
Dates	1997 - 1997
Title of qualification awarded	Expert in enterprise management
Main Subjects	Purchase and logistics, financing, administration and control, marketing, production, budget, bringing out of new products
Name and type of organisation providing education and training	Regione Abruzzo - CIFAP
Dates	1997 - 1997
Title of qualification awarded	Evaluator of Quality systems
Main subjects	Expert according to the ISO regulations. Qualification for leading controls according to the UNI EN 9002 regulations.
Personal skills and competences	
Mother tongue	Italian
<i>English</i>	Indipendent User
<i>French</i>	Basic User

Social skills and competences	<p>Communication Ability acquired during the working experiences</p> <p>Aptitude to learn, adaptable to new situations, different from the known ones.</p> <p>Ability to work under pressure.</p> <p>Good aptitude to work in multicultural environment thanks to the experiences spent abroad for education or personal reasons.</p> <p>Team spirit</p>
Organisational skills and competences	<p>Innate sense of organisation both in the working place and in the management of personal and familiar life.</p> <p>I am considered as a reference point by the production operators.</p>
Technical skills and competences	<p>Mastery in quality control processes in small enterprises (I was responsible for the quality evaluation)</p>
Computer skills and competences	<p>Good Knowledge of Microsoft Office (Word, Excel e PowerPoint)</p> <p>Very good knowledge of Team System – Gamma, Mult program</p> <p>Basic knowledge of graphic application</p> <p>Good knowledge of Internet and web search engines.</p>

Gabriele Attilio Brandolini



E-mail address gabriele.brandolini@icranet.org
Telephone +39 085 23054203
Fax +39 085 4219252
Nationality Italian
Place and date of birth Ortona (CH), 22 April 1986

Work experiences

Date 01 July 2013 - present
Name of employer Soabit srl
c/o ICRANet - International Center for Relativistic Astrophysics Network
Kind of Employment System manager
Main activities and responsibilities Network administrator – Web development

Date 2011 - 2011
Name of employer Tipografia F.lli Brandolini snc
Kind of Employment Graphic designer
Main activities and responsibilities Network administrator
Graphic design and layout texts

Date 2010-2010
Name of employer Soabit srl
c/o Univesità degli Studi “G. d'Annunzio” - Chieti
Kind of Employment Help desk
Main activities and responsibilities Web development: analysis and development of applications for managing stock of average complexity using PHP and MySQL technologies.
Network administrator: support to the installation of network devices and updating of its firmware, to the segmentation of local area network (VLAN 802.1q) and support to troubleshooting activities.
Network management: implementation of procedures for the historicizing of traffic flows (NetFlow / PMAcct) generated by the various firewalls on the various local networks.

Date 2009 - 2009

Name of employer Tipografia Flli Brandolini snc

Kind of Employment Graphic designer

Main activities and responsibilities Network administrator
Graphic design and layout texts

Education

Date September 2005 – 18 December 2012

Title of qualification awarded Degree in Computer Science

Name and type of organisation University of L'Aquila – Final marks: 88/110
providing education and training Thesis: “Analisi di prestazioni dell'instradamento in reti di sensori wireless”

Dates September 2009 – July 2005

Title of qualification awarded Secondary School Degree

Name and type of organisation Istituto Tecnico Industriale Statale “Luigi di Savoia” - Chieti
providing education and training

Personal skills and competences

Mother tongue Italian

English Basic User

Social skills Ability to work in a team matured in many situations where it
and competences was necessary collaboration between the figures, both in
academia and in the business and sports.
Good relational abilities thanks to the past work experience.

Organisational skills Sense of organization
and competences Good experience in project and team management

Computer skills Excellent knowledge of Operating Systems: Windows, Mac OS
and competences X and Linux.
Excellent knowledge of Apple and Microsoft applications and
Microsoft Office.
Excellent knowledge, also, of various graphics and layout
software.
Excellent ability to use the Internet and manage applications that
use them.
Management of Local Area Networks LAN and WLAN and
implementation of web applications.
Excellent knowledge of HTML, PHP, CSS, Javascript, jQuery,
MySQL.
Good knowledge of C, C++, Java, VPN, Firewalling.
Good knowledge of virtualization platforms, with particular
reference to XEN Server (v. 7, open-source).

Other skills and competences Considerable passion for the sport, followed and practiced.

Driving licence Driving licence cat. A – B.

di Niccolo Cinzia

E mail address cinzia.diniccolo@icranet.org
Telephone +39 085 23054 219
Fax +39 085 4219252
Nationality Italian
Date and place of birth Terlizzi, 23 May 1985



Work experiences

Date 01 August 2013 → present
Name of employer ICRA Net - International Center for Relativistic Astrophysics Network
Main activities and responsibilities Secretariat Office

Date 12 June → 16 July 2013
Occupation or position held ISTAO – Project Work
Main activities and responsibilities Report And Presentation Of The Results Loccioni Group – Our Presence In The World: Germany, USA, China; Country Analysis: Turkey.
Results, Report And Final Slide Presentation To Loccioni Managers
Name and address of employer Loccioni Group, via Fiume 16, 60030 Angeli di Rosora, Ancona
Phone +39.0731.8161 | Fax +39.0731.814.700

Date From October 2012
Occupation or position held Conference interpreting and translations.
Name and address of employer OS-Card Srl – Bologna

Date May 2012 → September 2012
Occupation or position held Junior Export Manager
Main activities and responsibilities Brazil country analysis. Brazilian Portuguese website translation.
Company profile in Brazilian Portuguese language.
Name and address of employer Marzoarreda – Novoli (LE)

Date September 2011 → January 2013
Occupation or position held Stageur
Main activities and responsibilities Legal Office – Notary services
Drafting of documents concerning: general/special power of attorney, will and testament of citizens living abroad, public acts, certificates of

authentications, self-certifications and official certificates that can be replaced by self-certifications.

Name and address of employer Italian General Consulate in Brazil – São Paulo
Avenida Paulista, 1963; CEP 01311-300 São Paulo (SP)

Date October 2011 → January 2012

Occupation or position held Italian teacher

Main activities and responsibilities Italian teacher for native Brazilian students.
Private lessons and classes.

Conference interpreter for 30th São Paulo *Venice Architecture Biennial* 2012

Name and address of employer Italian Institute of Culture in Brazil – São Paulo
Avenida Higienópolis, 436; CEP 01238-000, São Paulo (SP)

Date January → July 2011

Occupation or position held Internship

Main activities Editing, proofreading.

Name and address of employer Edizioni dell'Urogallo – Literature from Portuguese-speaking countries

Education and training

Date February → July 2013

Title of qualification awarded Postgraduate master course in International Management

Name and type of organisation providing education and training ISTAO – Istituto Adriano Olivetti di Studi per la gestione dell'economia e delle aziende

The Masters Course in International Management prepares highly specialized students in the field of international business and trade. Organized in collaboration with ICE (Governmental Agency for the internationalization of Italian companies), Confindustria Marche (Italian Employers' federation) and the Government of the Marche Region, the Master represents one of the most important and valuable programs for new graduates approaching the business world focused on the themes of internationalization: macroeconomics and global markets, enterprise organization, emerging countries, strategies and decision-making skills, contracts, rules, techniques.

Date May 2012

Title of qualification awarded CEDILS Certificate
Certified teacher for Italian as foreign language

Name and type of organisation providing education and training Ca' Foscari – University of Venice

Date November 2008 → 11 July 2011

Title of qualification awarded Master degree in *Languages for international communication – Portuguese EU/BR and Spanish*

Name and type of organisation Univerità degli Studi di Perugia
 providing education and Final marks: 110/110 cum laude
 training Thesis: “Way to Europe. Portugal and the European integration process”

Date November – December 2010

Title of qualification awarded Brief Master on Europroject Management 2007-2013

Name and type of organisation Introduction to European Union: institutional, juridical and economic
 providing education and aspects. Training courses: full lifecycle of an EC funded project:
 training proposal preparation and submission, evaluation, negotiation, technical and financial project management, reporting, technical reviews and post-project audits.

Date November 2004 → 9 November 2008

Title of qualification awarded Degree in *Linguistic and Cultural Mediation Sciences – Portuguese EU/BR and Spanish*

Name and type of organisation Univerità degli Studi di Perugia
 providing education and Final marks: 110/110 cum laude
 training Thesis: Modern poetry in Portugal.

Dates 1999 - 2004

Title of qualification awarded Secondary School Degree

Name and type of organisation Liceo Linguistico Carlo Troya – Andria (BT)
 providing education and
 training

Personal skills and competences

Mother tongue Italian

Portuguese Second language

Spanish Very good

English Good

French Basic User

Social skills and competences Good ability to adapt to multicultural environment, gained through my experience of studying and travelling abroad (Brazil and Europe); Very good aptitude in teamwork (working within collective projects in the postgraduate course and in academia); Ability to work under pressure.

- Organisational skills and competences Very good sense of organisation and time planning abilities;
Self rigorousness and self discipline;
Good analytical and problem-solving abilities gained during all study years and especially during internship at Italian General Consulate in Brazil (the Vice-Consul signed my letter of recommendation)
- Computer skills and competences Very good command of Microsoft Office (Word, Excel e PowerPoint);
Very good knowledge of Internet and web search engines;
Knowledge of graphic application.

Latorre Silvia



PERSONAL INFORMATION

Place and date of birth Chieti, 23/09/1982
Nationality Italian
E- mail silvia.latorre@icranet.org
Phone 085 – 23054223
Fax 085 - 4219252

WORK EXPERIENCES

- Date 12/02/2008 – present
- Name of employer ICRANet
 - Firm or Sector International Center for Relativistic Astrophysics Network
- Kind of Employment Administrative employee
 - Main Tasks Managing the relationship with suppliers, controlling invoices, calculating reimbursement and rewards for our scientific visitors, preparing orders for the bank, executing and verifying on-line payments, meeting our bank referents for particular payment operations, cash holding, using ICRANet cost-accounting system.

- Date 01/12/2006 – 20/01/2008
- Name of employer DelVerde Industrie Alimentari S.p.A.
 - Firm or Sector Pasta Factory
- Kind of Employment Trainee
 - Main Tasks Study and analysis of annual financial statements of ten competitor pasta factories for the financial years from 2002 to 2006, as well as reclassification of balance sheets and profit and loss accounts and calculation of the main income and financial indexes. Analysis of export strategies of DelVerde and other Italian pasta factories.

EDUCATION

- Date 11/2005 – 12/2007
- Institution Università degli Studi “G. D’Annunzio” Pescara
- Main Subjects Marketing, commercial law, innovation management and economics, business statistics, quality technique and theory
- Achieved Qualification Degree in Economics and Administration of the enterprises. Final thesis in analysis of balance sheet: “*La leva finanziaria e la leva operative nel settore pastario*” (supervisor Prof. Michele A. Rea)
- Mark 110/110 *cum laude*

- Date 09/2001 – 11/2005
- Institution Università degli Studi “G. D’Annunzio” Pescara
- Main Subjects Financial Mathematics, bank technique, business economics, accountancy, microeconomics, macroeconomics, private and public law, work law, analysis of balance sheet, business strategy and politics
- Achieved Qualification Business Economics Degree. Final thesis in business strategy and politics: “*Gli strumenti di analisi strategica: l’analisi SWOT*” (supervisor Prof. Michele A. Rea)
- Mark 106/110

<ul style="list-style-type: none"> • Date • Institution • Main Subjects 	<p>09/1996 – 07/2001</p> <p>Secondary School focusing on sciences- Liceo Ginnasio Statale “Publio Virgilio Marone” Vico del Gargano (FG)</p> <p>Mathematics analysis, Italian language and literature, Latin language and literature, Chemistry, Physics</p>
<ul style="list-style-type: none"> • Achieved Qualification • Mark 	<p>Scientific school-leaving certificate</p> <p>100/100</p>
FOREIGN LANGUAGES	ITALIAN
MOTHER-TONGUE	
OTHER LANGUAGES	ENGLISH (GOOD) – FRENCH (ELEMENTARY)
RELATIONAL ABILITIES	<p>Good relational abilities thanks to the past work experience at DelVerde and to the present experience at ICRANet.</p> <p>Self-reliant.</p> <p>Good listener.</p>
ORGANIZING COMPETENCES	<p>Good organizing abilities acquired handling the big amount of data at DelVerde and working at ICRANet, where they are essential for managing the large number of guests, mainly during the meetings.</p>
TECHNICAL SKILLS	<p>Computers competences: Windows. Softwares: Word, Excel, Power Point. Very good use of Internet and e-mail accounts.</p> <p>Good use of cost-accounting system HELPAZI and bank system BNL Businessway.</p> <p>Elementary knowledge of HTML e CSS programs for websites.</p> <p>Knowledge of “TOP VALUE” program for financial diagnosis and corporate planning.</p>
ARTISTIC SKILLS	Piano classes attended for 8 years. sol-fa Diploma.
DRIVING LICENCE	Driving licence cat. B
FURTHER INFORMATION	I like travelling, cooking, cinema, listening music, playing the piano. I have a determined, dynamic and flexible personality. I like staying and working with people.

INFORMAZIONI PERSONALI

Elisabetta Natale



📍 Via Cesare Battisti 12, 65029, Torre de' Passeri (PE)

☎ +39 3389465580

✉ elynatale@hotmail.com

Data di nascita 07/11/1991 | Nazionalità Italiana

ESPERIENZA PROFESSIONALE

- Da 01/2018 → **ICRANet Secretariat**
International Center for Relativistic Astrophysics Network (ICRANet), Pescara
- Da 09/2017 a 12/2017 → **Europe and North America Desk Assistant**
UNESCO, Parigi
Relazione con Stati membri e Partner istituzionali (MSP), settore Relazioni estere e Public information and communication (ERI)
- Da 03/2017 a 09/2017 **HR & Project Assistant Intern**
INTERSOS, Roma
- Da 08/2016 a 02/2017 **Intern – Delegazione dell'Unione Europea presso Agenzie delle Nazioni Unite (FAO, IFAD, WFP), Santa Sede, Ordine di Malta e Repubblica di San Marino**
EEAS (European External Action Service), Roma
- Sezione rapporti Unione Europea – ONU, in particolare responsabile delle relazioni UE - FAO
 - Partecipazione ai principali meeting FAO in qualità di delegata UE
 - Organizzazione e coordinamento dei meeting tra i 28 stati membri, analisi e preparazione di documenti e statement per i meeting
 - Assistente sezione stampa e comunicazione, cura del sito web della Delegazione
 - Stesura di comunicati stampa e report per gli uffici UE a Bruxelles, in particolare per la Commissione Europea e le DG pertinenti
- Da 06/2016 a 08/2016 **Marketing assistant**
General Communication Srl Bologna, Bologna
- Ricerca e fidelizzazione di nuovi clienti per conto di ONGs e INGOs (AMNESTY INTERNATIONAL, UNICEF, AISM Onlus)
 - Project Assistant
- 06/2016 **Exit poll e proiezioni elettorali per elezioni amministrative Bologna 2016**
IPR marketing per conto di RAI radiotelevisione italiana spa, Bologna
- Raccolta dati, monitoraggio, analisi e statistiche per proiezioni elettorali
 - Trasmissione dei dati a RAI radiotelevisione italiana per immediata diffusione in tempo reale
- 04/2016 **Scrutatrice per il referendum popolare italiano del 17 aprile 2016**
Comune di Torre de' Passeri (PE)
- Da 09/2015 a 11/2015 **Administrative assistant Intern**

Centro linguistico d'ateneo (CLA) Ravenna - Alma Mater Studiorum università di Bologna

- Attività di front/ back office, traduttrice per gli studenti stranieri in arrivo
- Preparazione e correzione dei test di livello linguistici (inglese, francese, tedesco e spagnolo)
- Assistente all'insegnamento per il progetto "ALMA ENGLISH" e per le certificazioni linguistiche
- Assistente all'insegnamento della lingua italiana per studenti stranieri
- Assistente sezione comunicazione

Da 11/2013 a 04/2014 **Administrative assistant Intern**

Ufficio orientamento e career service Forlì, Alma Mater Studiorum università di Bologna, Campus di Forlì (FC)

- Creazione e aggiornamento dei database
- Attività di front/ back office
- Colloqui con gli studenti per l'orientamento in entrata ed in uscita
- Promozione dell'attività formativa dell' Alma Mater Studiorum
- Assistente sezione comunicazione

Da 20/03/2014 **Co-founder associazione IAPSS sezione di Forlì**

IAPSS (International Association for Political Science Students), Forlì (FC)

- Cofondatrice dell'associazione
- Presentazione di IAPSS a istituzioni accademiche e amministrative (Alma Mater Studiorum - UniBo, comune di Forlì,...)
- Organizzazione di conferenze a livello locale / nazionale e internazionale
- Organizzazione di conferenze, eventi, round-tables, workshops, viaggi studio e di approfondimento
- Assistente sezione stampa e comunicazione

03/ 2010 **Traduttrice DE> IT del materiale informativo relativo al XXXVII Congresso nazionale su "KANT E L'AUFKLÄRUNG"**

Società filosofica italiana, Sulmona (L'AQ)

Traduzione di discorsi, flyer, documenti e materiale informativo relativo al XXXVII Congresso nazionale della "KANT E L'AUFKLÄRUNG"

ISTRUZIONE E FORMAZIONE

02/ 2017 **Workshop in International Journalism and Communication**

The Post Internazionale and Limes, Roma (RM)

Panelists: Enrico Mentana, Curzio Maltese, Marco Damilano, Amedeo Ricucci, Emiliano Fittipardi, Stefano Mentana, Giulio Gambino, Alessio Romenzi, Francesca Mannocchi, Nancy Porsia, Eva Giovannini, Sabika Shaha Povia, Laura Silvia Battaglia.

Da 04/2016 a 08/2016 **Executive master in International Business Development (percorso Export management e internazionalizzazione d'impresa)**

Sida group Management Academy, Bologna (BO)

Principali tematiche trattate: Strategie per l'internazionalizzazione d'impresa; marketing analitico e operativo; web marketing; social media marketing; project management; supply chain management e disciplina doganale; bilancio aziendale; controllo di gestione, pianificazione e strategia aziendale; business plan e finanziamenti; fiscalità e contrattualistica internazionale; tutela di marchi e brevetti; pagamenti internazionali e gestione del credito; analisi di mercato.

06/2016 **Diploma congiunto NATO Allied commander transformation-UNIBO**

NATO summer workshop and NATO Model event, Forlì (FC)

"NATO and Security Challenges: Institutions and Policies, Key Trends and Best Practices"

Ruolo ricoperto: giornalista NATO

Principali tematiche: Changing balances and the role of NATO in international politics: current challenges and

future opportunities; NATO in the future; Cooperative Security: Nato Partnerships in Perspective; Collective Defence and Crisis Management – Art.5 and Beyond; NATO and Other Actors in the New Security Environment: NATO and the UN; NATO and the EU; Cybersecurity: Myth and Reality; The changing global security environment: Exploring new challenges and opportunities.

Erasmus +

Da 09/2014 a 06/2015

Institut d'études politiques (SCIENCES PO), Lione, Francia

Specializzazione nel percorso Affari internazionali e commerciali

Principali tematiche: Politique commerciale européenne et comparée; Pratiques du commerce international; Médias, pouvoir et construction du consensus politique ; Communication politique et publique; Théorie et pratiques de la diplomatie; Violence internationale et gestion des conflits; Politiques publiques; Histoire internationale.

Laurea magistrale in scienze internazionali e diplomatiche

Da 09/2013 a 03/2016

Curriculum: politica e sicurezza internazionale

Votazione: 110 con lode /110

Alma Mater Studiorum università di Bologna, Campus di Forlì

Redazione della tesi sperimentale in lingua francese, dal titolo «*L'outrecuidance «à la française»: paradoxes stratégiques et ambiguïtés historiques de la politique européenne et de défense de la France*».

Attività extracurricolari:

- Co-fondatrice dell'associazione IAPSS (International Association For Political Science Students)
- 07/05/2014: SEMINAR "The Ukrainian Warfare: historical path and future implications to the International System" (organizzatrice)
- 11/04/2014: Incontro "Percorsi verso le carriere internazionali-da scienze politiche al mondo globale", Campus di Forlì
- 06/03/2014: simulazione del Consiglio dell'UE nella formazione Occupazione e Affari Sociali (Forlì) – Ruolo: Germania

Laurea in scienze internazionali e diplomatiche

Da 09/2010 a 07/2013

Alma Mater Studiorum università di Bologna, Campus di Forlì

Attività extracurricolari:

- 05/2013: NATO Model Event (Forlì) - Ruolo: Ambasciatrice della Lituania
- 10/05/2013: "Croatian Membership in the New Europe", conferenza con l'Ambasciatore croato in Italia, Damir Grubiša, Punto Europa (Forlì)
- 12/04/2013: incontro ISPI "GLOBE, orientamento alle carriere internazionali", Campus di Forlì
- 07/03/2013: "L'Emilia nel cuore dell'Europa. Emigrazione in Belgio. Storia e memorie di molte partenze e di qualche ritorno", presentazione del libro del professor Lorenzo Bertucelli, Punto Europa (Forlì)
- 02/2013: Prague Model United Nations Conference (Praga) - Ruolo: delegata della Mongolia nel Consiglio economico sociale Onu (ECOSOC)
- 13/03/2012: Cerimonia di consegna del Sigillum Magnum a Jean-Claude Juncker, Romano Prodi e Helmut Kohl, Bologna

Da 09/2005 a 07/2010

Maturità linguistica

Liceo linguistico Gian Battista Vico, Sulmona (L'AQ)

Lingue di studio: inglese, francese e tedesco

Scambi culturali:

- 10/2008: scambio culturale in Germania, liceo "Kurfurst Maximilian Gymnasium" Burghausen (Salzach)
- 03/2008: scambio culturale in Francia, liceo "Jean Zay", Jarny (Lorraine)

COMPETENZE PERSONALI

Lingua madre Italiano

Altre lingue	COMPRESIONE		PARLATO		PRODUZIONE SCRITTA
	Ascolto	Lettura	Interazione	Produzione orale	
Inglese	C1/C2	C1/C2	C1/C2	C1/C2	C1/C2
Francese	C1/C2	C1/C2	C1/C2	C1/C2	C1/C2
Tedesco	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2
Russo	B1	B1	B1	B1	B1
Spagnolo	A2	A2	A2	A2	A2

Competenza digitale	AUTOVALUTAZIONE				
	Elaborazione delle informazioni	Comunicazione	Creazione di Contenuti	Sicurezza	Risoluzione di problemi
	Utente intermedio	Utente intermedio	Utente intermedio	Utente intermedio	Utente intermedio

- Altre competenze**
- Corsi CRI (Pioniere e Volontaria del soccorso della Croce Rossa Italiana, corso BLSD e abilitazione all'utilizzo del defibrillatore semi automatico esterno)
 - Attività sportiva agonistica (Federazione italiana Pentathlon moderno_ società sportiva Valpescara srl)
 - Educatrice in Azione Cattolica e accompagnatrice/organizzatrice di campi estivi parrocchiali
 - Aiuto nel doposcuola parrocchiale e ripetizioni private (saltuariamente).
 - Conoscenza del sistema di scrittura e di lettura Braille

Patente di guida B

ULTERIORI INFORMAZIONI

Progetti **GENERAZIONE ITALIA** - Progetto di formazione istituzionale e innovazione legislativa organizzato dalla FONDAZIONE CULTURA DEMOCRATICA e dal GOVERNO ITALIANO
Roma, 04 -08/ 2017

- Riconoscimenti e premi**
- Luglio 2015: attestato di merito per studenti meritevoli, Alma Mater Studiorum Università di Bologna
 - 11/12/2010: Borsa di studio per conseguimento del diploma con esito eccellente, elargita dal "Centro studi Mac 47, Carmine Mastrogiuseppe no profit", Sulmona (L'AQ)
 - 08/2010: Segnalazione da parte del Dirigente Scolastico del liceo G.B.Vico (Sulmona-L'AQ) per rappresentare la scuola e partecipare al Premio "Alfieri del Lavoro" e alle prove di ammissione nel Collegio Universitario Lamaro Pozzani di Roma, realizzate dalla Federazione Nazionale dei Cavalieri del Lavoro
 - 05/2001: Riconoscimento ed elezione alla carica di Consigliere nel Consiglio comunale dei bambini di Torre de' Passeri (PE)

Certificazioni

- Luglio 2016: CORSO DI FORMAZIONE GENERALE PER I LAVORATORI secondo il D.Lgs. 81/2008 e l'accordo Stato Regioni del 21/12/2011

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".

Pescara, 18/01/2018

Elisabetta Natale

PERSONAL INFORMATION

Damiano Verzulli



 Viale Unita' d'Italia 224, 66100 Chieti (Italia)

 +39 3495893862 ("Telegram" enabled)

 damiano@verzulli.it

Date of birth Sep. 28th, 1971 | Nationality Italian

WORK EXPERIENCE

from may 2003, up to now

System & Network specialist (Consultant)

Università degli Studi "G. d'Annunzio" di Chieti-Pescara, Chieti (Italia)
<http://www.unich.it>

- Network management (3.300 interconnected hosts distributed around hundreds VLAN and 7 remote sites; 3x1Gbps Internet backbone [GARR]; a layered server farm focused on both services and security): monitoring, fixing, capacity planning;
- System management, with particular focus to the university e-mail platform (several servers; 2.500 mailboxes; more than 4TB of on-line storage) and virtualization environment (more than 30 VMs powered by a (phasing-out) vmWare ESX cluster and a (increasingly adopting) XEN Server 7 environment);
- System management of the underlying hardware infrastructure: DELL Blade Center m1000e with related blade-servers; an EMC² SAN (one storage array with four additional enclosures); a multilayer backup infrastructure; a web-hosting platform (several LAMP stacks); various other IT systems (logging, monitoring, TTS, VPN, etc.);
- Security management: ensuring proper security levels among all layers of ICT infrastructures:
 - Layer 2: wired 802.1x; wireless 802.1x; Radius AAA infrastructures;
 - Layer 3: firewalling, security assessment, Network-based Intrusion Detection Systems, ip-flow analysis (*NetFlow/IPFIX, SFLOW*) with particular focus on BotNet detection;
 - Layer 4 – Layer 7: Host-based Intrusion Detection Systems; Log analysis; Application specific vulnerabilities and patching; web-platforms hardenization (*Apache mod-security and reverse proxies*); incident handling and response, including source code-analysis of (web-based) malware;
 - Cross-layers: infrastructure planning and deployment (virtual infrastructures [*Vmware, XEN*] and related deployment [Hardware, Networking, Clustering, VM deployments, Backup & D/R])
- 2° level support towards underlying software stacks, with a particular focus to "open-source" technologies (linux, apache, mysql, php, rsyslog, pmacct, nagios, munin, postfix, courier, etc.);

april 2010 - august 2010

IT Specialist

MIUR – Italian Ministry of Education, Universities and Research

- Member of the technical-staff established by the Italian Ministry of Education, University and Research to plan and conduct the Five-Year Research Evaluation 2004-2008 Exercise [1]

[1] <http://civr.miur.it/en/vqrteam.html> - <http://civr.miur.it/en/index.html>

april 2010– december 2013

IT Specialist

MIUR – Italian Ministry of Education, Universities and Research

- External member of the technical-committee of the “Università Digitale” project, funded by the Italian Department of Public Administration and Innovation and involving ICT development and cooperation among 23 Italian universities and the Italian Ministry of Education, Universities and Research.
As an external member, he attended 15 meetings and directly supported the communication within the group by creating and managing several mailing-lists and a private intranet/website;

March 2005 - march 2007

Project Manager - TOSSAD (FP6)

- Project Manager for TOSSAD – Towards Open Source Software Adoption and Dissemination -, an EU project funded under the FP6 IST program (Contract No. 015981 signed on march 22nd 2005) whose objective was “...to start integrating and exploiting already formed methodologies, strategies, skills and technologies in F/OSS domain in order to help governmental bodies, educational institutions and SMEs to share research results, establish synergies, build partnerships and innovate in an enlarged Europe...” .
In TOSSAD he was involved in WorkPackage 3, leading the delivery process of several project-deliverables.

september 1999 – february 2003

Project Manager and Team Leader

Nextra Spa (a former Telenor Norway Company), Casalecchio di Reno (BO) - Italy

- Web-development Team Leader, coordinating a team of 5 to 12 people;
- Project Manager for various web-portal contracts;
- Local contact point, towards "corporate", for all the issues related to web-development software technologies and web-development hardware and system infrastructures.
- System administrator of the web-hosting platform.

As such he had the change to often travel abroad, all-around other Nextra Europe sites as well as to corporate headquarter, in Norway.

May 1996 – august 1999

Internet Application Developer

CINECA - Consorzio Interuniversitario, Casalecchio di Reno (BO) - Italy

- Web developer (Perl/CGI; PHP; Postgresql; MySQL);
- Junior sysadmin for IRIX and HP-UX platforms powering the web-hosting services;

EDUCATION AND TRAINING

1991 - 1995

Computer Science degreeUniversity of L'Aquila – Italy - with full marks (*110 cum laude*)

The thesis titled “*Multidimensional Interval Routing techniques*” researched some routing topics in specic network environments.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	B2	B2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Organisational / managerial skills

- Significant project-management attitude and skills mainly thanks to previous working experience, also in multicultural/international team;
- Being able to (comfortably) speak to both technical and non-technical targets, even within medium/large conferences. As an example:
 - 2005: “Free Software World Conference” - 26/10/2005, Badajoz, Spain
 - 2009: “GARR Workshop” - 17/06/2009, Rome, Italy
- Being able to present/discuss deeply technical topics to non-technical decision-makers (CEOs, CFOs, etc.);
- Presenting an uncommon balance between technical knowledge, capacity to deliver, team-working and customer satisfaction.

Computer skills

- Deep knowledge of Linux-based systems;
- Good knowledge of Microsoft “server” platforms (Domain, Active Directory, etc.), with particular reference to the interoperability/integration with Linux environments;
- Deep knowledge of networking technologies, ranging from Layer 2 (Ethernet) up to Layer 7 Internet protocols (HTTP, FTP, SMTP, SNMP, DNS, NTP, SYSLOG, POP/IMAP, SSL, etc.);
- Good “web programming” skills, mainly as PHP and PERL development but also with respect to current/modern WEB 2.0 pattern (AngularJS and other Javascript platforms/frameworks, Bootstrap CSS, NoSQL);
- Good knowledge of DBMS technologies, with particular reference to SQL language and MySQL/MariaDB engine;
- Good knowledge of collaborative development technologies (GIT);
- Good knowledge of virtualization platforms, with particular reference to VMware ESX/vSphere and XEN Server (v. 7, open-source);
- Deep knowledge of the Open-Source and Free Software movements, with particular reference to their impact towards Public Administrations and, more in general, to the Society as a whole.

ADDITIONAL INFORMATION

Additional information

- Very “open minded” and “technology” addicted;
- Really interested in the security side of the Internet technologies, especially related to web-security (web application vulnerabilities) and network traffic analysis (BotNet detection);
- “Arduino” and “ESP8266” microcontroller addicted. Really interested in deepen related know-how, especially regarding the current and future IoT trends;
- Member of the great StackExchange community, with particular reference to the ServerFault portal (<http://serverfault.com/users/251104/damiano-verzulli> ; 5 questions and 50 answers for a 1916 current score);
- Aiming to work in multicultural and multiethnic context, better if in “international” groups/companies;
- he'd like to be involved as project-manager for medium/large projects, better if in medium/large "global" companies, even better if with Free/Open-Source-Software as a common base for such projects;
- he would like to continue to broaden his knowledge about Internet technologies and to always “stay-inline” with technology news and trends.

Stefanov Vladislav

Position: Scientific secretary
Period covered: from September 1, 2019



I Scientific Work

In collaboration with I. Siutsou was investigated an effect of dephasing induced by weak gravitational field on the collective radiation dynamics of atomic system in timed single-photon Dicke states.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

III. Service activities

III a. Within ICRANet

III b. Outside ICRANet

Supervisor of the school team (Gymnasium №61 of Minsk) participating in the International Young Physicists' Tournament

IV. Other

2019 List of Publication

[1] V.Stefanov, I.Siutsou and D.Mogilevtsev *Gravitational dephasing in spontaneous emission of atomic ensembles in timed Dicke states*, (in print) <https://arxiv.org/abs/1905.12301>