Staff, Visiting Scientists and Graduate Students at the Pescara Center

ICRANet Faculty Staff

• Belinski Vladimir	ICRA
• Bianco Carlo Luciano	Università di Roma “Sapienza” and ICRANet
• Ruffini Remo	Università di Roma “Sapienza” and ICRANet
• Vereschchagin Gregory	ICRANet
• Xue She-Sheng	ICRANet

Adjunct Professors of the Faculty

- Aharonian Felix Albert — Benjamin Jegischewitsch Markarjan Chair
  Dublin Institute for Advanced Studies, Dublin, Ireland
  Max-Planck-Institut für Kernphysis, Heidelberg, Germany
- Arnett David — Subramanyan Chandrasektar- ICRANet Chair
  University of Arizona, Tucson, USA
- Chechetkin Valeri — Mstislav Vsevolodich Keldysh-ICRANet Chair
  Keldysh institute for Applied Mathematics Moscow, Russia
- Christodoulou Dimitrios — ETH, Zurich, Switzerland
- Coppi Bruno — Massachusetts Institute of Technology
- Damour Thibault — Joseph-Louis Lagrange- ICRANet Chair
  IHES, Bures sur Yvette, France
- Della Valle Massimo — Osservatorio di CapodiMonte, Italy
- Everitt Francis — William Fairbank-ICRANet Chair
  Stanford University, USA
- Fang Li-Zhi — Xu-Guangqi-ICRANet Chair
  University of Arizona, USA
- Greiner Walter — Frankfurt Institute for Advanced Studies, Germany
- Jantzen Robert — AbrahamTaub-ICRANet Chair
  Villanova University USA
- Kleinert Hagen — Richard Feynmann-ICRANet Chair
  Freie Universität Berlin
- Kerr Roy — Yevgeny Mikhajlovic Lifshitz-ICRANet Chair
  University of Canterbury, New Zealand
- Misner Charles — John Archibald Wheeler
  University of Maryland
- Novello Mario — Cesare Lattes-ICRANet Chair
  CBPF, Rio de Janeiro, Brasil
- Panagia Nino — ESA, Space Telescope Science Institute, USA
- Pian Elena — INAF and Osservatorio Astronomico di Trieste
- Popov Vladimir — ITEP, Russia
- Punsly Brian Matthew — Mathew California University, Los Angeles USA
- Rosquist Kjell — Karl Gustav Jacobi-ICRANet Chair
  Stockholm University, Sweden
- t Hooft Gerard — (Nobel Laureate) Institut for Theoretical Physics
  Utrecht Universiteit, Holland
- Titarchuk Lev — US Naval Laboratory, USA

Lecturers

• Bini Donato	CNR and ICRANet, Italy
• Boccaletti Dino	ICRANet and Università di Roma "Sapienza"
• Chakrabarti Sandip K.	Center for Space Physics, India
• Chardonnet Pascal	Université de la Savoie, France and ICRANet
• Chieffi Alessandro	INAF, Rome, Italy
• Coullet Pierre	Université de Nice - Sophia Antipolis, France
• Di Castro Carlo	Università di Roma "Sapienza", Italy
• Filippi Simonetta	ICRANet and Campus Biomedico, Italy
• Gurzadyan Vahe	(up to Oct.10, 2008) Yerevan Physics Institute, Armenia
• Jing Yi-Peng	Shangai Astronomy Observatory
• Lee Hyun Kyu	Department of Physics, Hanyang University,
• Lee Hyung Won	School of Computer Aided Science,Ingje, Korea
• Limongi Marco	INAF, Rome, Italy
• Lou You Qing	Tsinghua University, Beijing
• Mester John	Stanford University, USA
• Mignard François	Observatoire de la Côte d'Azur, Nice, France
• Montani Giovanni	ENEA and ICRANet
• Nagar Alessandro	Politecnico di Torino and IHES, Bures sur Yvette, Franc
• 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 Roma
• Starobinsky Alexei	Landau Institute for Theoretical Physics, Russia
• Sung-Won Kim	Institute of Theoretical Physics for Asia-Pacific, Korea

Research Scientists

- Benini Riccardo — ICRANet and Università di Roma “Sapienza”, Italy
- Bernardini Maria Grazia — ICRANet and Università di Roma “Sapienza”, Italy
- Cherubini Christian — Campus Biomedico, Rome, Italy
- Cianfrani Francesco — ICRANet and Università di Roma “Sapienza”, Italy
- Geralico Andrea — ICRANet and Università di Roma “Sapienza”, Italy
- Lattanzi Massimiliano — University of Oxford and ICRANet
- Rotondo Michael — ICRANet and Università di Roma “Sapienza”, Italy

Short-Term Visiting Scientists

• Alekseev Georgy	Steklov Mathematical Institute Russian Academy of Sciences, Russia
• Ashtekhar Abhay	Institute for Gravitational Physics and Geometry Penn State, USA
• Chardin Gabriel	CNRS, Université Orsay
• Cirilo-Lombardo Diego	Bogoliubov Lab. of Theoretical Physics, JINR-Dubna
• Folomeev Vladimir	National Academy of Sciences of the Kyrgyz Republic
• Fraschetti Federico	CEA Saclay, France
• Gurovich Victor	Technion, Israel
• Mosquera Cuesta Hermann	CBPF, Brazil and ICRANet
• Pelster Axel	Freie Universitat, Berlin
• Thieman Thomas	Max Plank Institut fuer Gravitationnsphysik Einstein Institut, Germany

Long-Term Visiting Scientists

• Aksenov Alexey	Institute for Theoretical and Experimental Physics, Russia
• Arkhangekskaja Irene	Moscow Engineering Physics Institute, Russia
• Boshkayev, Kuantay	Al-Farabi Kazakh National University, Uzbekistan
• Fimin Nicolaj	Keldysh institute for Applied Mathematics, Russia
• Gadri Mohamed	University of Tripoli Libya
• Hoang Ngoc- Long	IPE, Hanoi, Vietnam
• Kim Jik Su	Pyongyang Astronomical Observatory Kim Il Sung Univ, North Korea
• Lee Hyung Won	School of Computer Aided Sciences, Inje University
• Quevedo Hernando	Universidad Nacional Autónoma de México
• Ri Chang Hyok	Pyongyang Astronomical Observatory Kim Il Sung Univ, North Korea
• Sepulveda Alonso	Universidad de Antioquia, Colombia
• Song Doo Jong	National Institute of Astronomy Korea
• Torres Sergio	Centro Internacional de Fisica, Bogotà Colombia
• Wiltshire David	University of Canterbury
• Zalaletdinov Roustam	Dept. of Theoretical Physisc, Institute of Nuclear Physics Uzbek Academy of Sciences Uzbekistan

International Relativistic Astrophysics Ph. D.

Third Cycle 2004-07

- *Chiappinelli Anna France*
- *Cianfrani Francesco Italy*
- *Guida Roberto Italy*
- *Rotondo Michael Italy*
- *Yegoryan Gegham Armenia*

Fourth Cycle 2005-08

- *Battisti Marco Valerio Italy*
- *Dainotti Maria.Giovanna Italy*
- *Khachatryan Harutyun Armenia*
- *Lecian Orchidea Maria Italy*
- *Pizzi Marco Italy*
- *Pompi Francesca Italy*

Fifth Cycle 2006-09

- *Caito Letizia Italy*
- *De Barros Gustavo Brasil*
- *Minazzoli Olivier Switzerland*
- *Patricelli Barbara Italy*
- *Rangel Lemos Luis Juracy Brasil*
- *Rueda Hernandez Jorge Armando Colombia*

Sixth Cycle 2007-2010

- *Ferroni Valerio Italy*
- *Izzo Luca Italy*
- *Kanaan Chadia*
- *Pugliese Daniela Italy*
- *Sigismondi Costantino Italy*

Administrative Staff

• D'Angelo Veronica	Head of the Administrative Office
• Del Beato Annapia	Documentation Office
• Di Berardino Federica	Head of the Secretarial Office
• Latorre Silvia	Administrative Office
• Regi Massimo	System Manager

Belinski Vladimir

Position: member of ICRANet Faculty Staff

Period covered:1990 2007 (INFN)

2007– present (ICRANet)

I Scientific Work

Cosmology: The study of the general solution of gravitational equations with cosmological singularity of an oscillatory chaotic structure (the so-called BKL singularity). Investigation of the properties of this solution and of the influence of different kinds of matter on its character.

Astrophysics: Construction of exact solutions for the motions of gravitating shells and its intersections. Chaotic behaviour of the intersecting shells. Applications to the stellar clusters.

Exact solutions of Einstein and Einstein-Maxwell equations: the theory of gravitational solitons and the mathematical aspects of the Inverse Scattering Method in General Relativity. Constructions of the exact solutions of physical interest.

Quantum Fields: Analysis of the behaviour of the Quantum Fields in Black Hole space-time and in accelerated systems from the point of view of canonical and algebraic Quantum field Theory.

II Conferences and educational activity

The 10^{th} Italian Conference on General Relativity and Gravitational Physics, Bardonecchia, Italy,
September 1-5, 1992. Invited Talk “Gravitational Topological Charge and Gravibreather”. Proceedings ed. M.Cerdonio et al., page 37, World Scientific, (1994).

International Conference “Birth of the Universe and Fundamental Physics”, Rome, May 1994. Invited talk “Gravitational Topological Charge”. Lectures Notes in Physics, vol. 455, ed. F. Ochionero, Springer, (1995).

The Seventh Marcel Grossman Meeting (MG7), Stanford, USA, July 24-30, 1994. Chairman of the “Exact solutions” parallel session. Two talks: (i) Plenary talk “Gravitational Topological Charge and the Gravibreather” and (ii) parallel session talk "On the existence of black hole evaporation".

The Eighth Marcel Grossman Meeting (MG8), Jerusalem, Israel, June 22-27, 1997. . Chairman of the "Quantum Fields in Curved Space Time" parallel session. Two parallel sessions talks: "On the turbulence near cosmological singularity" (together with A.Kirillov and G.Montani) and "On the theory of the Unruh effect" (together with B.Karnakov, V.Mur and N.Narozhny).

The Third ICRANet Workshop "Electrodynamics and Magnetodynamics around Black Holes",Rome-Pescara, July 12-24, 1999. The talk "Quantum Field in Rindler space" (together with N..Narozhny, A.Fedotov, B.Karnakov and V.Mur).

International European Conference "Journées Relativistes 99", Weimar, Germany, September 12-17. Plenary talk: "Quantum Fields in Accelerated Frames" (together with N. Narozhny, A. Fedotov, B Karnakov and V. Mur), Ann. Phys. (Leipzig), vol.9 p. 199 (2000).

The Second ICRA Network Workshop "The Chaotic Universe", Rome-Pescara, February 1-5, 1999. The talk "Chaos in Cosmology".

The Third ICRANet Workshop "Electrodynamics and Magnetodynamics around Black Holes", Rome- Pescara, July 12-24, 1999. The talk: "Quantum Field in Rindler space" (together with N. Narozhny, A. Fedotov, B Karnakov and V. Mur)

The Ninth Marcel Grossman Meeting (MG9), Rome, July 2-8, 2000. Chairman of the "Quantum Fields" parallel session.

The Tenth Marcel Grossman Meeting (MG10), Rio de Janeiro, July 20-26, 2003. Chairman of the "Quantum Fields" parallel session.

The 8th Italian-Korean Symposium on Relativistic Astrophysics, Rome-Pescara, August 18-23, 2003. The talk "Boundary conditions in the Unruh problem"

The 1st Italian-Sino Workshop on Cosmology and Relativistic Astrophysics, Rome-Pescara, July 7-17, 2004. The talk on the chaotic motion of the gravitating shells.

The 2nd Italian-Sino Workshop on Relativistic Astrophysics, Pescara, June 10-20, 2005. The talk "On the equilibrium state for two charged masses in General Relativity".

The 9th Italian-Korean Symposium on Relativistic Astrophysics, Seoul, July 19-24, 2005. Invited talk "On the equilibrium state for two charged masses in General Relativity".

The Bego Scientific Recontres, Nice, February 6-17, 2006. Three invited lectures on the black hole evaporation phenomenon.

The 3rd Italian-Sino Workshop on Relativistic Astrophysics, Pescara, June 10-20, 2006. The talk "Equilibrium configuration of two charged masses in general Relativity" (together with G. Alekseev)

The 1st Stueckelberg Workshop on Relativistic Field Theories, Pescara, June 25-July 1, 2006. The talk "New developments in Einstein-Maxwell Theory: non-perturbative approach".

Eleventh Marcel Grossman Meeting (MG11), Berlin, July 23-29, 2006. Chairman of the "Quantum Fields" parallel session. Invited review paper for Proceedings: G. Alekseev and V. belinski "Superposition of Fileds of two Reissner-Nordstrom Sources", in press.

XII Brazilian School in Gravitation and Cosmology, Rio de Janeiro, September 2006. Five invited lectures under the title "Quantum fields in black hole spacetime and in accelerated systems".

Workshop "Key Problems in Theoretical Cosmology", April 23-28, 2007, Cargese, Institut D'Etudes Scientifiques De Cargese. Invited talk on the exact solution for the equilibrium configuration of two static Reissner-Nordstrom sources (together with G. Alekseev).

The 10th Italian-Korean Symposium on Relativistic Astrophysics, Pescara, June 25-30, 2007. Talk on the static equilibrium state of two Reissner-Nordstrom sources (together with G. Alekseev)

The 4th Italian-Sino Workshop on Relativistic Astrophysics, Pescara, July 20-30, 2007. Talk on the electric force lines in the equilibrium configuration of two Reissner-Nordstrom sources (together with G. Alekseev, A. Paolino and M.Pizzi).

The 5th Sino-Italian Workshop on Relativistic Astrophysics, Taiwna, May 28-June 1, 2008. talk "Charged membrane as a source for repulsive gravity".

The 3rd Stueckelberg Workshop on relativistic Astrophysics, Pescara, 8-18 July, 2008. The talk "Charged Masses and repulsive Gravity" (together with M. Pizzi and A. Paolino).

XIII Brazilian School in Gravitation and Cosmology, Rio de Janeiro, July 20-August 1, 2008. Five invited lectures under the title "Einstein.Maxwell solitons".

Work with students and Diploma thesis Supervision:

1. G.Montani (University Graduation, 1992)
2. W. Inglese (University Graduation, 1992)
3. A.D'Aquino (University Graduation, 1993)
4. F.Ferrante (University Graduation, 1996)
5. G.Montani (PhD degree, 1997)
6. M.Talevi (University Graduation, 1997)
7. A.Paolino (University Graduation, 1997)
8. A.Borreli (PhD degree, 1998)
9. D.Oriti (University Graduation, 1999)
10. M.Vella (University Graduation, 2000)
11. D.Colosi (University Graduation, 2000)

12. F.Briscese (University Graduation, 2003)
13. M.Pizzi (University Graduation, 2005)
14. M.Pizzi (PhD degree, in progress)
15. A.Paolino (PhD degree, in progress)

Other teaching activity

The course of lectures in Cosmology for the PhD students delivered in Physics Department, Rome University “La Sapienza” during 1990-1998.

III Service Activities

Coordination of the collaboration between ICRANet and Russian physicists.

IV 2007-2008 List of Publications

V. Belinski "Quantum **fields** in black hole spacetime and in accelerated sistems", AIP Conference Proceedings, Ed. M.Novello and S. Bergliaffa, 910, 270, (2007).

G.Alekseev and V.Belinski "Schwarzschild Black Hole Hovering in the Field of a Reissner-Nordstrom Naked Singularity", Nuovo Cimento, 122B, No.2, (2007).

G.Alekseev and V.Belinski "”Equilibrium configurations of two charged masses in General Relativity”, Phys. Rev. D76, 021501(R), (2007).

G.Alekseev and V.Belinski “Superposition of fields of two Reissner-Nordstrom sourses”, Invited paper for Proceedings of 11 Marcel Grossmann Meeting (Berlin, July 2006), World Scientific, pub. date September 2008.

V.Belinski, M.Pizzi and A.Paolino “Charged membrane as a source for repulsive gravity” IJMP(D), in press (2008).

V. Belinski "Einstein-maxwell solitons", AIP Conference Proceedings, Ed.M.Novello and S. Bergliaffa, in press, to appear in 2009.

Bianco Carlo Luciano

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

Period covered: 2005 – present

I Scientific Work

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

II Conferences and educational activities

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 (Italia), 10 July 2008.

Work With Students

- Students of the IRAP-PhD program at University “La Sapienza”, Rome, Italy: Maria Grazia Bernardini, Letizia Caito, Maria Giovanna Dainotti, Roberto Guida, Barbara Patricelli.

- Students of the First three years degree Thesis ("Tesi di Laurea triennale") in Physics at University "La Sapienza", Rome, Italy: Eliana La Francesca, Francesco Alessando Massucci.

- Students of the Final Degree Thesis ("Tesi di Laurea Vecchio Ordinamento") in Physics at University "La Sapienza", Rome, Italy: Letizia Caito, Walter Ferrara.

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.

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 year 2007/2008.

- 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 year 2008/2009.

III 2007-2008 List of Publications

R. RUFFINI, M.G. BERNARDINI, C.L. BIANCO, L. CAITO, P. CHARDONNET, M.G. DAINOTTI, F. FRASCHETTI, R. GUIDA, G. VERESHCHAGIN, S.-S. XUE; The role of GRB 031203 in clarifying the astrophysical GRB scenario; *ESA Special Publication*, **SP-622**, 561 (2007).

R. RUFFINI, M.G. BERNARDINI, C.L. BIANCO, L. CAITO, P. CHARDONNET, M.G. DAINOTTI, F. FRASCHETTI, R. GUIDA, M. ROTONDO, G. VERESHCHAGIN, L. VITAGLIANO, S.-S. XUE; The Blackholic energy and

the canonical Gamma-Ray Burst; in *Proceedings of the XIIth Brazilian School on Cosmology and Gravitation*, Mangaratiba, Rio de Janeiro (Brazil), September 2006, M. Novello, S.E. Perez Bergliaffa, Editors; *AIP Conference Proceedings*, **910**, 55 (2007).

M.G. BERNARDINI, C.L. BIANCO, L. CAITO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI; GRB970228 and the class of GRBs with an initial spikelike emission: do they follow the Amati relation?; in *Relativistic Astrophysics – Proceedings of the 4th Italian-Sino Workshop*, Pescara (Italy), July 2007, C.L. Bianco, S.-S. Xue, Editors; *AIP Conference Proceedings*, **966**, 7 (2008).

C.L. BIANCO, M.G. BERNARDINI, L. CAITO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI; The ''Fireshell'' Model and the ''Canonical'' GRB Scenario; in *Relativistic Astrophysics – Proceedings of the 4th Italian-Sino Workshop*, Pescara (Italy), July 2007, C.L. Bianco, S.-S. Xue, Editors; *AIP Conference Proceedings*, **966**, 12 (2008).

L. CAITO, M.G. BERNARDINI, C.L. BIANCO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI; GRB 060614: A Progress Report; in *Relativistic Astrophysics – Proceedings of the 4th Italian-Sino Workshop*, Pescara (Italy), July 2007, C.L. Bianco, S.-S. Xue, Editors; *AIP Conference Proceedings*, **966**, 16 (2008).

M.G. DAINOTTI, M.G. BERNARDINI, C.L. BIANCO, L. CAITO, R. GUIDA, R. RUFFINI; GRB 060218 and the Binaries as Progenitors of GRB-SN Systems; in *Relativistic Astrophysics – Proceedings of the 4th Italian-Sino Workshop*, Pescara (Italy), July 2007, C.L. Bianco, S.-S. Xue, Editors; *AIP Conference Proceedings*, **966**, 25 (2008).

R. GUIDA, M.G. BERNARDINI, C.L. BIANCO, L. CAITO, M.G. DAINOTTI, R. RUFFINI; The Amati Relation within the Fireshell Model; in *Relativistic Astrophysics – Proceedings of the 4th Italian-Sino Workshop*, Pescara (Italy), July 2007, C.L. Bianco, S.-S. Xue, Editors; *AIP Conference Proceedings*, **966**, 46 (2008).

R. GUIDA, M.G. BERNARDINI, C.L. BIANCO, L. CAITO, M.G. DAINOTTI, R. RUFFINI; Theoretical interpretation of the Amati relation within the fireshell model; in *GAMMA-RAY BURSTS 2007: Proceedings of the Santa Fe Conference*, Santa Fe (NM, USA), November 2007, M. Galassi, D. Palmer, E. Fenimore, Editors; *AIP Conference Proceedings*, **1000**, 60 (2008).

L. CAITO, M.G. BERNARDINI, C.L. BIANCO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI; GRB 060614: a Fake Short Gamma-Ray Burst; in *GAMMA-RAY BURSTS 2007: Proceedings of the Santa Fe Conference*, Santa Fe (NM, USA), November 2007, M. Galassi, D. Palmer, E. Fenimore, Editors; *AIP Conference Proceedings*, **1000**, 301 (2008).

C.L. BIANCO, M.G. BERNARDINI, L. CAITO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI; Short and canonical GRBs; in *GAMMA-RAY BURSTS 2007: Proceedings of the Santa Fe Conference*, Santa Fe (NM, USA), November 2007, M. Galassi, D. Palmer, E. Fenimore, Editors; *AIP Conference Proceedings*, **1000**, 305 (2008).

A.G. AKSENOV, C.L. BIANCO, R. RUFFINI, G.V. VERESHCHAGIN; GRBs and the thermalization process of electron-positron plasmas; in *GAMMA-RAY BURSTS 2007: Proceedings of the Santa Fe Conference*, Santa Fe (NM, USA), November 2007, M. Galassi, D. Palmer, E. Fenimore, Editors; *AIP Conference Proceedings*, **1000**, 309 (2008).

C.L. BIANCO, M.G. BERNARDINI, L. CAITO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI, G. VERESHCHAGIN, S.-S. XUE; The Equations of motion of the "fireshell"; in *OBSERVATIONAL EVIDENCE FOR BLACK HOLES IN THE UNIVERSE: Proceedings of the 2nd Kolkata Conference*, Kolkata (India), February 2008, S.K. Chakrabarti, A.S. Majumdar, Editors; *AIP Conference Proceedings*, **1053**, 259 (2008).

M.G. BERNARDINI, C.L. BIANCO, L. CAITO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI; The "Canonical" GRBs within the fireshell model; in *OBSERVATIONAL EVIDENCE FOR BLACK HOLES IN THE UNIVERSE: Proceedings of the 2nd Kolkata Conference*, Kolkata (India), February 2008, S.K. Chakrabarti, A.S. Majumdar, Editors; *AIP Conference Proceedings*, **1053**, 267 (2008).

M.G. DAINOTTI, M.G. BERNARDINI, C.L. BIANCO, L. CAITO, R. GUIDA, R. RUFFINI; GRB 060218: the density mask and its peculiarity compared to the other sources; in *OBSERVATIONAL EVIDENCE FOR BLACK HOLES IN THE UNIVERSE: Proceedings of the 2nd Kolkata Conference*, Kolkata (India), February 2008, S.K. Chakrabarti, A.S. Majumdar, Editors; *AIP Conference Proceedings*, **1053**, 283 (2008).

L. CAITO, M.G. BERNARDINI, C.L. BIANCO, M.G. DAINOTTI, R. GUIDA, R. RUFFINI; GRB 060614 in the canonical fireshell model; in *OBSERVATIONAL EVIDENCE FOR BLACK HOLES IN THE UNIVERSE: Proceedings of the 2nd Kolkata Conference*, Kolkata (India), February 2008, S.K. Chakrabarti, A.S. Majumdar, Editors; *AIP Conference Proceedings*, **1053**, 291 (2008).

C.L. BIANCO, S.-S. XUE (EDITORS); Relativistic Astrophysics – Proceedings of the 4th Italian-Sino Workshop; *AIP Conference Proceedings*, **966**, American Institute of Physics (2007).

Ruffini Remo

Position: Professor at Università “Sapienza” Roma

Director ICRANet

President IRAPh. D.

Curriculum Vitae:

- Doctorate in Physics, University of Rome, 1966.
- Postdoctoral fellow Mainz Academy of Sciences. Hamburg, Fed. Republic, Germany, 1967.
- Postdoctoral fellow Palmer Physics Lab. Princeton University, N.J., 1967-68.
- Member Institute for Advanced Study, Princeton, N.J., 1968-70.
- Instructor, Princeton Univ., 1970-71.
- Assistant Professor, Princeton University, 1971-74.
- Member Institute for Advanced Study, Princeton, N.J. 1974-76 .
- Visiting professor Kyoto University (Japan), 1975.
- Visiting professor University of Western Australia, Nedlands (Australia), 1975.
- Professor University of Catania, Italy, 1976-78.
- **Professor, Chair of Theoretical Physics, University of Rome “la Sapienza”, 1978-**
- Member Council of Center. International Physics, Bogotà, Colombia, 1984-
- President International Center Relativistic Astrophysics (ICRA), 1985-
- Director of ICRANet, 2005-
- Member of Task Force Scientific Use of Space Station NASA, Washington, 1986-88.
- Chairman International Organizing Committee of Marcel Grossmann Meetings, 1984-
- Member International Forum on the Scientific Use of Space Station, Washington, 1986-90.
- Member of Consiglio Ricerche Astronomiche, Rome, 1987-91.
- Co-Chairman Italian-Korean Meetings on Relativistic Astrophysics, Rome and Seoul, 1987-
- Chairman William Fairbanks Meetings, 1990-
- President of the Scientific Committee of the Italian Space Agency, Rome, 1989-93.
- Member of the Board of ENEA, 2004-

- Co-Director Advanced Series in Astrophysics and Cosmology-World Scientific, Singapore, 1986
- Editor Internat. Jour. Modern Phys. D World Scientific Singapore, 1992-
- Editor of the series “The Marcel Grossmann meetings on relativistic Field Theories”, 1985-
- Co- Editor of the Series” Italo-Korean meetings on Relativistic Astrophysics”.
- Member Sigma Xi.
- Member Italian Physical Society.
- Founding Member of European Physical Society.
- Member of Euroscience
- Fellow recipient:
    - Cressy Morrison award of the New York Academy of Sciences , 1972.
    - Fellow of the American Physical Society 1974-
    - Alfred P. Sloan Foundation fellow, 1974-76.
    - Space Scientist of the Year Award, 1992.
    - Honorary Professor of University of Kirghizia 1998-

Main Scientific Publications:

Coauthor, among others, of the following books:

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 Diri Gratazionnie 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

Vereshchagin Gregory

Position: researcher

Period covered: 2008

I Scientific Work

- Thermalization of optically thick pair plasma
- Kinetic instabilities of collisionless shockless electron-ion plasmas
- Relativistic hydrodynamics
- Correlation dynamics in cosmology
- Massive neutrinos in cosmology

II Conferences and educational activities

Conferences and Other External Scientific Work

- APS April Meeting, St. Louis, USA, 12-15 April, 2008
- 3nd Stueckelberg Workshop, Pescara, Italy, 3-7 September, 2008
- Probing Stellar Populations out to the Distant Universe, Cefalù, Italy, September 7-19, 2008

Work With Students

- Gustavo de Barros
- Juracy Rangel-Lemos

III Service activities

Within ICRANet

Signing the Agreement of collaboration between ICRANet and the Belarusian State University, Minsk, 4 September, 2008, as coordinator of collaboration from the side of ICRANet

Outside ICRANet

Seminars

- "Cosmic Gamma-Ray Bursts"
  Belarusian Physical Society, Institute of Physics, National Academy of Sciences, Minsk, Belarus, April 24, 2008.

- "Relaxation of electron-positron plasma"
  Theoretical physics department, Belarusian State University, Minsk, Belarus, April 30, 2008.

- "Thermalization of pair plasma with baryonic loading"
  (with A.G. Aksenov and R. Ruffini)
  ICRA seminar. Rome, March 12, 2008

IV Other

Public lectures

- "Creazione della materia e antimateria dalla luce"

  Bos´Art 2008. Festival internazionale multimediale di Filosofia, Letteratura, Scienza, Arte, Cinema, Musica, Teatro. Bosa, Sardegna, August 8, 2008.

V 2007-2008 List of Publications

1. G.V. Vereshchagin and G. Yegorian, "Dynamics of perturbations in Gurzadyan-Xue cosmological models", International Journal of Modern Physics D, Vol. 17 (2008) No 2, pp. 203-223.

2. A.G. Aksenov, M. Lattanzi, R. Ruffini and G.V. Vereshchagin, "From massive neutrinos and inos and the upper cut-off to the fractal structure of the Universe to recent progress in theoretical cosmology" Il Nuovo Cimento B, Vol. 122 (2007) No 12, pp. 1377-1384.

3. R. Ruffini , G.V. Vereshchagin and S.-S. Xue, "Vacuum polarization and plasma oscillations", Physics Letters A, Vol. 371 (2007) No 5-6, pp. 399-405.

4. G.V. Vereshchagin, "Inflation and cycles in Loop Quantum Cosmology", Il Nuovo Cimento B, B, Vol. 122 (2007) No 2, pp. 163-166.

5. H.G. Khachatryan, G.V. Vereshchagin and G. Yegorian, "Luminosity distance in GX cosmological models", Il Nuovo Cimento B, Vol. 122 (2007) No 2, pp. 197-200.

6. A.G. Aksenov, R. Ruffini and G.V. Vereshchagin, "Thermalization of nonequilibrium electron-positron-photon plasmas", Physical Review Letters, Vol. 99 (2007) No 12, 125003.

Xue She-Sheng

Position: Staff

Period covered: 2006 – present

I Scientific Work

``On the gravitational and electrodynamical stability of nuclear matter core'', submitted to Phys. Rev. Lett. (2008),

``Electron-positron production in non-uniform electric fields'' , Phys. Rev. D 78 (2008) 02501

``Dyadosphere formed in gravitational collapse'', Review article, AIP Conf. Proc. 1059 (2008) 72.

``Pair-production in inhomogeneous electric field'', AIP Conf. Proc. 966 (2007) 213

``On the electrodynamics properties of nuclear matter in bulk'', AIP Conf. Proc. 966 (2007) 147

``Electron-positron oscillation in a weak electric field under critical value'' , Phys. Lett. A 371 (2007) 399

``Electron-positron pairs in physics and astrophysics'', Phys. Rep. (2008)

``The phase structure of Einstein-Cartan theory'' , Phys. Lett. B665 (2008) 54

``Electron-positron pair production in a marcoscopic object Q/M'', submitted to Phy. Lett. B

``Neutral nuclear core vs super charged one'', Proceedings MGXI Marcel Grossmann meeting (MG11), Berlin , World scientific (2007).

`` The Blackholic energy and the canonical Gamma-Ray Burst'', AIP Conf.Proc. 910 (2007) 55-217,

`` Theoretical interpretation of luminosity and spectral properties of GRB 031203'', Marcel Grossmann meeting (MG11), Berlin , World scientific (2007),

`` The Blackholic energy and the canonical Gamma-Ray Burst'', AIP Conf. Proc. 910 (2007) 55-217

``Electrodynamics for Nuclear Matter in Bulk'', Int. Journ. Mod. Phys. D 16 (2006) 1-9

`` The role of GRB 031203 in clarifying the astrophysical GRB scenario '', the proceedings of "The 6th INTEGRAL Workshop - The Obscured Universe", Moscow, 2006, ESA Special Publication, SP-622,

`` GRB 050315: A step in the proof of the uniqueness of the overall GRB structure'', AIP Conf.Proc. 836 (2006) 103-108

`` Equations of motion, initial and boundary conditions for GRB'', J.Korean Phys.Soc. 49 (2006) 722-731

`` Theoretical predictions of spectral evolution of short GRBs'', the Proceedings of the "Swift and GRBs: Unveiling the Relativistic Universe", in Venice (Italy), June 5-9, 2006 (IL NUOVO CIMENTO)

``GRB 050315: A step toward the uniqueness of the overall GRB structure'', Astrophys. J. 645 (2006) L109-L112

`` GRB970228 as a prototype for short GRBs with afterglow'', Nuovo Cim. 121B (2006) 1439-1440

II Conferences and educational activities

Conferences and Other External Scientific Work

Presenting talks and posters in international ICRANet meetings:

MGXI Marcel Grossmann meeting (Berlin)

1st Cesare Lattes meeting (Brazile)

10^{th} Italian-korean and 4^{th} Italian-Chinese meetings (Pescara)

2^{nd} and 3^{rd} Stuekelberg Workshops (Pescara)

4^{th} and 5^{th} Italian-Chinese Workshops on Relativistic Astrophysics (Pescara and Taiwan)

APS April meeting, April 12-15, 2008, Saint Louis , USA

XIIth Brazilli Scholl of Cosmology and Gravitation (Brazile)

And international Conferences:

"Century of Cosmology", in Venice (Italy), August 27-31, 2007

"Swift and GRBs: Unveiling the Relativistic Universe", in Venice (Italy), June 5-9, 2006

Work With Students

B. Patricelli, M. Rotondo, Noemi., G. De Barros, Jorge rueda, Juracy Luis, L.J. Rangel Lemos,, and the research group of Gamma Ray Bursts :

Maria Grazia Bernardini, Carlo Luciano Bianco, Letizia Caito, Maria Giovanna Dainotti, Roberto Guida,

G. Vereshchagin

Diploma thesis supervision

IRAP PhD. Faculty, thesis supervision and reading and examination

M. Rotondo, G. Vereshchagin

Work With Postdocs

C.L. Bianco, L. Vitagliano , F. Fraschetti

Work With the Director R. Ruffini and External Professors

V.S. Popov, H. Kleinert, Hoang Ngoc Long, Pascal Chardonnet,

III Service activities

Within ICRANet

Participating organization of ICRANet meetings: the 10th Italian-Korean meeting and 4th and 5th Italian-Chinese meeting and Stuekelberg Workshops on Cosmology and Relativistic Astrophysics

Editor of two conference proceedings ``4th and 5th Italian-Chinese meeting on Cosmology and Relativistic Astrophysics'', published by American Institute of Physics

Participating organization of 1st Galileo - Xu Guangqi Meeting, October 26-30, 2009 Shanghai - CHINA

Participating organization of ICRANet Seminars

Outside ICRANet

External Professor of Chinese Academy and University.

IV 2007-2008 List of Publications

European Phys. Lett. 81 (2008) 57001, ``Photon production in Semiconductors by Onset of Magnetic field''

Phys. Lett. B665 (2008) 54**,** ``The phase structure of Einstein-Cartan theory''

Plenary and parallel talks in the 11th MG meeting ``Thomas-Fermi approach to electrodynamics of Neutron stars''

Int. Jour. of Mod. Phys. D 16 (2007) 1 ``Electrodynamics for Nuclear Matter in Bulk''
AIP Conf. Proc. 966 (2007) 147 ``On the electrodynamics properties of nuclear matter in bulk''

Phys. Lett. B (2008) ``Electron-positron pair production in the electric potential of marcoscopic cores '' (to be submitted)

Phys. Rev. D (2008) `` Electrodynamics of Neutron star cores with different proton distributions'' (in preparation)

Marcel Grossmann meeting (MG11), Berlin , World scientific (2007), ``Neutral nuclear core vs super charged one'',

Phys. Rev. Lett. (2008), ``On the gravitational and electrodynamical stability of nuclear matter core'' (submitted)

AIP Conf.Proc. 910 (2007) 55-217 `` The Blackholic energy and the canonical Gamma-Ray Burst''

the proceedings of "The 6th INTEGRAL Workshop - The Obscured Universe", Moscow, 2006, ESA Special Publication, SP-622, `` The role of GRB 031203 in clarifying the astrophysical GRB scenario '', (in press).

Phys.~Lett.~A 371 (2007) 399 ``Electron-positron oscillation in a weak electric field under critical value''

AIP Conference Proceedings 966 (2007) 207, ``Vacuum polarization and electron-positron plasma oscillations''

Phys. Rep. (2008) ``Electron-positron pairs in physics and astrophysics''

AIP Conference Proceedings 966 (2007) 213, ``Pair-production in inhomogeneous electric field''

Phys. Rev. D 78 (2008) 02501 ``Electron-positron production in non-uniform electric fields''

AIP Conference Proceedings 1059 (2008) 72, Review article ``Dyadosphere formed in gravitational collapse'

Aharonian Felix

Position: Professor of Astrophysics, Dublin Institute for Advanced Studies,
and
Leader of High Energy Astrophysics Group
Max-Planck-Institut fur Kernphysik

Period covered: Professor of Astrophysics since 2006 – present
Leader of High Energy Astrophysics Group since 1993-present

I Scientific Work

- Radiation Processes in Thermal and Non-thermal Relativistic Plasmas
- Physics and Astrophysics of Relativistic Outflows
  (*Pulsar Winds, Jets in Microquasars, AGN, GRBs*)
- Origin of Galactic Cosmic Rays and related topics
  (*X- and γ-radiation from Supernova Remnants, Diffuse radiation of the Galactic Disk*)
- Sources of Highest Energy Cosmica Rays and related topics
  (*Radiogalaxies, Clusters of Galaxies, Large Scale Intergalactic Shocks*)
- Observational Cosmology
  (*Diffuse Extragalactic Radiation, Magnetic Fields, Dark Matter*)
- Astrophysical Sources of High Energy Neutrinos
- Detection techniques of cosmic gamma-rays and neutrinos

II Conferences and educational activities

2006: Convener of three sessions on "Astrparticle Physics", "Gamma Ray Astronomy" and "Neutrino Astronomy" during the XXIII Symposium on Relativistic Astrophysics, Melbourne, Australia, December 2006

2007: Chair of SOC of the International workshop "High Energy Phenomena in Relativistic Outflows", Dublin, September 2007

2008: Chair of SOC of the 4th International Symposium on "High Energy Gamma Ray Astrophysics", Heidelberg July 2008

member of Scientific Organizing Committees (SOC) of international meetings: *"The variable gamma-ray sources: their identifications and counterparts"* (Elba Island, Italy, June 2006); *"Challenges of Relativistic Jets"* (Cracow, Poland, June 2006); *"The Multi-Messenger Approach to High-Energy Gamma-Ray Sources"* (Barcelona, Spain, July 2006); *"The light of the dark: solving the mysteries of the Universe"* (Villa Mondragone, Frascati, Italy, June 2007); *RICAP'07: Roma International Conference on Astro-Particle physics* (Roma, Italy, June 2007); *"High-Energy Astrophysics: the keV-TeV connections"*, JENAM 2007 Symposium No. 4 (Yerevan, Armenia, August 2007); *"TeV Particle Astrophysics III"* (Venice, Italy,August 2007), *"Non-Thermal Hadronic Processes in Galactic Sources"* (Heidelberg, January 2008), *"High-Energy Acceleration Processes in Supernova Remnants, PWNe, MicroBlazars and Binaries: the keV to TeV Connection"* and *"Astrophysical Studies of Neutron Stars from Multi-wavelength Observations"* (both symposia during the 37th COSPAR Scientific Assembly, Montreal, Canada, July 2008), International Workshop *"TeV Particle Astrophysics IV"* (Beijing, China,September 2008), Workshop *" Science with the New Generation of High Energy Gamma-Ray Experiments"*, Padova, Italy, September 2008, ASPEN Winter Conference on *"Thirty Years of Magnetars: New Frontiers"*, Aspen, USA, February 2009, International workshop on *"High Energy Phenomena in Relativistic Outflows II"*, Buenos Aires, Argentina, October 2009.

- University College Dublin (2007), lectures on "Introduction to Gamma Ray Astronomy"
- Trinity College Dublin (2008), lectures on Radiation processes in High Energy Astrophysic
- First La Plata International School on Astronomy (Argentina, 2008), lectures on High energy processes in relativistic Outflows
- The International Relativistic Astrophysics PhD School (Rome/Pescara, 2008-2009), lectures on Selected topics of X and Gamma -ray Astronomies

- Supervisor of a Alexander von Humboldt postdoctorial fellow (MPIK, Heidelberg)
- Supervisor of two Marie Curie postdoctorial fellows (DIAS, Dublin, and MPIK, Heidelberg
- Supervisor of two LEA postdoctorial fellows (MPIK, Heidelberg)
- Supervisor of a Schroedinger postdoctorial fellow, DIAS, Dublin
- Supervisor of an ERGSET postdoctorial fellow (DIAS, Dublin)
- Supervisor of two PhD students (G. Vannoni and O. Zacharopoulou) International Max Planck Research School at University of Heidelberg (Germany)
- Supervisor of three PhD students: L. Fallon (Trinity College Dublin), S. Delaney and D.Malishev (University College Dublin)

- Chair of the PhD theses defense Committee (University of Barcelona)
- Member of the PhD theses defense Committee (Oxford University)

III 2007-2008 List of Publications

F.A. Aharonian, J. Buckley, T. Kifune, G. Sinnis “High energy astrophysics with ground based gamma ray detectors", Reports on Progress in Physics, 2008, vol. 71, p. 096901 (2008)

F.A. Aharonian, “Motivations and Objectives of Gamma Ray Astronomy", Physics Reports, in preparation

F.A. Aharonian, W. Hofmann, S. Ritz “High-Energy Gamma-Ray Astronomy", Annual Review of Nuclear and Particle Science, in preparation

F.A. Aharonian, “The Very-High-Energy Gamma Ray Sky", Science, 2007, vol. 315, p.70

F.A. Aharonian, “High Energy Astrophysics", invited article for the UNESCO Encyclopedia, in press

F. A. Aharonian and S.R. Kelner "Radiation Processes in High Energy Astrophysics" , Oxford University Press, in preparation (to be submitted before December 2008)

F. A. Aharonian "Very high energy cosmic gamma radiation : a crucial window on the extreme Universe", World Scientific Publishing, second edition, to be submitted before August 2009

F.A. Aharonian, F. Rieger (editors): "High Energy Phenomena in Relativistic Outows ", International Journal of Modern Physics, World Scientific, 2008, in press

F.A. Aharonian, W. Hofmann, F. Rieger (editors): "High Energy Gamma Ray Astronomy-3", AIP Conf. Proc., New York, 2009, in preparation

F.A. Aharonian “Galactic Sources of High Energy Neutrinos", J.Phys.G: Nucl. Part. Phys., 2008, in press

D.V. Khangulyan, F.A. Aharonian, F. A., S.V. Bogovalov, A.V. Koldoba, G.V. Ustyugova "Hydrodynamics of interaction of pulsar and stellar winds and its impact on the high energy radiation of binary pulsar systems" Intern. Journal of Modern Physics D, in press

V. Bosch-Ramon, D. Khangulyan, F.A. Aharonian "The magnetic field and the location of the TeV emitter in Cygnus, X-1 and LS, 5039, Astron. Astrophys., 2008, vol. 489, p. L 21

S.R. Kelner, F.A. Aharonian "Energy distributions of gammarays, electrons and neutrinos produced at interactions of relativistic protons with low energy radiation" Phys. Rev D 2008, vol. 78, id. 34013

T. Tanaka, Y. Uchiyama, F.A. Aharonian, et al. "Study of Nonthermal Emission from SNR RX J1713.7-3946 with Suzaku" Astrophys. J 2008, vol. 685, p. 988

S. Gabici, A. Taylor, R. White, S. Casanova, F. Aharonian " The diffuse neutrino ux from

the inner Galaxy: constraints from very high energy gamma-ray observations Astroparticle Physics, in press

L. O' C. Drury, F.A. Aharonian The puzzling MILAGRO hot spots Astroparticle Physics 2008,, vol. 29, p. 420

F. A. Aharonian, D. Khangulyan, L. Costamante "Formation of hard very high energy gamma-ray spectra of blazars due to internal photon-photon absorption" Mon. Not. of Royal Astron. Soc. 2008, vol. 387, p. 1206

Y. Uchiyama, F.A. Aharonian "Fast variability of X-ray compact hot spots in Cas A" Astrophys. J 2008, vol. 677, p. L105

S.V. Bogovalov, D. Khangulyan, A.V. Koldoba, G.V. Ustyugova, F. Aharonian "Modeling interaction of relativistic and nonrelativistic winds in binary system PSR 1259-63/SS2883. I.Hydrodynamical limit" Mon. Not. of Royal Astron. Soc. 2008, vol. 387, p. 63

V. Bosch-Ramon, D. Khangulyan, F. Aharonian "Non-thermal emission from secondary pairs in close TeV binary systems" Astron. Astrophys., 2008, vol. 482, p.397

F.M. Rieger, F.A. Aharonian "Variable VHE gamma-ray emission from non-blazar AGNs" Astron. Astrophys., 2008, vol. 479, p. L5

D. Khangulyan, F. Aharonian, V. Bosch-Ramon "On the formation of TeV radiation in LS 5039" Mon. Not. of Royal Astron. Soc. 2007, vol. 383, p. 467

Y. Uchiyama, F. Aharonian, T. Takahashi, T. Tanaka, Y. Maeda “Witnessing shock acceleration of cosmic rays in real time" Nature, 2007, vol. 449, p. 576

D. Khangulyan, S. Hnatic, F.A. Aharonian, S. Bogovalov "TeV lightcurve of PSR B1259-63/SS2883" Mon. Not. of Royal Astron. Soc. 2007, vol. 380, p. 320

A. Neronov, F.A. Aharonian, \Production of TeV gamma-radiation in the vicinity of the supermassive black hole in the giant radiogalaxy M87", Astrophys. J, 2007, vol. 671, p. 85

S. Gabici, F.A. Aharonian “ Searching for galactic cosmic ray PeVatrons with multi-TeV gamma rays and neutrinos ApJ. Letters, 2007, vol. 665, p. L131

S. Gabici, F.A. Aharonian “Gamma ray signatures of ultra high energy cosmic ray accelerators: electromagnetic cascade versus synchrotron radiation of secondary electrons" Astrophys. Space Sci., 2007, vol. 309, p. 365

D. Khangulyan, S. Hnatic, F.A. Aharonian "Modulation of the high energy gamma-ray ux from PSR B1259-63/SS2883 due to the orbital variation of the maximum energy of accelerated electrons" Astrophys. Space Sci., 2007, vol. 309, p.261

S. Funk, J.A. Hinton, Y. Moriguchi, F.A. Aharonian \XMM-Neuton observations of HESS

J1813-178 reveal a composite supernova remnant" Astron. Astrophys., 2007, vol. 470, p.249

S. Gabici, F.A. Aharonian, P. Blasi "Gamma Rays from molecular cluds" Astrophys. Space Sci. 2007, vol. 309, p. 365 D. Horns, A.I.D. Hoffmann, F.A. Aharonian, G.P. Rowell, A. Santangelo \XMM-Neuton observations of the first unidentified TeV gamma-ray source TeV J2032+4130" Astron. Astrophys., 2007, vol. 469, p.L17

S. Funk, J.A. Hinton, G. Puehlhofer, F. Aharonian, W. Hofmann, O. Reimer, S. Wagner "XMM-Newton observations reveal the X-ray counterpart of the very-high-energy gamma-ray source HESSJ1640-465" Astrophys.J., 2007, vol. 662, p. 517

V.N. Zirakashvili, F.A. Aharonian \Analytical solutions for energy spectra of electrons accelerated by nonrelativistic shock-waves in shell type supernova remnants" Astron. Astrophys., 2007, vol. 465, p. 695

A. Kappes, J. Hinton, Ch. Stegmann, F.A. Aharonian \Potential Neutrino Signals from Galactic Gamma-Ray Sources" Astrophys. J., 2007, vol. 656, p. 870

E.V. Derishev, F.A. Aharonian, V.V. Kocharovsky "Off-axis emission from relativistic plasma ows" Astrophys. J., 2007, vol. 655, p. 980

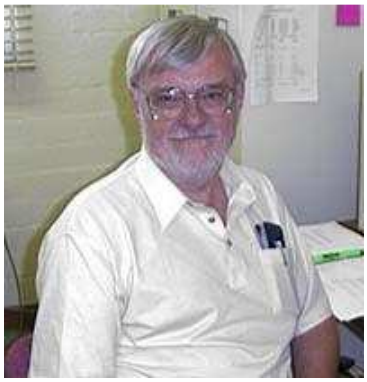
J. Hinton, F.A. Aharonian \Inverse Compton Scenarios for the TeV Gamma-Ray Emission of the Galactic Center" Astrophys. J., 2007, vol. 657, p. 302

S.A. Yost, F.A. Aharonian, C,W. Akerlof et al. "The Dark Side of ROTSE-III Prompt GRB Observations" Astrophys. J., 2007, vol. 669, p.1107

A.E Ruiz-Velasco, ... F.A. Aharonian, ... W.K. Zheng "Detection of GRB 060927 at z = 5.47: Implications for the Use of Gamma-Ray Bursts as Probes of the End of the Dark Ages Astrophys. J., 2007, vol. 669, p.1

S.A Yost, H.F. Swan E. S. Ryko_, F.A. Aharonian, C.W. Akerlof et al., "Exploring broad-band GRB behavior during gamma-ray emission" ApJ Letters, 2007, vol. 657, pp. 925

Arnett David



Position: Regents Professor of Physics and Astronomy

University of Arizona

Period covered: November 2007- present

I Scientific Work

Arnett's current work involves development of a theory of turbulent convection in stars, using the results of three-dimensional time dependent simulations as an aid to closure of the Reynolds-decomposed mean field equations. The goal is to replace the phenomenological approach now used with better physics, and generate a new generation of stellar evolutionary predictions, for all stars that evolve significantly, from birth to death as white dwarf, neutron star or black hole.

II Conferences and educational activities

Conferences and Other External Scientific Work

Colloquium: New Results on Convection in Stars, ICRA, University of Rome "La Sapienza", October, 2007
Invited lectures: 1. Stellar Evolution 2. Supernovae as Stellar Explosions 3. New Speculations on Gravitational Collapse
ICRA, October, 2007

Work With Students

Kris Eriksen (UofA): Simulations of Young Supernova Remnants (dissertation in astrophysics)

Diploma thesis supervision

Casey Meakin, obtained his PhD degree (astrophysics)
Thesis: Simulations of an Oxygen Burning Shell in a Pre-Supernova

Other Teaching Duties

Astro 535 (Stellar Evolution)
Astro 597 (Computational Astrophysics)

Work With Postdocs

I Postdoc: Casey Meakin(UofA/UofChicago FLASH Center): we are now setting up a major new simulation to use the new computer cluster acquired by Frank Timmes' group at Arizona State University

2 Postdoc: Carlo Luciano Biano (ICRA): nucleosynthesis predictions from gamma-ray bursts (GRB's)

III Service activities

Within ICRANet

1. Lectures to students in Rome (see above)
2. Discussions with senior scientists in Rome and Pescara

Outside ICRANet

1. Member, National Research Council Committee on "The Impact of High Performance Computing on Selected Fields", 2006-2007
2. Establishing a Collaborative Program on Stellar Convection and Explosions, with Sumner Starrfield and Frank Timmes at ASU and UofA

Chechetkin Valeri

Position: Professor
M I PH U , Moscow, Russia
Period covered: 1998-present

I Scientific Work

Fluid Dynamics:

The Raleigh-Taylor instability and other hydrodynamic instabilities, Turbulence, Shocks, Explosions;

Combustion:

Turbulent flames, Detonation, Flame ignition;

Nonlinear Physics:

Front propagation, Instabilities, Fractals;

Electrodynamics and Plasma Physics:

Plasma instabilities, Magnetohydrodynamics;

Astrophysics:

Supernova events, Thermonuclear explosions, White dwarfs, Jets, Nucleosynthesis, Neutron Stars, Accretion Discs, Black Holes, High-Particles in Astrophysics.

Leader in 6 successful projects

Publications

Books and monographs	4
Articles in refereed journals	200
Invited papers in books	12
Conference reports	24

Christodoulou Demetrios

Position: Professor of Mathematics and Physics

ETH Zurich

Period: 2001- present

I Scientific Work

Partial Differential Equations
Geometric Analysis
General Relativity
Fluid Mechanics

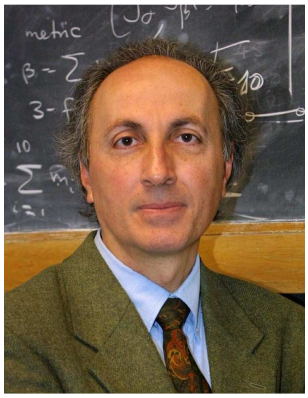
II 2007-2008 List of Publications

The Formation of Shocks in 3-Dimensional Fluids (monograph, 992 pp.), EMS Monographs in Mathematics, EMS Publishing House (ISBN 978-3-03719-031-9), 2007.

The Euler Equations of Compressible Fluid Flow, Bull. Amer. Math. Soc. 44 (2007), 581-602.

The Formation of Shocks in 3-Dimensional Fluids, Proceedings of Symposia in Applied Mathematics 65, Recent Advances in Nonlinear Partial Differential Equations and Applications: Toledo 2006, pp. 17-30, American Mathematical Society, 2007.

Damour Thibault



Position: Professeur Permanent
l'Institut des Hautes Etudes Scientifiques.

Period covered: 1989-present

Diplomes

1970-1974 : Ecole Normale Superieure de la rue d'Ulm.

1970-1972 : Matrise de Physique.

1973 : DEA de Physique Theorique, option Relativite et Theorie des Champs.

1974 : These de Doctorat de 3eme cycle, specialite Physique Theorique (Universite de Paris VI, 5 juin 1974): ``Theorie classique de la renormalisation''. Agregation de Sciences Physiques.

1979 : These de Doctorat d'Etat es Sciences Physiques (Universite de Paris VI, 10 janvier 1979): ``Quelques proprietes mecaniques, electromagnetiques, thermodynamiques et quantiques des trous noirs''.

Carriere

1970-1974 : Ecole Normale Superieure de la rue d'Ulm.

1973-1974 : Laboratoire de Physique Theorique, Institut Henri Poincare, Paris.

1974-1975 : Jane Eliza Procter Fellow a l'Universite de Princeton, U.S.A. (Physics Department).

1975-1976 : European Space Agency International Fellow a l'Universite de Princeton, U.S.A. (Physics Department).

1976-1977 : Service National -- Centre d'Etudes Theoriques de la Detection et des Communications, Base Aerienne 117, Paris.

1977-1981 : Attache de Recherche au CNRS (Groupe d'Astrophysique Relativiste, ER 176, Observatoire de Paris-Meudon).

1981-1985 : Charge de Recherche au CNRS.

1985-1992 : Directeur de Recherche (2eme classe) au CNRS. [Mise en disponibilite aupres de l'IHES en 1989-1992; Demission du CNRS le 30/09/92].

1989 (octobre) : Professeur Permanent a l'Institut des Hautes Etudes Scientifiques.

Distinctions

1978 : Laureat de la Fondation Singer-Polignac.

1980 : Medaille de bronze du CNRS.

1984 : Prix de physique theorique ``Paul Langevin'' de la Societe Francaise de Physique.

1990 : Grand Prix de l'Academie des Sciences, France (Prix Mergier-Bourdeix).

1994: First Award de la Gravity Research Foundation (USA).

1994: Membre correspondant de l'Academie des Sciences.

1996: Medaille Einstein de l' Albert Einstein Gesellschaft, Berne (Suisse).

1999: Membre de l'Academie des Sciences (Section de Physique) et Membre de l'Institut de France.

2005: Cecil F. Powell Memorial Medal de l'European Physical Society.

Responsabilites

1986-1994 : Directeur-adjoint de l'UPR 176 du CNRS -- Departement d'Astrophysique Relativiste et de Cosmologie de l'Observatoire de Paris-Meudon.

1991-1995: Membre nomme du Comite National de la Recherche Scientifique (Centre National de la Recherche Scientifique).

1991-1996 : Team member and chairman of the theory group du projet de mission spatiale STEP (Satellite Test of the Equivalence Principle) propose a l'Agence Spatiale Europeenne dans le cadre des Medium Size Projects M2 et M3.

1994-1997 : Membre du Fundamental Physics Topical Team (TT-5), puis du Fundamental Physics Advisory Group (FPAG), de l'Agence Spatiale Europeenne.

1994-2000 : Membre du Comite des Programmes Scientifiques du Centre National d'Etudes Spatiales.

1995-1997 : Membre du Conseil Scientifique de l'Ecole Normale Superieure.

Conferences and educational activities

Mars-Avril 2005: Spacetime in Action, 100 Years of Relativity, Pavia (Italie).
Avril 2005: Geometry and Physics after 100 Years of Einstein's Relativity, Potsdam (Allemagne).

Avril 2005: Einstein 1905-2005, Seminaire Poincare, Paris (France).

Mai 2005: A Century from Einstein Relativity: Probing Gravity Theories in Binary Systems, Villa Olmo, Como (Italie).

Juin 2005: Salon Europeen de la Recherche et de l'Innovation, Paris (France).

Juillet 2005: 13th General Conference of the European Physical Society: Beyond Einstein, Physics for the 21st Century, Berne (Suisse).

Juillet 2005: Albert Einstein Century International Conference, Paris (France).

Septembre 2005: 28th Spanish Relativity Meeting (ERE05) ``A Century of Relativity Physics'', Oviedo (Espagne).

Septembre 2005: Galileo Galilei Institute Inaugural Conference, Florence (Italie).

Septembre 2005: Cosmic Strings and Fundamental Strings, Paris (France).

Octobre 2005: Reunion du GDR 2062 ``Gravitation et Experience dans l'Espace'', Paris (France).

Octobre 2005: Geometry and the Universe, Stony Brook (USA).

Novembre 2005: Polyakovfest, Princeton (USA).

Novembre 2005: Neuvieme rencontre ``Physique et Interrogations fondamentales'': Einstein et les horizons de la physique, BNF, Paris (France).

Decembre 2005: 23ieme Conseil Solvay de Physique: ``The Quantum Structure of Space and Time'', Bruxelles (Belgique).

Decembre 2005--Janvier 2006: 23rd Winter School in Theoretical Physics: ``Symmetries and Dynamics'', Jerusalem (Israel).

Fevrier 2006: First Bego scientific rencontres of the ICRA net, Nice (France).

Mars 2006: Confronting Gravity: a Workshop to Explore Fundamental Questions in Physics and Cosmology, Saint Thomas, Virgin Islands (USA).

Juillet 2006: 11th Marcel Grossmann Meeting, Berlin (Allemagne).

Aout 2006: Eurostrings and Greenfest, Cambridge (UK).

Aout 2006: First Cambridge-Mitchell Texas Conference and Gibbonsfest, Cambridge (UK).

Octobre 2006: Boltzmann Conference, Munich (Allemagne).

V Other

1978 : Laureat de la Fondation Singer-Polignac.
1980 : Medaille de bronze du CNRS.

1984 : Prix de physique theorique ``Paul Langevin'' de la Societe Francaise de Physique.

1990 : Grand Prix de l'Academie des Sciences, France (Prix Mergier-Bourdeix).

1994: First Award de la Gravity Research Foundation (USA).

1994: Membre correspondant de l'Academie des Sciences.

1996: Medaille Einstein de l' Albert Einstein Gesellschaft, Berne (Suisse).

1999: Membre de l'Academie des Sciences (Section de Physique) et Membre de l'Institut de France.

2005: Cecil F. Powell Memorial Medal de l'European Physical Society.

Della Valle Massimo

Position: Full Professor INAF-Napoli

Period covered: 1990-2008

I Scientific Work

The reseach activity spans several fields in the observational Astrophysics:

A) Supernovae (local and at high redshifts) and measurement of the cosmological parameters; b) Gamma-ray bursts and their afterglows c) Supernova/GRB connection); d) Novae (galactic and extragalactic); e) Distance Scale.

Curriculum

1976. High School diploma, Brescia.

1983. Laurea in Astronomia, Universita' di Padova
(Summa cum Laude). Supervisor: Prof. L. Rosino.

1984. Fellow at the Asiago Astrophysical Observatory

1985. PhD student at the Byurakan Observatory (ex-URSS).
Supervisor: Prof. Ambartsumian.

1988. PhD in Astronomy Universita' di Padova. Supervisors:
Prof. L. Rosino, e M. Capaccioli

1989. Post-Doc at SISSA, Trieste

1990. Fellow at the European Southern Observatory, La Silla, Cile.

1994. Fellow at the European Southern Observatory, Munchen, Germany

1995. Assistant Professor at the Astronomy Dept., Universita' di Padova.

1999. Associate Astronomer Associato at the Arcetri Astrophysical Observatory

2007. Adjunct Professor at the International Center for Relativistic Astrophysics Network, 65122, Pescara

2008. Full Professor at the Osservatorio Astronomico di Capodimonte, INAF-Napoli

2008-2009. Visiting Scientist at the ESO Telescope Division (on leave

of INAF-Napoli)

Sabbatical leaves (> 1 mese)

1994, 1996, 1997, 1999, 2003, 2005. Visiting Scientist, European Southern Observatory, Garching.

1995, 1997, 2000, 2002, 2004. Visiting Scientist, Space Telescope
Science Institute, Baltimore.

1998, 2001, 2003. Visiting Scientist, European Southern Observatory, Santiago.

2006. Visiting Scientist, Department of Astronomy, Graduate School of Science, University of Tokyo, Japan

2006, 2007. Visiting Scientist, KAVLI Institute, Santa Barbara, Universita' della California.

2007. Visiting Scientist, Dark Cosmology Center, Niels Bohr Institute, Copenhagen
2007. Visiting Scientist, Queen's University, Belfast, UK

Teaching

1989. Lecturer alla SISSA: ``The Cosmological Distance Ladder'' .

1992. Visiting Professor, Centro de Astrofisica da Universidade do Porto, Portugal: ``The Late Stages of the Stellar
Evolution'' (grad. level).

Assistant Professor for Esercitazioni di Astronomia I (Padova, Astronomy Dept. a.a.1993/94; 1994/95; 1995/96; 1996/97).

Assistant Professor for Laboratorio di Fisica II (Padova Astronomy Dept. a.a. 1995/96).

Assistant Professor for Astrofisica (Padova Astronomy Dept. a.a. 1996/97).

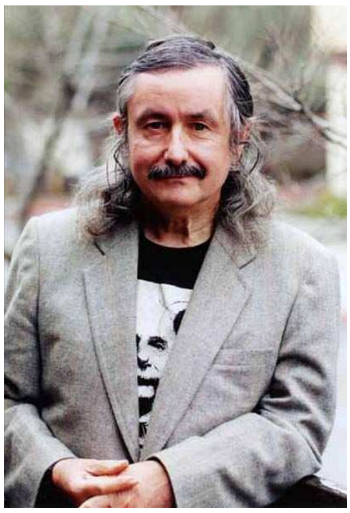
Professor in charge of Astronomia Generale (Padova Physics Dept. a.a. 1996/97; 1997/98)

Professore at the Physics Dept. Ferrara University for “Tecniche Osservative in Astronomia” (a.a. 2002/03; 2003/04; 2005/06; 2006/2007; 2007/2008).
Lecturer in 11 national and international PhD Schools.

Outreach

Author of many popular papers published on Astronomia, Coelum, Le Stelle and national newspapers.

Everitt Francis



Position: Professor (Research)
W.W. Hansen Experimental Physics Laboratory (HEPL)

I Scientific Work

Research Interests

- Experimental Gravitational Physics
- Theoretical Gravitational Physics

II 2007-2008 List of Publications

· 94 research and review papers
· 5 books and 2 in preparation

Fang Li-Zhi

Position: Professor of Physics and Astronomy

University of Arizona

Period covered: 1992- present

I Scientific Work

In recent years Fang's research focus on non-equilibrium, non-linear problems of cosmology. It includes the turbulence-like dynamical behavior and log-Poisson hierarchical evolution of the mass and velocity fields of cosmic baryon fluid; the origin of the leaks in Ly-alpha absorption spectrum of high redshift quasars; the growth of ionized and heated region around photon sources in the early universe, and the 21 cm signal from the epoch of reionization.

II Conferences and educational activities

Conferences and Other External Scientific Work

Colloquium: Scaling in Cosmology, Institute of Physics, Academia Sinica,
Taipei, May 30, 2007
Invited lectures: 1. the standard cosmological model
2. primordial perturbations
3. nonlinear evolution of intergalactic medium (IGM)
4. probe of dark energy with large scale structures
Taipei School/Workshop on Large Scale Structures of the Universe
National Center for Theoretical Science, May 28 – June 2, 2007

Work With Students

1. Alan Cooney, a new graduate student.
2. Susan Barke, final defence
3. Veron Miller, committee member, oral exam
4. Bauman, Sky, committee member
5. Jessica Uscinski, committee member, oral exam
6. Ziran Wu, committee member, oral exam

Diploma thesis supervision

Hu Zhan, obtained his PhD degree
Thesis: The Large-Scale Structure of the Universe in One Dimension.

Other Teaching Duties

Phys571 (general relativity and cosmology)
Phys195A (creation of the universe)
Phys596F (Cosmology and particle astrophysics)

Work With Postdocs

I Postdoc: Tong-Jie Zhang (stay in my group from June 1, 2005 - May 31, 2006)
Publications in this period: X-ray emission of baryonic gas in the universe: luminosity-temperature relationship and soft band background, ApJ, 642, 625 (2006)

2. . Postdoc: Xin-He Meng (stay in my group from June 1, 2004 - Jan 31, 2005)
Publications in this period: Codimension Two Branes in Einstein-Gauss-Bonnet Gravity, Phys.Rev. D71 (2005) 024023

3. Postdoc: Ji-Ren Liu (stay in my group from Aug 8 2006 - present)
Publications in this period: 1. Is the cosmic UV background fluctuating at redshift z ~6 ? ApJL, 645, 1, (2006)

III Service activities

Within ICRANet

Organizing the 4th Italian-Sino Workshop
Member and Chair of Steering Committee

Outside ICRANet

Editor, International Journal of Modern Physics A (2003 -)
Editor, Modern Physics Letters A (2003 -)

IV 2007-2008 List of Publications

2007 A WENO algorithm of the temperature and ionization pro_les around a point source, J.M. Qiu, L. L. Feng, C.W. Shu and L. Z. Fang, New Astronomy, 12, 398

Estimating power spectrum of Sunyaev-Zeldovich e_ect from the cross-correlation between WMAP and 2MASS, L. Cao, J.R. Liu, and L.Z. Fang, Astrophys. J., 661, 641

21 cm signals from early ionizing sources, J. R. Liu, J.M. Qiu, L. L. Feng, C. W. Shu and L.Z. Fang Astrophys. J., 663, 1

Book Review: History of Purple Mountain Observatory, L.Z. Fang, Isis, in press 2008

A WENO algorithm for the growth of ionized regions at the reionization epoch, J. M. Qiu, C.W. Shu, J.R. Liu ans L.Z. Fang, New Astronomy in press

Non-Gaussianity of the Cosmic Baryon Fluid: Log-Poisson Hierarchy Model, J.R. Liu and L. Z. Fang, Astrophys. J., in press

DWT Analysis of the 2-degree Field Galaxy Redshift Survey, Y.-C. Cai, J. Pan, L.L. Feng and L.Z. Fang, ChJAA, in press

The DWT power spectrum of the two-degree field galaxy redshift survey, Y.C. Cai, J. Pan, Y.H. Zhao, L.L. Feng and L.Z. Fang

Twenty one cm signals from ionized and heated regions around _rst stars, L.Z. Fang, Ly_ Leaks and Reionization, L.L. Feng, H.G. Bi, J.R. Liu and L.Z. Fang, Mon. Not. R. Astr. Soc., in press

Li-Zhi Fang (Western version) or Fang Lizhi (Chinese version) was born in Beijing in 1936. He received his diploma of physics from Beijing University in 1956, and immediately joined the Chinese nuclear project as a junior researcher. For his speaking out on freedom of thought and expression, Fang was dismissed, and transferred to the University of Science and Technology of China (USTC) as an assistance in 1958 and lecturer in 1961. During the Cultural Revolution (1966-1976), he was sent to do labor in the country side and in the coal mine. In 1978, Fang became a full professor of physics and later the Vice-President of the USTC in 1984. Owing the student movement in 1986, Fang was once again dismissed, and moved to the Beijing Astronomical Observatory in 1987, and then headed a group of theoretical astrophysics from 1987 to 1989.

Following the bloody event on Tiananmen Square on June 4th 1989, Fang was named the most wanted counter-revolutionary criminals by the Chinese authorities. He then sought sanctuary in the US Embassy in Beijing, where he remained for over a year. When he got out of China in 1990, he stopped at the Cambridge University as a Guest Professor of the Royal Society, and in the following year at the Institute for Advanced Study of Princeton as a Director's Visitor. Since 1992, Fang joined the faculty of the University of Arizona as a Professor of Physics.

Fang's research has covered nuclear physics, laser physics, and a variety of topics in theoretical astrophysics and cosmology. He has published more than 330 research papers, and also numerous popular articles. He is the author, co-author and editor of 24 books. Fang has been a member of many scientific committees, including the council of the International Centre for Theoretical Physics (Trieste), Commission No.2 of the International Union of Pure and Applied Physics (IUPAP) and 1990-1993 Chair of the Commission C19 of IUPAP.

Fang has served on many organizations of human rights, including the International League for Human Rights, Committee of Concerned Scientists, and he was 1994 Chair of the APS Committee on International Freedom of Scientists.

Fang was a member of the Chinese Academy of Science. He is a fellow of the American Association for the Advancement of Science, and Founding Fellow of Arizona Arts, Sciences and Technology Academy. Fang is the recipient of numerous awards, including the 1978 (Chinese) National Award of Science and Technology, 1985 First Award of the Gravity Research Foundation, 1987 (Chinese) National First Award for Scientifically Popular Article, 1989 Human Rights Award of Robert F Kennedy, 1991 Freedom Award of International Rescue Committee and the 1996 Nicholson Medal of the American Physical Society.

Greiner Walter

Position: Founding Director Frankfurt Institute for Advanced Studies

Period covered:

I Scientific Work

II Conferences and educational activities

Conferences and Other External Scientific Work

Very many

Work With Students

With very many

Diploma thesis supervision

Ph-thesis, all together more than 150

Work With Postdocs

More than 120 Alexander von Humboldt-fellows

III Service activities

Within ICRANet

Close collaboration with Prof. Ruffini

-many joint interests

-talks at Frankfurt and Pescara

IV 2007-2008 List of Publications

1.V.N.Tarasov, D.V.Tarasov, K.A.Gridnev,D.K.Gridnev, V.G.Kartavenko, W.Greiner, V.E.Mitroshin
Neutron-deficient and neutron-rich isotopes Fe and Ni near the drip-line
Notes of Russian Academy of Science N5, 2007

2.I.A.Solov'yov, Walter Greiner
Theoretical analysis of an iron mineral-based magnetoreceptor model in birds
Biophysical Journal 93, 2007 (1-17)

3.M.Tabrizi, A.V.Korol, A.V.Solov'yov and Walter Greiner
Feasibility of an electron-based crystalline undulator
Physical Rev. Letters 98,164801 (1-4), 2007 (physics/0611012)

4.Raj K.Gupta, Dalip Singh and Walter Greiner
Semiclassical and microscopic calculations of the spin-orbit density part of the Skyrme nucleus-nucleus interaction potential with temperature effects included
Physcal Review C 75, 2007 (024603), 12pp

5.I. Pshenichnov, I. Mishustin, Walter Greiner,
MCHIT - Monte Carlo model for proton and heavy-ion therapy,
In Proc. International Conference on Nuclear Data for Science and Technology ND2007, Nice, France, April 22-27, 2007,
arXiv:0705.0248v1 [physics.med-ph] 2 May 2007

6.M.Tabrizi, A.V.Korol, A.V.Solov'yov, Walter Greiner
An electron-based crystalline undulator
Journal of Physics G: Nuclear and Particle Physics 34, p.1581-1594, 2007

7.A.V.Korol, A.V.Solov'yov, Walter Greiner
Parameters of the crystalline undulator and its radiation for particular expeimental conditions
Proceedings of the International Wokshop “Channeling2006” Italy July 2006, SPIE 6634, 2007, arXiv: physics/0612020

8.T.J.Bürvenich, L.Guo, P.Klüpfel, P.-G.Reinhard, Walter Greiner
Proton-neutron deformations in 16C and their consequences
Submittes Journals of Physics G, October 2007

9.B.K.Sharma, A.Shukla, P.Arumugam, P.D.Stevenson, S.K.Patra, Raj K.Gupta and Walter Greiner (fias)
Nuclear halo: A deformation effect

10.D.N.Poenaru, R.A.Gherghescu, A.V.Solov'yov, Walter Greiner
Liquid drop stability of a superdeformed prolate semi-spheroidal atomic cluster
Europhysics Letters (EPL) 79, (2007) 63001

11.Raj K.Gupta, Dalip Singh and Walter Greiner(fias)
Semiclassical and microscopic calculations of the spin-orbit density part of Skyrme nucleus-nucleus interaction potential with temperature effects included
Phys. Rev.C 75, 024603, 2007

12.Raj K.Gupta, S.K.Patra, P.D.Stevenson and Walter Greiner
A highly neutron-rich cluster and / or Superheavy nucleus in the Compound Nucleus 238U+238U: A Mean Field Study
International Journal of Modern Physics E, Vol.16, No.6 (2007) 1721-1732

13.Thomas J. Buervenich, Igor N. Mishustin, and Walter Greiner
Nuclei embedded in an electron gas
Submitted to Phys. Rev. C

14.D.N.Poenaru, I-H.Plonski, Walter Greiner (fias)
Saddle point shapes of nuclei
Invited talk at the 6th General International Conference of the Balkan Physical Union (PBU-6) Istambul, Turkey, August 22-26,2006
American Institute of Physics Conference Proceedings vol. 899 (2007) 15-18

15.Raj K.Gupta, M. Manhas, S.Hofmann, Walter Greiner
Role of static deformation and compact orientation of target nucleus in measured fusion cross-section of 244Pu+48Ca reaction
Submitted in Phys. Rev. C, March 2007

16.S.Yu.Torilov, K.A.Gridnev, Walter Greiner
Chain configurations in the light nuclei
Accepted for publication in IJMPE in June 2007

17.P.O.Hess, Walter Greiner
Shift of the GKZ limit in the cosmic ray spectrum due to a smallest length scale
Journal of Physics G, 34, 2091-2098 2007

18.A.G.Lyalin, I.A.Solov'yov, A.V.Solov'yov, Walter Greiner
Stability of charged atomic clusters
Romanian Reports in Physics 2007, accepted

19.I.Pshenichnov, I.Mishustin, Walter Greiner
Comparative study of depth-dose distributions for beams of light and heavy nuclei in tissue-like media
Submitted to Physiocs in Medicine and Biology, April 2007

20.P.O.Hess, Walter Greiner
Pseudo-complex field theory
Int.J.Mod.Phys.E16:1643-1679,2007 (arXiv: 0705.1233[hep-th])

21.A.V.Yakubovich, I.A.Solov'yov, A.V.Solov'yov, Walter Greiner
Ab initio theory of alpha-helix ↔ coil phase transition
European Physical Journal D, 2007

22.I.A.Solov'yov, A.V.Yakubovich, A.V.Solov'yov, Walter Greiner
Alpha-helix ↔ Coil Phase Transition: Analysis of Ab Initio Theory Predictions
European Physical Journal D 2007

23.I.A.Solov'yov, A.V.Yakubovich, A.V.Solov'yov, Walter Greiner
Two-center-multipole expansion method: Application to macromolecular systems
Phys.Rev. E 75,051912 (2007), pp.1-9

24.Walter Greiner, V.Zagrebaev
Giant quasi-atoms and superheavy nuclei produced in damped collisions of transactinides
Int.J.Mod.Phys.D, Vol.16,Nos 2&3 (2007) 141-152

25.Thomas J. Bürvenich, Igor N. Mishustin, Walter Greiner
Nuclei embedded in an electron gas
Phys.Rev.C76:034310,2007, (arXiv: 0706.1450v1 [nucl-th] 2007)

26.O.I. Obolensky, V.V. Semenikhina, A.V. Solov'yov, W. Greiner
Interplay of electrostatic and van der Waals forces in dimer of coronene
International Journal of Quantum Chemistry 107, p.1335-1343, (2007)

27.A.G.Lyalin, I.A.Solov'yov, A.V.Solov'yov, W.Greiner
Interplay of Electronic and Geometric Shell Effects in Properties of Neutral and Charged Strontium Clusters
Phys.Rev. A 75,053201 (1-13), 2007

28.A.V.Yakubovich, I.A.Solov'yov, A.V.Solov'yov, Walter Greiner
Ab initio describtion of phase transitions in finite bio-nano systems
Europhysics News 38, p.10, 2007

29.P.O.Hess, Walter Greiner
Extending the GKZ limit without breaking Lorentz Invariance

30.I.A. Solov'yov, Walter Greiner
Towards an understanding of the mechanism of magnetoreceptor in birds
submitted in EPJ

31.S.K.Patra, Raj K.Gupta, B.K.Sharma, P.D.Stevenson, Walter Greiner
Exotic clustering in heavy and superheavy nuclei within the relativistic and non-relativistic mean field formalisms
Journal of Phys. G: Nuclear Particle Physics, 34 (2007) 2073-2090

32.Walter Greiner

A new insight in the decay modes of heavy nuclei
Romanian Reports in Physics, Vol. 59, No 2, 193-204, 2007

33.Raj K.Gupta, S.K.Patra, P.D.Stevenson, C.Beck, Walter Greiner
Fission of hyper-hyperdeformed 56Ni: a clustering analysis with in mean-field approaches
Submitted Phys. Rev. C, October 2007

34.O.I.Obolensky, E.Surdutovich, I.Pshenichnov, I.Mishustin, A.V.Solov'yov, Walter Greiner
Ion beam cancer therapy: fundamental aspects of the problem
Submitted October 2007

35.A.Kostyuk, A.V.Korol, A.V.Solov'yov, Walter Greiner
The influence of the structure imperfectness of a crystalline undulator of the emission spectrum

36.A.Kostyuk, A.V.Korol, A.V.Solov'yov, Walter Greiner
One-dimensional Model of a Gamma Klystron
Submitted October 2007

37.Reflections on my youth and early years in science - final remarks - thank you!
Walter Greiner (Frankfurt U., FIAS) . 2007. 7pp.
Prepared for International Symposium on Heavy Ion Physics 2006 (ISHIP 2006), Frankfurt, Germany, 3-6 Apr 2006.
Published in Int.J.Mod.Phys.E16:1285-1291,2007.

38.D.N.Poenaru, Walter Greiner
A variantional mehtod for equilibrum nuclear phase.
Invited talk, Proc. Predeal International Summer school on Collective motion and phase transsitions in nuclear systems. Ed. A.A. Raduta et al (World Scientific, New Jersey, 2007) pp.44-61

39.I. A.Solov'yov and W. Greiner
Theoretical analysis of an iron mineral-based magnetoreceptor model in birds
Biophysical Journal, 93, 1493-1509 (2007).

40.Model of binding alpha-particles and structure of the light nuclei.
K.A. Gridnev, S.Yu. Torilov (St. Petersburg State U.) , V.G. Kartavenko (Dubna, JINR) , W. Greiner (Frankfurt U., FIAS) . 2007. 6pp.
Prepared for International Symposium on Heavy Ion Physics 2006 (ISHIP 2006), Frankfurt, Germany, 3-6 Apr 2006.
Published in Int.J.Mod.Phys.E16:1059-1064,2007.

41.Heavy particle radioactivities.
D.N. Poenaru, R.A. Gherghescu (Bucharest, IFIN-HH & Frankfurt U., FIAS) , I.H. Plonski (Bucharest, IFIN-HH) , W. Greiner (Frankfurt U., FIAS) . 2007. 13pp.

Prepared for International Symposium on Heavy Ion Physics 2006 (ISHIP 2006), Frankfurt, Germany, 3-6 Apr 2006.
Published in Int.J.Mod.Phys.E16:995-1007,2007.

42.Collisions of transactinides: Superheavy nuclei and giant nuclear molecules.
Valery Zagrebaev (Dubna, JINR) , Walter Greiner (Frankfurt U.) . 2007. 13pp.
Prepared for International Symposium on Heavy Ion Physics 2006 (ISHIP 2006), Frankfurt, Germany, 3-6 Apr 2006.
Published in Int.J.Mod.Phys.E16:969-981,2007.

43.2nd International Workshop on Astronomy and Relativistic Astrophysics (IWARA 2005): Proceedings.
Bardo E.J. Bodmann, (ed.), Cesar A.Z. Vasconcellos, (ed.), Heli o T. Coelho, (ed.), Dimi ter Hadjimichef, (ed.) (Rio Grande do Sul U.) , Walter Greiner, (ed), Horst Stucker, (ed.) (Frankfurt U., FIAS) . Feb 2007.
Published in Int.J.Mod.Phys.D16, nos. 2-3, Feb 2007

44.Equilibration of matter in relativistic heavy-ion collisions.
L. Bravina, I. Arsene, M.S. Nilsson, K. Tywoniuk (Oslo U.) , E. Zabrodin (Oslo U. & Moscow State U.) , M. Bleicher (Frankfurt U.) , H. Stocker (Frankfurt U. & Frankfurt U., FIAS) , W. Greiner (Frankfurt U., FIAS) . 2007. 10pp.
Prepared for International Symposium on Heavy Ion Physics 2006 (ISHIP 2006), Frankfurt, Germany, 3-6 Apr 2006.
Published in Int.J.Mod.Phys.E16:777-786,2007.

45.Conference summary: Final remarks.
Walter Greiner (Frankfurt U.) . 2007. 25pp.
Prepared for International Conference on Nucleus-Nucleus Collisions, Rio de Janeiro, Brazil, 28 Aug - 1 Sep 2006.
Published in Nucl.Phys.A787:648-672,2007.

46.Clusters of matter and antimatter.
W. Greiner (Frankfurt U.) . 2007. 11pp.
Prepared for 2nd Cairo International Conference on High Energy Physics (CICHEP 2), Cairo, Egypt, 14-17 Jan 2006.
Published in AIP Conf.Proc.881:156-166,2007. Also in *Cairo 2006, High energy physics* 156-166

47.V.I. Zagrebaev, V.V. Samarin (Dubna, JINR) , Walter Greiner (Frankfurt U., FIAS) .
Sub-barrier fusion of neutron-rich nuclei and its astrophysical consequences.
Published in Phys.Rev.C75:035809,2007. 11pp

48.Zagrebaev V, Karpov A, Aritomo Y, Naumenko, M., Greiner, Walter
Potential energy of a heavy nuclear system in fusion-fission processes
Physics of Particles and Nuclei 38 (4): 469-491 JUL 2007

49.Zagrebaev V, Greiner W
Superheavy nuclei and giant quasi-atoms
Nuclear Physics A 787: 363C-372C, 2007

50.Zagrebaev V, Greiner W
Low-energy collisions of heavy nuclei: dynamics of sticking, mass transfer and fusion
Journal of Physics G: Nuclear and Particle Physics 34 (1): 1-25 2007

51.Walter Greiner
A New Insight in the Decay Modes of Heavy Nuclei
Dedicated to Prof. Dorin N. Poenaru's 70th Anniversary
Romanian Reports in Physics, Vol.59,No. 2, 193-204, 2007

Jantzen Robert

Position: professor, Villanova University

Period covered: 1983-present

I Scientific Work

Collaboration with Donato Bini, Christian Cherubini, Andrea Geralico on mathematical properties of stationary spacetimes.

Lie groups and differential geometry: applications to physics
Classical general relativity:
Spatially homogeneous and self-similar spacetimes and mathematical cosmology
Spacetime splitting approaches, observer-measurement interpretation of spacetimes, gravitoelectromagnetism

II Conferences and educational activities

Conferences and Other External Scientific Work

Participated in General Relativity and Gravitation Meetings:
GR8 (1978) -- GR14 (1995), GR17 (2004)

Participated in Marcel Grossmann Meetings on General Relativity:
MG2 (1979) -- MG11 (2006)

MG11 ICC chair and editor

MG12 ICC chair

III Services

Teaching Duties

Full time teaching in Mathematical Sciences Dept of Villanova University

IV 2007-2008 List of Publications

Physical frames in along circular orbits in stationary axisymmetric spacetimes
D. Bini, C. Cherubini, A. Geralico and R.T. Jantzen
to appear in Gen. Rel. Grav. (2007).

Circular motion in accelerating black hole spacetimes
D. Bini, C. Cherubini, A. Geralico and R.T. Jantzen
to appear in Int. J. Mod. Phys. D (2007).

The speciality index and the Lifshitz-Khalatnikov Kasner index parametrization
D. Bini, C. Cherubini and R.T. Jantzen
Class. Quantum Grav. 24 5627-5636 (2007).

The Lifshitz-Khalatnikov Kasner index parametrization and the Weyl tensor
D. Bini, C. Cherubini and R.T. Jantzen
to appear in Nuovo Cimento (2007).

Kleinert Hagen

Position: Professor of Theoretical Physics

Sub-Project Applied Quantum Field Theory

Period covered:1964-2007

I Scientific Work

1. Theory of Defect-Induced Phase Transitions
2. Quark and String Physics
3. Quantum Mechanics
4. Classical and Statistical Mechanics in Spaces with Curvature and Torsion
5. Classical Statistics
6. Quantum Statistics
7. Polymer Physics
8. Field Theory of Liquid Crystals
9. Fluctuation Effects in Membranes
10. Superfluid Helium 3
11. Superconductivity
12. Mathematical Physics
13. Stochastic Physics
14. Supersymmetry in Nuclear Physics
15. Financial Markets

II Conferences and educational activities

Conferences and Other External Scientific Work

Hundreds of conferences.

Work With Students

Hundreds of students.

Diploma thesis supervision

Hundreds of theses.

Other Teaching Duties

All courses of Theoretical Physics

Work With Postdocs

Many Postdocs financed by FU-Berlin, Humboldt Foundation, DFG, and DAAD.

III Service activities

Within ICRANet

Lecturing and exchange of ideas. Organization of big Marcel-Grossmann Conference 2006.

Research and collaborations.

Outside ICRANet

Teaching and research, writing textbooks.

IV Other

Study and Degrees:

1960 -1963: TH Hannover; there 1962 -BS with fist class honors 1963 -1964: Georgia Institute of Technology, Atlanta, Georgia, USA;
there 1964 -Master of Science
Fall 1964: Washington University, St. Louis, USA
Spring 1965: University of Wisconsin, Madison, USA
1965 -1967: University of Colorado, Boulder, Colorado, USA;
there 1967 -Ph. D.
Spring 1969: Habilitation at the Free University Berlin

Positions:

Fall 1963 – Research Assistant at EURATOM, Ispra, Italy
June 1967 – Research Associate at the University of Colorado
Jan. 1968 – Assistant Professor at the University of Montana

Oct. 1969 – Associate Professor at the Free University Berlin
Okt. 1976 – Full Professor at the Free University Berlin

Since 1965 – Numerous invited lectures at summer schools and conferences
Since 1968 – Numerous visiting professorships,
in particular:
CERN – summer 1968, spring 1970, summer 1970, spring 1971, summer 1971, spring 1972,

California Institute of Technology – winter 1973/1974, spring 1977, spring 1980, spring 1983, spring 1986
Los Alamos – winter 1976/77
University of Kioto – winter 1979
Berkeley – spring 1980
UC Santa Barbara – winter und spring 1982/83
UC San Diego – winter und spring 1985/86
University of Miami – winter und spring 1989/90
Princeton University – winter und spring 1993

Chair Offers:

University Wuppertal (declined) 1975,
University Dortmund (declined) 1994,
Technical University Braunschweig (declined) 1996,
Technical University Graz (declined) 1999

Member of Russian Academy of Creativity since 2001.

Max-Born Medal 2008.

V 2007-2008 List of Publications

Hagen Kleinert
Multivalued Fields in Condensed Matter, Electromagnetism, and Gravitation
pp. 1-500, World Scientific, Singapore 2008

Hagen Kleinert and Robert T. Jantzen (eds.)
Proceedings of the Eleventh Marcel Grossmann Meeting on General Relativity
pp. 1-2800, World Scientific, Singapore 2008

H. Kleinert
Stiff Quantum Polymers
Berlin preprint 2007

F. Nogueira and H. Kleinert

Compact quantum electrodynamics in $2+1$ dimensions and spinon deconfinement: a renormalization group analysis
Berlin preprint 2007

J.W. Zhang, Y. Zhang, and H. Kleinert
Power tails of Index Distributions in Chinese Stock Market
Berlin preprint 2007

K. Glaum, A. Pelster, H. Kleinert, and T. Pfau:
Critical Temperature of Weakly Interacting Dipolar Condensates;
Physical Review Letters *98*, 080407/1-4 (2007); cond-mat/0606569

H. Kleinert and S.-S. Xue
Photoproduction in Semiconductors by Onset of Magnetic Field
Eur. Phys. Letters 81, 57001 (2008).

H. Kleinert, R. Ruffini, and S.-S. Xue
Electron-Positron Pair Production in Space- or Time-Dependent Electric Fields
Phys. Rev. D 78, 025011 (2008).

Kerr Roy

Position: Professor Emeritus

University of Canterbury

I Scientific Work

1) During the first period of 4 weeks I worked on a paper

"On the Discovery of the Kerr Metric", Proc. 11th Marcel Grossman Conf.

2) The second period of 4 weeks was principally spent helping Prof. Ruffini with

his manuscript for the Kerrfest volume, and working on my own manuscript

"Discovering the Kerr and Kerr--Schild metrics"

for the same Kerrfest volume.

3) The two days in April were spent at an Italian/Korean conference in Seoul.

4) Jun 24 – July 7, 2007: The first week was spent in Pescara at an Italian/Korean GR

Conference. I presented a paper"Are Boyer-Lindquist coordinates the best to use around a black hole?". I then went to Nice with Professor Ruffini to discuss a future branch of ICRA.

5) 2008: Working with Donato Bini and Andrea Geralico on a new approach to the Kerr-Schild metrics and generalizations of the Black Hole metrics when other fields present.

II Conferences and educational activities

Conferences and Other External Scientific Work

I gave invited talks at the following conferences:

Jun 2006: "Supermassive Black Holes", Santa Fe, NM.

Jun 2006: "Marcel Grossman Conf.", Berlin.

Apr 18: "Italian/Korean meeting", Seoul, Korea.

Jun 24-28 "The Galactic Center", Castle Ringberg, Germany.

Jun 31 “Italian/Korean Meeting”, Pescara.

Nov 13, an invited talk in the “International Public Lecture series” at Melbourne Uni. “Unravelling Einstein's Secrets”

2008:

Feb 10-15: “Observational evidence for Black Holes in the Universe”. Kolkata, India

Feb 20: “Bose Memorial Lecture “,”. Kolkata, India

Apr : “J.L.Synge Memorial Lecture”, Trinity College, Dublin.

May28-31: “5th Italian-Sino Workshop”, Taipei-Hualien**,** Taiwan**,**

Aug 11-15: “Bos’Art Conference”, Bosa, Sardinia.

Roy Kerr retired from his position as Professor of Mathematics at the University of Canterbury in February of this year. He had been in the Department for twenty-two years, and its Head for the past ten. In this note I shall record some of the facts and legends known and circulated about his life and career so far.

Roy first came to the attention of New Zealand's mathematical community in 1950, when as a pupil of St Andrew's College in Christchurch he sat the University Entrance Scholarship. In those days Scholarship Mathematics consisted of two papers, and was marked out of 600; Roy got 298. This disappointing result was almost entirely explained by the fact that he'd turned up in the afternoon for one of the papers when it had in fact been scheduled in the morning. Despite this oversight, he did get a scholarship, and in his first year at Canterbury College, attended the lectures for Stage III. Regulations, however, permitted him to sit only the stage II examinations. Next year he was sitting in on the Masters lectures.

His undergraduate career was not given wholly to mathematics and science; he admits to having played a lot of billiards, and in 1952 represented his College in boxing at the Easter Tournament, as a light-welterweight. I recall W.W. Sawyer, then a lecturer at Canterbury, expressing alarm and dismay over Roy's pugilism, on the ground that he didn't want the best brain he'd encountered in a student scrambled by a well-thrown punch; but history seems to confirm that Roy came to no lasting harm over it.

In 1955 he received a MSc with first class honours, and went to Cambridge with a Sir Arthur Sims Empire Scholarship. He was awarded a PhD in 1960, for a thesis on the equations-of-motion problem in general relativity. This work appeared in a series of three uncharacteristically long papers in *Nuovo Cimento*, and although later overshadowed by the Kerr metric, was extensively cited. He went on to a post-doctoral post at Syracuse University, and then to work with a US Air Force relativity group at Wright-Patterson Field, in Ohio. The USAF were interested in antigravity devices; one of the tasks of the relativity group was to assess and report on such devices proposed to it by inventors. Roy remarked to me once that these devices usually involved massive

flywheels spinning at high speeds; most of the inventors specified that these flywheels be made of gold or platinum.

In 1962 Roy moved to the University of Texas in Austin, where a relativity group had been formed. In his first year he produced the work which led to the two-page article in *Phys Rev Letters* describing the Kerr metric. Here we enter the realm of legend. In an interview printed in the University of Canterbury *Chronicle* of 11 March (on which this article relies heavily), Roy says that, although he knew that his metric represented the gravitational field of a rotating star, he did not then realise how important it was going to be. Some insight on how the realisation dawned may be got from a lively if somewhat disingenuous article on the First Texas Symposium on Relativistic Astrophysics published in *Physics Today* (August 1989). Although this describes an interesting attempt to rob Roy of the fruits of his labours, which seems to indicate that they were thought to be valuable, it also says that Roy's paper was not in fact mentioned by the summarizers at the end of the conference. But when recognition came, it was emphatic. Chandrasekhar, in his Ryerson Lecture of 1978, said: "In my entire scientific life, extending over forty-five years, the most shattering experience has been the realization that an exact solution of Einstein's equations of general relativity, discovered by the New Zealand mathematician Roy Kerr, provides the *absolutely exact representation* of untold numbers of massive black holes that populate the universe".

Roy returned to New Zealand in 1971, to the chair he has just vacated. He brought to us in Canterbury a sharpened sense of belonging to the international mathematical community and attracted many visitors, but his major contribution to the Department began when in 1983, after Gordon Petersen's early retirement, he took over the headship. Roy's style as HOD was at once uncompromising and dashing; in a series of moves which affronted some of our colleagues in other departments, who had grown comfortable with the traditional Canterbury view that Mathematics should be a low-cost department devoted to service teaching, he contrived to reduce student-staff ratios, encourage research, and equip the department with a computer system at the sort of cost hitherto associated with spectrographs. Morale rose markedly. In many respects Roy was an unusual figure in University administration; he had very little patience for the practice of wrapping self-interest up in politically correct pieties, and was perfectly willing to offend entrenched privilege. But he was successful, and we are the better for his efforts, and we love him for them.

Roy has received many awards, culminating in the Hughes Medal of the Royal Society of London in 1984, and has given many invited lectures. His retirement comes at a time when his remarkable faculties seem unimpaired. He has put it about that he will sail the seven seas in the ocean-going yacht he has recently bought. Perhaps new legends will arise; we await with interest, and wish him success and happiness.

Novello Mario

Position: Professor

Period covered: 2003-present

I Scientific Work

1. Theoretical Cosmology with emphasis in Bouncing cosmological models
2. Nonlinear field theory in flat and curved spacetime - effective geometry
3. Spinor theory of gravity

II Conferences and educational activities

Conferences and Other External Scientific Work

- July 20 - August 3 (2008), The XIII Brazilian School of Cosmology and Gravitation, CBPF.
- 2nd semester of 2007 - first months of 2008, the 3rd edition of the itinerant program of Cosmology (Programa Minimo de Cosmologia, PMC, in Portuguese), University of the State of Ceara.
- 26 February- 03 March (2007) the First Cesare Lattes Meeting on Gamma-Ray Bursts**,** Mangaratiba (Rio de Janeiro)
- **July 16 - 21 (2007) The IV School on Cosmology and Gravitation**
- **August 27, 28 (2007) The Conference Gödel: Logic and Time, CBPF**
- August 8-10 (2007) The Sobral First Conference on Cosmology, Sobral (Ceara')
- October 9-11 (2007), The First ICRA-BR Internal Workshop CBPF
- November 27- 28 (2007) The 2005-2007 Scientific Report ICRANet
- (June 2007) IV Escola de Cosmologia e Gravitação
- He organized and chaired a team of researchers which performed a historical-scientific study on the evolution of Cosmology along the XX century. The main topics of this path were included in a poster that was prepared as a piece of popular science, and distributed in technical schools of the Brazilian Ministry of Science and Technology, and also in the public schools of the city of Rio de Janeiro. This experience will be extended to cover many other Brazilian states. To continue this endeavour a review book is being prepared containing reading material and pictures to serve as a guide for the teaching of Cosmology in schools and universities.
- (September 2006) XII Brazilian School of Cosmology and Gravitation
- (August 2004), XI Brazilian School of Cosmology and Gravitation

Diploma thesis supervision

Erico Goulart
Maria Borba

Aline N. Araújo
Josephine Rua
Vicente Antunes
R P Neves

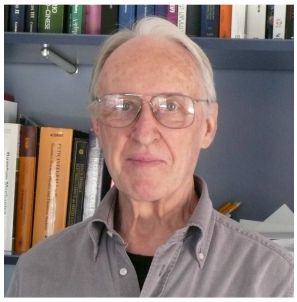
Work With Postdocs

Santiago E.P. Bergliaffa
Herman Mosquera Cuesta
Leo Medeiros

III Other

Received the title of Docteur Honoris Causa from University of Lyon (France)

Misner Charles



Position: Professor Emeritus and Senior Research Scientist
University of Maryland

Period: 2000-present

I Scientific Work

Discussions with Ruffini, Kerr, and Vereshchagin regarding black holes and gamma ray bursts. Commented on Gurzadyan's papers on CMB

II Conference and educational activities

Lectured at the symposium "Lucrezio, Leopardi, Hawking: tra Vuoto e Materia" at Villa Favorita in Ercolino. My title was "One attempt to make Something out of Nothing in Theoretical Physics" with a translation to Italian by Paola Catapano (CERN).Lectured in Rome "La Sapienza" on "John A Wheeler's rescue of Einstein's gravitation theory".

III Other

Education: B.S. Physics, Notre Dame 1952 (mathematics mentor Arnold Ross); Ph.D., Princeton 1957 (mentor John Archibald Wheeler).

University Positions: Princeton 1956-63, University of Maryland 1963-2000, now Emeritus. Visitor at Max-Planck Einstein Institute (Potsdam) 2000, 2002, 2005; UC Santa Barbara ITP 1980-81; All Souls College, Oxford 1973; Caltech 1972; Princeton 1969; DAMTP Cambridge UK 1966-67.

Honors and Awards: Fellow of the American Academy of Arts & Sciences 2000; Dannie Heineman Prize for Mathematical Physics (APS, shared with Arnowitt and Deser) 1994; Guggenheim Fellowship 1972-73; Festschrift (*Papers in honor of Charles Misner*, Cambridge Univ. Press 1993, Hu et al. editors).

Selected Publications: Arnowitt, Deser and Misner (ADM) "The dynamics of general relativity" (This paper; originally pp 227—265 in L. Witten, ed., *Gravitation: An Introduction to Current Research,* Wiley, New York, 1962), gr-qc/0405109;

-- Misner, Thorne and Wheeler (MTW) *Gravitation* (Freeman 1973) [Now a classic, never revised, still selling over 500 copies per year.];

-- Misner and Finkelstein "Some New Conservation Laws" (*Annals of Physics* **6**, 230—243, 1959);

-- Misner, "Wormhole Initial Conditions" (*Physical Review* **118**, 1110—1111, 1960)

-- Misner (with D L Beckedorff), "Infinite Red-Shifts in General Relativity" (pp 75—89 in T Gold, ed., *The Nature of Time---Cornell Conference 1963*, Cornell University Press 1967) http://www.lib.umd.edu/drum/handle/1903/4280?mode=full ;

-- Misner, "Quantum Cosmology" (*Physical Review* **186**, 1319—1327, 1969);

-- Misner, "Minisuperspace" (pp 441—473 in J. Klauder, ed., *Magic Without Magic---J. A. Wheeler 60th Anniversary Volume*, Freeman 1972);

-- Misner, " The Mixmaster Cosmological Metrics" (pp 317—328 in *Deterministic Chaos in General Relativity,* Hobill et al., eds., Plenum Press 1994);

-- Misner, van Meter and Fiske "Excising das All: Evolving Maxwell waves beyond scri" (Phys.Rev. **D74**, 064003, 2006), gr-qc/0603034

Students: Twenty-two Ph.D. students, of whom half became full professors in physics or mathematics, while several others had equally important positions.

Popov Vladimir

Position: Leading scientist

Institute of Theoretical and Experimental Physics

Period covered: 1970 - present

I Scientific Work

In recent years Popov's research focus on: the theory of multiphoton ionization of atoms and ions, including the relativistic generalization of Keldysh ionization theory for the case of multicharged ions; the process of electron-positron pair production from vacuum by the field of intense optical and X-ray lasers; development of the "imaginary time" method in theory of tunneling of relativistic particles; application of the Feynman method of disentangling of noncommuting operators to non-stationary problems of quantum mechanics.

II Conferences and educational activities

1. International Conference on Theoretical Physics, Lebedev Institute, Moscow, April 2005

2. Conferences MEPHI - 2000, 2002, 2005, 2006, 2007, 2008, Moscow Engineering Physical Institute, Moscow

3. XVIII Conference "Fundamental Atomic Spectroscopy", Zvenigorod, October 2007

III Service activities

Journal of Experimental and Theoretical Physics, member of editorial board (1993 -)

Popov Vladimir Stepanovich was born in Moscow in 1932. He received his diploma of physics from Moscow State University in 1955, joined the Institute of Theoretical and Experimental Physics (ITEP, Moscow) in 1959 as a junior researcher, received PhD in 1961, became senior researcher in 1964 and leading researcher in 1987. He received Doctor of Science (Physics) degree with the thesis "Atomic states at $Z > 137$ and tunnel effects in intense fields" in 1974 at ITEP, and became Professor in 1993. He also taught students in Moscow Physical-Technical Institute from 1964 to 1993, where he gave lectures on classical and quantum electrodynamics, quantum mechanics, theory of coherent states, quantum optics, and mathematical methods of quantum mechanics. Prof. Popov is a member of JETP (Journal of Experimental and Theoretical Physics) editorial board since 1993.

Popov's research has covered atomic and nuclear physics, laser physics, mathematical physics and a variety topics in quantum mechanics. He published more than 200 research papers. His main scientific activities were: theory of atomic processes in intense laser fields (particularly, tunnel and multiphoton ionization of atoms and ions); QED of superstrong Coulomb fields ($Z > 137$ problem), critical nuclear charge Z_{cr} and spontaneous production of positrons in collisions of heavy nuclei, $Z_1+Z_2 > Z_{cr} \approx 170$; e^+e^- pair production from vacuum by intense electromagnetic fields (Schwinger effect), in particular by two colliding laser pulses; quasiclassical approximation and 1/n-expansion in quantum mechanics and atomic physics; generalization of the WKB method for quasistationary states and resonances; "imaginary time" method in problems of tunneling of nonrelativistic and relativistic particles; Zel'dovich effect in atomic and nuclear physics, i.e. rearrangement of atomic spectrum due to strong short-range interaction; energy spectrum of the hydrogen atom in superstrong magnetic field; higher orders of perturbation theory for Stark effect, anharmonic oscillator and some other potentials; summation of divergent perturbation series in quantum mechanics and field theory; Feynman method of disentangling of noncommuting operators, its connection with group representation theory and application to some non-stationary problems of quantum mechanics.

Punsly Brian

Position:
Period covered:

I Scientific Work

Punsly, B., **Black Hole Gravitohydromagnetics** Second edition
Springer- Verlag, Heidelberg 2008, in press

Punsly, B., "Dynamic boundaries of event horizon magnetospheres" MNRAS Lett (2007), **381** 79

Ghosh, Kajal and Punsly, B., "The Physical Nature of Polar Broad Absorption Line Quasars" ApJL (2007), **661** 139

Punsly, B., "Three-dimensional Simulations of Ergospheric Disk-driven Poynting Jets" ApJL (2007), **661** 21

Punsly, B., "The Velocity Field of Quasar Broad Emission Line Gas" ApJL (2007), **657** 9

Punsly, B., "Kinetically dominated FRII radio sources" MNRAS Lett (2007), **374** 10

Punsly, B., "3C 216: A Powerful FR II Seyfert 1 Galaxy" ApJL (2006), **651** 17

Punsly, B., "X-Ray Absorption in Type II Quasars: Implications for the Equatorial Paradigm of Broad Absorption Line Quasars" ApJ (2006), **647** 886

Punsly, B., and Tingay, S. "PKS 1018-42: A Powerful, Kinetically Dominated Quasar" ApJL (2006), **640** 21

Punsly, B., "External sources of Poynting flux in magnetohydrodynamic simulations of black hole ergospheres" MNRAS (2006), **366** 29

Punsly, B., Rodriguez, L. Tingay, S. and Cellone, S. "PKS 1622-253: A Weakly Accreting, Powerful Gamma-Ray Source" ApJL (2005), **633** 99

Punsly, B., and Tingay, S. "PKS 0743-67: An Ultraluminous Accretion Disk and a High Kinetic Luminosity Jet" ApJL (2005), **633** 89

Chicone, C.; Mashhoon, B.; Punsly, B. "Relativistic motion of spinning particles in a gravitational field" PhLA (2005), **343** 1

Punsly, B., and Lipari, S. "Diagnostics of Quasar Broad Absorption Line Geometry: X-Ray Observations and Two-dimensional Optical Spectroscopy" ApJL (2005), **623** 101

Punsly, B. “An Independent Derivation of the Oxford Jet Kinetic Luminosity Formula” ApJL (2005), **623** 9

Punsly, B. “Fast-Wave Polarization, Charge Horizons, and the Time Evolution of Force-free Magnetospheres” ApJL (2004), **612** 41

Semenov, V., Dyadechkin, S, and Punsly, B. “Simulations of Jets Driven by Black Hole Rotation” Science (2004), **305** 978

Punsly, B and Bini, D.. “The Origins of Causality Violations in Force-free Simulations of Black Hole Magnetospheres” ApJL (2004), **601** 135

Chicone, C.; Mashhoon, B.; Punsly, B. “Dynamics of Relativistic Flows” IJMPD (2004), **13** 945

Rosquist Kjell

Position: Professor of Theoretical Physics at Stockholm University

Period covered: 2007-2008

I Scientific Work

Einstein's general theory of relativity is the basis for understanding many, if not most, of the astrophysical phenomena which are observed today. Black holes, in particular, are described by the Kerr-Newman family of solutions to the Einstein-Maxwell field equations. This family has a very special multipole structure with an infinite sequence of moments. Due to the black hole uniqueness theorems, the Kerr-Newman structure can be regarded as the end point of gravitationally collapsing astrophysical systems. Part of Rosquist's interest in this area is an attempt to characterize the Kerr-Newman solutions within a wider class of asymptotically flat systems.

There is an important general relativistic relation between the three quantities a, Q and M known as the Christodoulou-Ruffini mass formula. For black holes, the formula gives the available amount of energy which can be extracted. This is of relevance for macroscopic systems such as those responsible for gamma ray bursts. The mass formula is also expected to be important in the non-black hole case (i.e. not dominated by M), in particular in the microscopic domain as well. The situation in the non-black hole case is however less well-known. Rosquist is now working to fill in this gap. In particular, it is important to understand the relation between the two terms in the mass formula. This is an issue which can be investigated using the framework of the Kerr-Newman family of solutions.

II Conferences and educational activities

Conferences and Other External Scientific Work

Lectures and talks at the University of Rome and at conferences:

Bego Scientific Recontres, Nice, February 2006

Eleventh Marcel Grossmann Meeting on General Relativity (MG11), Berlin, July 2006

Italy-Korea meeting, Pescara, June 2007

18th International Conference on General Relativity and Gravitation **(**GR18), Sydney, July 2007

Work With Students

Mikael von Strauss, new graduate student
– Project on interacting fields using the theory of general relativity

Diploma thesis supervision

Tomas Bylund
– Carter's constant

Other Teaching Duties

Courses taught in the academic year 2008-2009:

Relativistic quantum mechanics (advanced undergraduate level)

Waves and Quantum Mechanics (undergraduate level)

Work With Postdocs

Lars Samuelsson at the Nordita Institute, Stockholm.
– Work on Carter's constant and other aspects of relativistic astrophysics

III Service activities

Within ICRANet

Adviser at various scientific committees

Outside ICRANet

Member of undergraduate teaching committee at the Dept of Physics, Stockholm University.

External examiner of licentiate thesis 2006 of Thomas Bäckdahl, Linköping University, Sweden.

IV Other

Collaboration with R. Ruffini, V. Belinski and others on aspects of general relativity, in particular field energy and interactions including both gravity and electromagnetic fields.

V 2007-2008 List of Publications

K. Rosquist, Some physical consequences of the multipole structure of the Kerr and Kerr-Newman solutions, in Proceedings of the 11th Marcel Grossmann Conference on General Relativity (2008), in press.

K. Rosquist, A dielectric analogue model of the Kerr equatorial plane, in Proceedings of the 11th Marcel Grossmann Conference on General Relativity (2008), in press.

K. Rosquist, A link between general relativity and quantum mechanics, in Proceedings of the 11th Marcel Grossmann Conference on General Relativity (2008), in press.

G. Pucacco and K. Rosquist, 1+1-dimensional separation of variables, J. Math. Phys. 48 (2007) 112903.

K. Rosquist, T. Bylund and L. Samuelsson, Carter's constant revealed, E-print, arXiv:0710.4260 Int. J. Mod. Phys. (2008) (in press).

K. Rosquist, Some Consequences of Gravitationally Induced Electromagnetic Effects in Microphysics, J. Kor. Phys. Soc. (2008) (in press).

Kjell Rosquist was born in Stockholm in 1948. He received his Ph. D. Degree in theoretical physics at the University of Stockholm in 1981. The thesis discussed the possibility that the universe could be rotating. In 1982-1983 he was a postdoc with Dr M. MacCallum at Queen Mary College in London. In 1984, Rosquist was given the title Docent in Theoretical Physics at Stockholm University. He was appointed as lecturer at Stockholm University in 1987. In 1993-1995 he was performing research at Université Libre de Bruxelles supported by a grant from the European Union. Rosquist was appointed as Professor at the University of Stockholm in 2000. He is now Professor at the Department of Physics at the Universtiy of Stockholm.

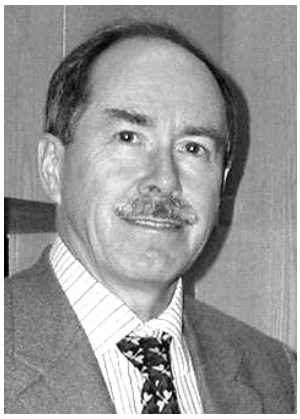
Starting with an invited visit in 1992, Rosquist has had a long time affiliation with the University of Rome. He has been an active participant in many conferences and other activities organized by ICRA and ICRANet in Rome, Pescara and Nice. Since 2005 he has been a regular visitor to the ICRANet center in Pescara.

The main focus in Rosquist's research activity has been on aspects of general relativity with applications in several separate directions. It began with the research in theoretical cosmology in his thesis which was followed by a long collaboration on Bianchi cosmology with R. Jantzen (Villanova University, Philadelpha), and with his first student C. Uggla (now Professor at Karlstad University, Sweden). He has also been collaborating extensively with G. Pucacco (the University of Rome, "Tor Vergata") on geometric formulations of dynamical systems. Other applications pursued by Rosquist include relativistic stellar models and gravitational waves.

Rosquist has been teaching a number of courses at both the graduate and undergraduate levels. Since the mid 1980s he has supervised a number of Ph D students. Rosquist was the founder and first chairman of the Section on Gravitation of the Swedish Physical Society. He is a member of the International Society on General Relativity and Gravitation and of the International Astronomical Union.

Rosquist has authored several popular science articles in a number of Swedish magazines including *Forskning och Framsteg* and the Yearbook of the national Swedish research council as well as the Swedish Astronomical Yearbook. He has also participated in a number of science programs on television and radio.

‘t Hooft Gerard



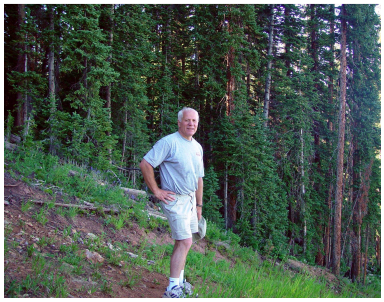
Gerardus 't Hooft (born July 5, 1946, Den Helder) is a professor in theoretical physics at Utrecht University, the Netherlands. He shared the 1999 Nobel Prize in Physics with Martinus J. G. Veltman "for elucidating the quantum structure of electroweak interactions". Asteroid 9491 Thooft is named in his honor; he has written a constitution for its future inhabitants. He was awarded the Lorentz Medal in 1986 and the Spinozapremie in 1995. Nobel Prize in Physics laureate Frits Zernike was his great-uncle.

The name 't Hooft means "the head" or "the main" ('t is short for "het"). He is married to Albertha Schik (Betteke) and has two daughters, Saskia and Ellen. Saskia is currently translating one of her father's popular Dutch fiction books 'Planetenbiljart' into English. The book's title will be 'Playing with Planets' and is expected to be in stores as of December 31, 2008.

Important works

- A proof that gauge theories are renormalizable
- Other results about gauge theory, confinement, and anomalies
- 't Hooft was the first to realise that gauge theories simplify in the large *N* limit. He solved the theory in 1+1 dimensions, discovering an equation for the meson masses.[1] This topological expansion of large *N* gauge theories has proved important in the AdS/CFT correspondence in string theory
- 't Hooft magnetic loop (related to Wilson loop by S-duality)
- Instanton contributions to interactions of fermions ('t Hooft interaction)
- Holographic principle (with Leonard Susskind) and other proposals about quantum gravity
- Recent attempts to revive hidden variables in quantum mechanics

Titarchuk Lev



Position: Professor of University of Ferrara
Research Professor of Naval Research Laboratory (NRL), Goddard Space Flight Center (GSFC), George Mason University in USA

Period covered: from November 2007 to November 2008.

I Scientific Work

Study of spectral and timing properties of Compact objects (black hole and neutron stars). Black hole mass determination using a new scaling method and X-ray observations by RXTE observatory.

II Conferences and educational activities

Conferences and Other External Scientific Work

Participation in a number of Conference:

1. High Energy Astrophysics meeting, Moscow, Russia, December 2007 (invited talk)
2. Observational Evidence of Black Hole meeting, Colkatta, India, February 2008 (invited talk)
3. American Astronomical Society meeting Los Angeles, March 2008 (NASA press release),
4. Milisecond Pulsar meeting, Amsterdam, Netherlands, April (invited talk)
5. Neutron Star Conference in Saint Petersburg, June 2008 2007 (invited talk)

Work With Students:

Chiara Ceccobello-graduate student of University of Ferrara,

Andrey Makeev-graduate student of George Mason University

Diploma thesis supervision:

Chiara Ceccobello-graduate student of University of Ferrara

Andrey Makeev-graduate student of George Mason University

Other Teaching Duties:

Lectures on the course of High Energy Astrophysics in University of Ferrara

Work With Postdocs

Drs. Ruben Farinelli and Enrico Montari (University of Ferrara)

Dr. Elena Seyfina (Sternberg Astronomical Institute of Moscow University)

Dr. Nikolai Shaposhnikov (Goddard Space Flight Center)

Dr. Philippe Laurent (Saclay, Paris)

III Service activities

Within ICRANet

Research, Adjunct Professor of ICRANET

IV Outside ICRANet

Teaching and Research

V 2007-2008 List of Publications

1 2007 L.Titarchuk, S. Kuznetsov & N. Shaposhnikov `` Correlations between X-ray spectral and timing characteristics in Cygnus X-2'' ApJ, 667, 404

2 2008 L. Titarchuk & N. Shaposhnikov "On the Nature of the Variability Power Decay Towards Soft Spectral States in X-Ray Binaries: Case Study in Cyg X-1" (72717). ApJ, 678, 1230

3 2008 R. Farinelli, L. Titarchuk, A. Paizis, F. Frontera `` A new Comptonization model for low-magnetized accreting neutron stars in low mass X-ray binaries'' ApJ, 680, 602

4 2008 E. Montanari, L.Titarchuk & F. Frontiera ``BeppoSAX Observations of the Power and Energy Spectral Evolution in the Black Hole Candidate XTE J1650-500'' ApJ, accepted

Bini Donato

Position: Reasercher Istituto per le Applicazioni del Calcolo, CNR

Period covered: 1995 -today.

I Scientific Work

The main topic of my interest is General Relativity with special attention to the analysis and the interpretation of exact solutions of Einstein's field equations.

In particular, I'm interested in 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 quadrupolar structure), gravitational perturbations, gravitational waves.

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 many 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.

Other Teaching Duties

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

Work With Postdocs

I'm continuosly working with A Geralico, post-doc student at the University of Rome "La Sapienza."

III Service activities

Scientific collaboration with:

Prof. R. Ruffini (University of Rome, Italy and ICRANet);

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

Prof. B. Mashhoon (University of Missouri-Columbia and ICRANet);

Prof. S. Filippi (University Campus Biomedico, Rome, Italy and ICRANet).

Dr. C. Cherubini (University Campus Biomedico, Rome, Italy and ICRANet).

Outside ICRANet

Scientific collaboration with:

Prof. F. de Felice (University of Padova, Italy);

Prof. G. Ferrarese (University of Rome, Italy);

Prof. L. Lusanna (INFN Florence, Italy);

Prof. A. Tartaglia (Politecnico of Turin, Italy)

IV 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'm 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'm leader of young researchers projects of INDAM (Istituto Nazionale di Alta Matematica). Title of the project: *Sistemi di Posizionamento Globale relativistici*

V 2007-2008 List of Publications

Bini D., Geralico A., Ruffini R. J.
Charged massive particle at rest in the field of a Reissner-Nordstrom black hole,
Phys. Rev. D, 75, 044012, 2007.

Bini D., Geralico A., Ruffini R. J.
On the equilibrium of a charged massive particle in the field of a Reissner-Nordstrom black hole,
Physics Letters A, vol. 360, 515-517, 2007.

Bini D., de Felice F., Geralico A.
Strains and axial outflows in the field of a rotating black hole,
Phys. Rev. D, 76, 047502, 2007.

Bini D., Cherubini, C., Geralico A., Jantzen R.T.
Circular motion in accelerating black hole spacetimes,
International Journal of Modern Physics D, vol. 16, 2007.

G. Ferrarese, Bini D.
Introduction to relativistic continuum mechanics,
Lecture Notes in Physics 727, Ed. Springer, 2007.

Bini D., Cherubini, C., Jantzen R.T.
The speciality index and the Lifshitz-Khalatnikov Kasner index parametrization,
Class. and Quantum Gravit., vol. 24, 5627-5636, 2007.

Bini D., Fortini, F., Geralico, A, Ortolan, A.
Quadrupole effects on the motion of extended bodies in Schwarzschild spacetime
Class. and Quantum Gravity, vol. 25, 035005 (9pp), 2008.

Bini D., Cherubini, C., Geralico A., Jantzen R.T.
Physical frames along circular orbits in stationary axisymmetric spacetimes,
Gen. Rel. and Gravit., vol. 40, 985-1012, 2008.

Bini D., Lusanna L.

Spin-*rotation couplings: spinning test particles and Dirac field,*
Gen. Rel. and Gravit., vol. 40, 1145-1177, 2008.

Bini D., Geralico A., Ruffini R.
Charged massive particle at rest in the field of a Reissner-Nordstrom black hole II. Analysis of the electric field lines,
Phys. Rev. D, vol. 77, 064020, 2008.

Bini D., Fortini, F., Geralico, A., Ortolan, A.
Quadrupole effects on the motion of extended bodies in Kerr spacetime,
Class. and Quantum Gravity, vol. 25, 125007, 2008.

Bini D., Succi S.
Analogy between capillary motion and Friedmann-Robertson-Walker cosmology,
Europhysics Letters, vol. 82, 34003, 2008.

Bini D., Geralico, A., Ruggiero, M. L., Tartaglia A.,
Emission vs Fermi coordinates: applications to relativistic positioning systems,
Classical and Quantum Gravity, vol. 25, 205011, 2008.

Bini D., Cherubini, C., Geralico A.,
Massless field perturbations of the spinning C metric
JMP, vol. 49, 062502, 2008.

Bini D., Fortini, F., Geralico, A., Ortolan, A,
Dixon's extended bodies and impulsive gravitational waves,
Physics Letters A, vol. 372, 6221–6225, 2008.

Bini D., Cherubini C., Filippi S.,
On the effective geometries in classical selfgravitating systems
Phys. Rev. D, vol. 78, 064024, 2008.

Bini D., Geralico A., Ruffini R.,
On the linearization of the Belinski-Alekseev exact solution for two charged masses in equilibrium,
IJMPA, vol. 23, 1226 - 1230, 2008.

Bini D., Cherubini, C., Chicone, C., Mashhoon, B.
Gravitational induction
Classical and Quantum Gravity, vol 25, 2008 (to appear).

Bini D., .Cherubini, C., Geralico, A., Ortolan, A.
Dixon's extended bodies and weak gravitational waves
GRG, 2008 (to appear).

Bini D., Capozziello S., Esposito G.

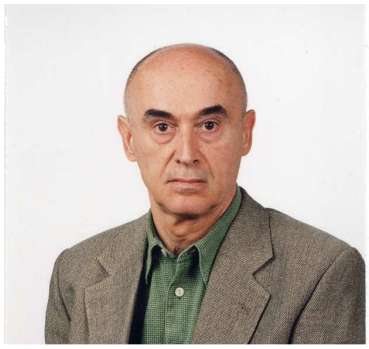
Gravitational waves about curved backgrounds: a consistency analysis in De Sitter spacetime,
International Journal of Geometric Methods in Modern Physics, 2008 (to appear).

Bini D., **Geralico A.**, Ruggiero, M. L., Tartaglia A.,
Emission vs Fermi coordinates: applications to relativistic positioning systems,
Classical and Quantum Gravity, vol. 25, 205011, 2008.

Bini D., Cherubini C., **Geralico A.**,
Massless field perturbations of the spinning C metric,
Journal of Mathematical Physics, vol. 49, 062502, 2008.

Bini D., Fortini P., **Geralico A.**, Ortolan A.,
Dixon's extended bodies and impulsive gravitational waves,
Physics Letters A, vol. 372, 6221, 2008.

Boccaletti Dino



Position: Professor of Celestial Mechanics

University of Rome “La Sapienza”

Period covered: 1987- present

I Scientific Work

Researches in the field of Physics of Elementary particles (in the first period), Theoretical Astrophysics, Theory of the gravitational waves, Stellar Dynamics, Celestial Mechanics, Mathematical Physics. The relevant papers are published on Nature, Nuovo Cimento B, Physical Review D, Astronomy & Dynamical Astronomy. An aside activity has regarded the history of Astronomy.

II Conferences and educational activities

In the last years communications at meetings on General Relativity and Celestial Mechanics

Work With Students

In the last twenty years many students have been aided at the beginning of their researches on topics of Celestial Mechanics and someone supervised until the doctorate

Diploma thesis supervision

Since 1987 about 70 thesis on topics of Celestial Mechanics

Other Teaching Duties

Member of the “Collegio Docenti” of the “Dottorato in Astronomia” at the University of Rome “La Sapienza” until October 31th 2007. Now member of the Faculty of the IRAP PhD.

Work With Postdocs

Researches in collaboration.

The latest postdoc is still involved in researches in collaboration (application of the technique of the normal forms to the study of galactic potentials).

III Service activities

Within ICRANet

No direct service activities but collaboration in some occasion regarding topics of research of mutual interest

IV Other

Member of IAU (International Astronomical Union)
• Commission 7 (Celestial Mechanics & Dinamical Astronomy)
• Commission 41 (History of Astronomy)
Member of SAIT (Società Astronomica Italiana)

V 2007-2008 List of Publications

Space-time Trigonometry and formalization of the “Twin paradox” for uniform and accelerated motions, Dino Boccaletti, Francesco Catoni, Vincenzo Catoni, *Adv. Appl. Clifford alg.* **17;** 1-22

Formalization of the “Twin paradox” for non-uniformly accelerated motions, Dino Boccaletti, Francesco Catoni, Vincenzo Catoni, *Adv. Appl. Clifford alg.* **17**; 611-616

On the orbit structure of the logarithmic potential, Cinzia Belmonte, Dino Boccaletti, Giuseppe Pucacco, *The Astrophysical Journal* **669**; 202-217 **2008**

The Mathematics of Minkowski Space-Time, Dino Boccaletti, Francesco Catoni, Roberto Cannata, Vincenzo Catoni, Enrico Nichelatti, Paolo Zampetti, [*Birkhäuser, 2008*]

Periodic orbits in the logarithmic potential, Cinzia Belmonte, Dino Boccaletti, Giuseppe Pucacco, A&A **489**; 1055-1063

Quantitative predictions with detuned normal forms, Giuseppe Pucacco, Dino Boccaletti, Cinzia Belmonte, *Celestial Mechanics and Dynamical Astronomy,***102**; 163-176

Approximate First Integrals with the Method of Lie-Transforms normalization, Cinzia Belmonte, Dino Boccaletti, Giuseppe Pucacco, Qualitative Theory of Dinamical Systems; **7**, 43-71 **In press**

A theorem of Beltrami and the integration of the geodesic equations, Dino Boccaletti, Francesco Catoni, Roberto Cannata, Paolo Zampetti, *11th Marcel Grossmann Meeting on General Relativity June 23-29 Berlin. Proceedings (in press)*.

Chakrabarti Sandip K.

Position: Senior Professor

S. N. Bose National Centre for Basic Sciences, Kolkata

And

In Charge, Academic Affairs, Indian Centre for Space Ph.

I Scientific Work

His main research work consists of study of the Astrophysical Flows around black holes. He studies the spectral and temporal properties of black holes, from quasars to nano-quasars. However he is also spending some time on formation and evolution of bio-molecules in star-forming region. He has published about 150 papers in International Refereed journal and a similar number of papers in Proceedings. He has written a book and edited several volumes.

II Conferences and educational activities

Please see my biodata which contains the whole set of activities, including the recent ones.

Please use them and place them where you find suitable.

Work With Students:

Doctorate Students Supervision

Last twelve years he has produced 12 Ph.D. scholars and another 6 students are registered and would submit their thesis soon. Four more students have joined since last year. The students mainly worked on (a) jets and outflows; (b) nucleosynthesis around black holes, (c) Planetary ring dynamics; (d) Quasi-periodic Oscillations of GRS 1915+105; (e) Transonic accretion flows with heating and cooling; (f) gravitational waves emitted from a binary which has an accretion disk also; (g) Multiwavelength studies of SS433; (h) Spectral properties of accretion disks having shock waves; (i) Formation of simple bio-molecules during star formation; (j) Grain chemistry using Monte-Carlo simulations etc.

Many of his students have permanent positions in national institutions.

Other Teaching Duties: Generally he takes courses on high energy astrophysics at S.N. Bose Centre and R.K.M. College (autonomous MSc in Astrophysics).

Work With Postdocs: he has several colleagues including post-docs.

III Service activities

Within ICRANet :

(a) he organized a workshop on Black Holes, Neutron Stars and Gamma Ray Bursts as a satellite meeting (Feb 15^{th}-17^{th}, 2008) just after the Observational Evidence for Black Holes in the Universe conference (Feb 10^{th} -15^{th}, 2008). These are done in collaboration with ICRAnet. A large number of delegates from ICRAnet came to India and the meeting was a grand success. A conference proceedings is already published by AIP (New York) on works presented in the conference and the ICRANET-S.N. Bose Centre joint workshop.

(b) Presented a seminar on the "Physics and Astrophysics of the Boundary Layer of a Black Hole: The Shocking Theory" at the University of Rome, Oct. 29^{th}, 2007.

(c) Presented a seminar on the "Formation of Bio-Molecules during star formation" at ICRANET Pescara, on Sept. 1^{st}, 2008.

IV 2007-2008 list of Publications

Time dependent chemical evolution of molecular clouds, 2006, by Ankan Das, Sandip K. Chakrabarti, Kinsuk Acharyya, Sonali Chakrabarti, In Book of Abstract:Complex molecules in space and the Present status and prospects with ALMA, p.59

Methanol Formation: AMonte Carlo Study, 2008, Ankan Das, Kinsuk Acharyya, Sonali Chakrabarti,
Sandip K. Chakrabarti, International Astronomical Union, 251, 2132

Formation of Water and Methanol in Star Forming Molecular Clouds, Sonali Chakrabarti, Ankan
Das, Kinsuk Acharyya and Sandip K. Chakrabarti, 2008, Origin of Life and Evolution of Biosphere, (in press).

Santabrata Das and Sandip K. Chakrabarti, 2007, Properties of accretion shock waves in viscous flows with cooling effects, Proc. Marcel Grossman Meeting, Ed. R. Ruffini et al. (World Scientific).

Samir Mandal and Sandip K. Chakrabarti, 2007, Spectral and timing properties of magnetized advective flows with standing shocks, Proc. Marcel Grossman Meeting, Ed. R. Ruffini et al. (World Scientific).
Ankan Das, Sandip K. Chakrabarti, P. BASU, S. MONDAL, S.K. CHAKRABARTI, 2007, Gravitational wave emissionfrom a stellar companion black hole in presence of an

accretion disk around a Kerrblack hole, Proc. Marcel Grossman Meeting, Ed. R. Ruffini et al. (World Scientific)

P. BASU, S.K. CHAKRABARTI, 2007, Gravitational wave damping from a self gravitating vibrating ring of matter around a black hole, Proc. Marcel Grossman Meeting, Ed. R. Ruffini et al. (World Scientific)

S. K. CHAKRABARTI, H. GHOSH and D. SOM, 2007, Astrophysical black holes do they have boundary layers?, Proc. Marcel Grossman Meeting, Ed. R. Ruffini et al. (World Scientific)

S. K. Chakrabarti, D. Debnath, P.S. Pal, A. Nandi, R. Sarkar, M.M. Samanta, P.J. Wiita, H. Ghosh and D. Som, 2007, Quasi periodic oscillations due to axisymmetric and non-axisymmetric shock oscillations in black hole accretion, Proc. Marcel Grossman Meeting, Ed. R. Ruffini et al. (World Scientific).

Soumen Mondal and Sandip K. Chakrabarti, 2007, Pseudo-Kerr Geometry, Proc. Marcel Grossman Meeting, Ed. R. Ruffini et al. (World Scientific).

Soumen Mondal and Sandip K. Chakrabarti, 2007, Standing Shocks in Pseudo-Kerr Geometry, Proc. Marcel GrossmanMeeting, Ed. R. Ruffini et al. (World Scientific).

Santabrata Das and Sandip K. Chakrabarti, 2007, Parameter space study of magnetohydrodynamic
flows around magnetized compact objects, Proc. Marcel GrossmanMeeting, Ed. R. Ruffini et al. (World Scientific).

Chardonnet Pascal

Position: Professor of Physics at the University of Savoie

Period covered: 2000-Present

I Scientific Work:

In recent years Chardonnet's research focus on the astrophysical and cosmological studies of Gamma-ray bursts, the problem of propagation of ultra-high energy cosmic-rays, the galactic center 511 keV annihilation line and the puzzle of dark matter. It includes the studies of galactic magnetic field influences of the cosmic rays propagation using numerical simulation with a recent local galactic survey.

II Conferences and educational activities

Conferences and Other External Scientific Work

- Integral Meeting in Moscow July 2006
- Massive Stars as cosmic engines: IAU Symposium Hawaii December 2007

Work With Students

1. Valentino Laquaniti, a new graduate student.
2. Julien Aublin, from the AUGER TEAM, committee member, oral exam

Diploma thesis supervision

Alvise Mattei, obtained his PhD degree

Thesis: The propagation of the ultra high energy cosmic rays.

Other Teaching Duties

Phys907 (general relativity and cosmology)

Phys502 (Lagrangian mechanics)

Phys405 (Introduction to Astrophysics)

Phys302 (Special Relativity)

Phys301 (Introduction to quantum mechanics)

Phys201 (Classical mechanics)

Work With Postdocs

Anton Baushev (stay in my group from Sept 2005-Aug 2006)

III Service activities

Within ICRANet

Organizing the MG11 Marcel Grossmann Meeting

Member of the Faculty of IRAP PhD Program

Outside ICRANet

Member of GDPR PCHE

Member of Specialist committee of University of Savoie

Chieffi Alessandro

Position: I^{o} researcher

Period covered: 2001-present

I Scientific Work

He has been working on stellar evolution for more than 20 years. His expertise extends from the low mass stars (M=0.5 MO) up to the massive stars (M=120 MO) and covers almost all the evolutionary phases experienced by these stars (Pre Main Sequence, H-burning, Red Giant Branch, He-burning, Asymptotic Giant Branch, Thermal Pulses, advanced burnings, explosive burnings).

Over these 20 years he has worked actively on these subjects:
Star clusters (Galactic Globular and Open Clusters, Magellanic Clouds Globulars etc.)
Horizontal Branch of the Globular Clusters
AGB stars and S-process nucleosynthesis
Stellar nucleosynthesis
Nuclear Astrophysics
Chemical evolution of the matter in the Universe
Core collapse supernovae
Explosive nucleosynthesis
The first stellar generation (pop.III stars)

He is also the primary developer of the stellar evolutionary code FRANEC, one of the most versatile codes presently available. Hence his interests cover also all the numerics and input physics involved in the stellar modelling.

Coullet Pierre

Position: Professor

Université de Nice-Sophia Antipolis,

INLN (Institut Non-Linéaire de Nice).

Period covered: 1987-present

I Scientific Works

Mon domaine d'activité est celui des Systèmes Dynamiques. Ma principale contribution concerne la découverte de l'universalité de la transition vers le « chaos ». Ce travail, fait à l'université de Nice en collaboration avec C. Tresser, a été reconnu par les physiciens et les mathématiciens (dont plusieurs médaillés « Field » et l'Encyclopédie Universalis !) comme une découverte majeure. Un système physique « poussé » hors de l'équilibre thermodynamique finit par se comporter de façon erratique. La transition vers la complexité présente une analogie frappante avec les transitions de phase. Nous avons, indépendamment de M. Feigenbaum introduit le nombre universel qui décrit cette transition. Nous avons été les premiers à conjecturer que l'on pourrait mesurer expérimentalement ce nombre. Ce nombre a effectivement été mesuré dans des systèmes très variés (systèmes mécaniques, optiques, acoustiques, chimiques et même biologiques). J'ai appliqué la théorie des systèmes dynamiques dans des domaines aussi différents que la mécanique des fluides, l'optique non-linéaire, les cristaux liquides, les réactions chimiques, les systèmes biologiques excitables et la condensation de Bose-Einstein

Enseignement

Je suis fortement impliqué au sein du département de physique dans la mise en place de nouveaux enseignements qui font une large place aux aspects expérimentaux et à l'histoire des idées. Le développement d'outils de simulations interactives des processus dynamiques a occupé une large partie de mon activité. Je m'efforce d'établir un contact avec la
communauté des professeurs du secondaire dans le but de lutter contre la désaffection des filières scientifiques.

Publications

Plus de 150 publications dans le domaine des systèmes dynamiques, du chaos de la turbulence et de l'auto organisation (dans les fluides, les cristaux liquides, l'optique, les réactions chimiques et les systèmes biologiques)

Filippi Simonetta

Position: **Associate Professor** in **Theoretical Physics**

University Campus Biomedico of Rome.

Period covered: 2003-today

I Scientific Work

-Physics of self-gravitating systems

-Nonlinear dynamics and complex systems

-Relativistic Astrophysics and Cosmology

II Conferences and educational activities

Conferences and Other External Scientific Work

-Varenna Physics School on "Gamow Cosmology": communication on "The Capture of Particles in an Einstein-Straus Universe", 1982.

-Equatorial School of Relativistic Astrophysics, CIF (Centro Internacional de Fisica), Bogotà (Colombia), communication on "Processes of clustering in Friedmann cosmology", 1984.

-International Meeting on Internal Dynamics of Galaxies, Accademia Nazionale dei Lincei (Rome,Italy), invited talk: "New class of rotating, anisotropic and inhomogeneous models of elliptical galaxies based on the tensor virial theorem," 1988.

-"Fifth Marcel Grossmann Meeting," Perth (Australia), communication on "Equilibrium of triaxial self-gravitating ellipsoid with rotation and anisotropic pressure," 1988

-International Meeting on Dynamics of Galaxies, Accademia Nazionale dei Lincei (Rome, Italy) , communication: "Observable properties of generalized Riemann ellipsoids and their application to elliptical galaxies", 1989.

-"Italian - Soviet Symposium on Cosmology and Relativistic Astrophysics" (Estonia), invited talk: "Generalized Riemann ellipsoids," 1989.

-"Italian - Korean meeting on relativistic astrophysics", (Rome, Italy), invited talk: "Non-linear Dedekind-Riemann sequences," 1989.

-International Meeting on Dynamics of Galaxies, Accademia Nazionale dei Lincei (Rome, Italy) , communication: "Nonlinear Velocities in Ellipsoidal Figures of equilibrium," 1990.

-"Sixth Marcel Grossmann Meeting," (Kyoto, Japan) communication on "Dynamical Equilibrium and Stability of Rotating Masses," 1991.

-International Meeting on Dynamics of Elliptical Galaxies, Accademia Nazionale dei Lincei (Rome, Italy) , communication: "Relations between observed quantities and parameters of galactic models," 1991.

-International Meeting on Structures in Early-Type Galaxies, Accademia Nazionale dei Lincei (Rome, Italy) , communication: "Landau damping in galactic systems," 1992.

-"Seventh Marcel Grossmann Meeting," Stanford University (USA), communication: "The Landau

damping in semi-degenerate gravitating systems," 1994.

-"Italian - Korean meeting on relativistic astrophysics," (Italy), invited talk: "The n-th order Virial Theory," 1995.

-International Meeting on Normal galaxies at high and low red-shift. Structure, Dynamics and Evolutions, Accademia Nazionale dei Lincei (Rome, Italy) , communication: "Inhomogeneous self-gravitating, rotating toroidal sequences," 1997.

-"Eighth Marcel Grossmann Meeting" (Hebrew University, Jerusalem, Israel), communications: "Landau damping of fermions perturbations in an expanding universe," "Toroidal solutions to the problem of inhomogeneous rotating gravitational systems," 1997.

-"Ninth Marcel Grossmann Meeting" University of Rome "La Sapienza",

communications: "Equilibrium Solutions for Self-Gravitating Polytropic Systems"

"Functional Method to solving the Euler Equation for Self-Gravitating Systems", 2000.

-YALE COSMOLOGY WORKSHOP on The shapes of galaxies and their halos,

communication: "A General Theory of self-gravitating Systems: Shapes of Astronomical Objects", 2001.

-Member of Scientific Organizing Committee "Fermi and Astrophysics", 2001.

- Vip guest at Stanford University for the Gravity Probe B launch mission.2004.

- Russian-Italian Lifshitz-Zeldovich Meeting on Relativistic Astrophysics, Pescara Italy, 2005.

-COMSOL Italian Multiphysics Meeting, Milan Italy, 2005.

- *Cardiac Dynamics* Kavli Institute for Theoretical Physics, Universita' di Santa Barbara, California, 2006.

-Bego scientific Rencontres, Nice, France 2006.

-COMSOL Users Conference, Milan, Italy 2006.

-Cardiac MEF and Arrhythmias Conference, Oxford, UK 2007.

-10th Italian-Korean Symposium on Relativistic Astrophysics in Pescara, Italy, 2007.

Work With Students

Alessio Gizzi

Miranda Barrella

Diploma thesis supervision

Dr. Costantino Sigismondi

Dr. Sandra Kanani

Other Teaching Duties

1) Engineering Faculty (University Campus Biomedico)

Reader: Dynamics of Complex Physiological Systems

Reader: General Physics I

2) Medicine Faculty(University Campus Biomedico):

Coordinator of the courses of Physics for Medicine,Nursing and Dietology.

3) Reader of IRAP PhD

4) Reader and examiner at University La Sapienza of Rome for the course of Theoretical Physics II.

Work With Postdocs

Prof. Filippi is involved in research activities with Dr Christian Cherubini regarding the the fields of Galactic Structures and Complex Systems in Nature. She has also started a collaboration with Dr Andrea Geralico in problems of General relativity,

III Service activities

Within ICRANet

Organization of conference activities in the ICRA center of Pescara as well as in the organization of other ICRA meetings.

IV Other

Prof. Filippi has a longstanding collaboration with other ICRANETscientists. In particular in collaboration with Prof. Remo Ruffini and Prof. Alonso Sepulveda, she has written plenty articles in various areas of self-gravitating systems and Galactic Structures. She has started recently a collaboration with Dr Donato Bini and Dr Christian Cherubini in the field of Complex Systems in Nature.

Gurzadyan Vahe

Position: Professor

Yerevan Physocs Institute

I Scientific Work

Chaos in Astrophysical and Cosmological Problems

The problems include**:** chaos in non-linear systems, N-body dynamics, stellar dynamics, cosmic microwave background radiation, large scale structure of the universe, observational cosmology.

II Conferences and educational activities

Reports at Marcel Grossmann meetings (1997-), IAU General Assembly (2003), ICRANet workshops, lectures at Bego workshop for IRAP PhD students (2006), lectures at Brazilian school on cosmology (2003).

Work With Students

Supervisor of IRAP PhD students.

G.Yegorian

H.Khachatryan

Within ICRANet

Member of Steering committee

Outside ICRANet

Co-editor, International Journal of Modern Physics D (2001 -)

Co- editor, book series Advances in Astronomy and Astrophysics, Tayler & Francis, Cambridge Scientific Publications (1996-).

Vahe Gurzadyan was born in Yerevan, Armenia (then USSR) in 1955. He graduated Yerevan State University, Chair of Theoretical Physics (1977). Was postgraduate student at Dept. Theoretical Physics, Lebedev Physics Institute, Moscow (1977-1980; 1980 PhD.), DSci, in Theoretical and mathematical physics (1988).

Since 1980 Gurzadyan worked as Research Fellow (Leading Research Fellow since 1989) in Dept. of Theoretical Physics, Yerevan Physics Institute, Yerevan; he is the head of Cosmology Unit since 1989. In 1989 he lectured on dynamical systems in 4 Universities in Japan. He had visiting positions in several Universities: University of Sussex (1996-1997) and since 2001 in ICRA, University of Rome "La Sapienza", ICRANet.

The main topics of his research are: the chaos in non-linear systems, N-body dynamics, stellar dynamics, Cosmic Microwave Background radiation, observational cosmology. He has published 2 monographs, 120 articles, has edited 4 books.

He chaired the Scientific Organizing Committee of workshop "Ergodic Concepts in Stellar Dynamics", Geneva, 1993; the Local Organizing Committee of workshops "The Chaotic Universe", Rome, 1999; “Fermi and Astrophysics”, Rome-Pescara, 2001; IX Marcel Grossmann meeting, Rome 2000. Chair of 'Chaos' Parallel sessions at Marcel Grossmann Meetings, Jerusalem, 1997, Rome, 2000, Rio de Janeiro, 2003, Berlin, 2006.

He is co-editor of **Intern.Journ.Modern Phys D** (World Scientific) and of book series '**Advances in Astronomy and Astrophysics**' (Taylor & Francis, UK).

He was member **EUROSCIENCE** Governing Board (elected 1998, reelected 2002).

Jing Yipeng

Position: Professor – Shanghai Observatory

Period covered: 1999-present

I Scientific Work

Observational Cosmology and Galaxy Formation

II Conferences and educational activities

Conferences and Other External Scientific Work

The 1st Sino-Italian Conference on Astrophysics (2004)

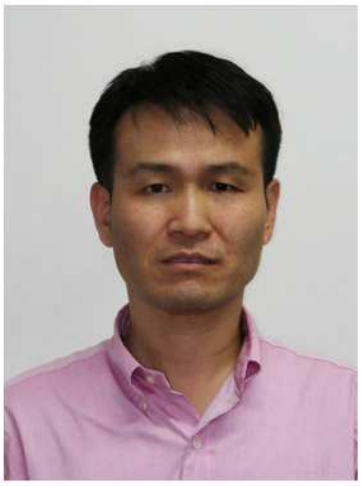
The 4th Sino-Italian Conference on Astrophysics (2007)

The 5th Sino-Italian Conference on Astrophysics (2008)

Lee Hyun Kyu

Department of Physics, Hanyang University
Seoul 133-791, Korea hyunkyu@hanyang.ac.kr

Lee Hyung Won



Position: Professor

Inje University

Period covered: 1993-present

I Scientific Work

Dark energy in cosmology,

Electromagnetic wave propagation in general relativity,

Numerical relativity,

FDTD simulation for acoustic wave simulation

II Conferences and educational activities

Conferences and Other External Scientific Work

Organization of 10th Italian-Korean Symposium for Relativistic Astrophysics, June 25-30, 2007, Pescara, Italy

Participating APPC10(10th Asia Pacific Physics Conference) meeting, August 20-24, 2007, Pohang

Participating Korean Astronomy Society fall meeting, October 11-12, 2007, Ewha Womans University

Participating Korean Physical Society fall meeting, October 18-19, 2007, Jeju island

Participating APCTP Jeju meeting on gravitation and cosmology, October 19-21, 2007, Jeju island

Diploma thesis supervision

Acoustic wave simulation in open space using FDTD method (M.S. thesis)

Interacting dark energy model (Ph. D. thesis)

Other Teaching Duties

Application of C program language

Practical Computer usage

III Service activities

Outside ICRANet

Head of School of Computer Aided Science

Director of Institute of Mathematical Sciences, Inje University

Editor of JKPS(Journal of the Korean Physical Society)

Limongi Marco

Position: Research Astronomer

I Scientific Work

Stellar Evolution with special attention to the presupernova evolution of massive stars, their explosion and their hydrostatic and explosive nucleosynthesis.

II Conferences and educational activities

Conferences and Other External Scientific Work

2005 – The University of Tokyo (Japan): “Evoluton and Explosion of Massive Stars With Mass Loss”

2005 – The University of Tokyo (Japan): “Presupernova evolution and explosive nucleosynthesis of solar metallicity massive stars: The production of ^{26}Al and ^{60}Fe”

2005 – Institute of Astronomy, University of Cambridge (UK): “Presupernova evolution and explosive nucleosynthesis of massive stars”

2006 – Member of the Scientific Advisory Commettee for the International Meeting “The Multicolored Landscape of Compact Objects and their Explosive Origin”, Cefalu’ (Palermo), Italy

2004 – Member of the Scientific Advisory Commettee for the International Meeting “Interacting binaries: accretion, evolution and outcomes”, Cefalu’ (Palermo), Italy

1997 – Chair of the educational project “Incontri con l’astronomia”

Teaching Duties

2007. 10 hours lectures on “Stellar Evolution” at The University of Rome “La Sapienza”

2007. 20 hours lectures on “Numerical Astrophysics” at the University of Rome “La Sapienza”

2006. Ph.D. in Astronomy, University of Bologna, Italy. The Physics of Core Collapse Supernovae (3 lectures)

II Other

2006. Member of the IAU

2005. Honorary Member of the Maths Department and Centre for Stellar and Planetary Astrophysics at Monash University, Melbourne, AUSTRALIA

III Publications

45 papers on refereed journals of which 8 as first author

15 invited talks at international meetings

50 among conference proceedings and non-refereed journals

Lou You-Qing

Position: Professor

Tsinghua University - Beijing

Period covered: 2002 - present

I Scientific Work:

Scientific collaboration and discussion.

To participate the two-week workshop on supernova and neutron star which is informal but technical, and to present the work ``Rebound Shocks in Stellar Collapse'' and other relevant topics.

Presented a colloquium on ``Formation of Supermassive Black Holes in Galactic Bulges".

II Conferences and educational activities

Work With Students

He participated in the annual interview of potential PhD students of ICRANet

III 2007-2008 List of Publications

\Magnetohydrodynamic Rebound Shocks of Supernovae", Lou Y.-Q.,Wang W. G., *Monthly Notices of the Royal Astronomical Society Letters*, 378, L54-L58, 2007 (astro-ph/0704.0223).

\Self-Similar Dynamics of a Magnetized Polytropic Gas", Wang W. G., Lou Y.-Q., *Astrophysics and Space Science*, 311, 363-400, 2007 (eprint 2007arXiv:0706.3959W).

\Moon shadow by cosmic rays under the in°uence of geomagnetic field and search for antiprotons at multi-TeV energies", Lou Y-Q et al., (The Tibet AS° Collaboration), *Astroparticle Physics*, 28, 137-142, 2007.

\An Imaging and Spectral Study of Ten X-Ray Filaments around the Galactic Center", Lu F.J., Yuan T. T., Lou Y.-Q., *The Astrophysical Journal*, 673, 915-927, 2008

\Self-Similar Dynamics of a Relativistically Hot Gas", Lou Y.-Q., Cao Y., *Monthly Notices of the Royal Astronomical Society*, 384, 611-629, 2008

\New estimation of the spectral index of high-energy cosmic rays as determined by the Compton-Getting anisotropy", Lou Y-Q et al., (The Tibet ASgamma Collaboration), *The Astrophysical Journal Letters*, 672, L53-L56, 2008

\Collisional Interaction Limits Between Dark Matters and Baryons in `Cooling Flow' Clusters", Hu J., Lou Y.-Q., *Monthly Notices of the Royal Astronomical Society*, 384, 814-820, 2008 (arXiv:0711.3555).

\Self-Similar Shocks and Winds in Galaxy Clusters", Lou Y.-Q., Jiang Y. F., Jin C. C., *Monthly Notices of the Royal Astronomical Society*, 386, 835-858, 2008

\Optical and Near-Infrared Observations of the Highly Reddened, Rapidly Expanding Type Ia Supernova 2006X in M100", Lou Y-Q et al., *The Astrophysical Journal*, 675, 626-643, 2008 (arXiv:0708.0140).

\The All-Particle Spectrum of Primary Cosmic Rays in the Wide Energy Range from 1014 to 1017 eV Observed with the Tibet-III Air-Shower Array", Lou Y-Q et al. (The Tibet ASgamma Collaboration), *The Astrophysical Journal*, 678, 1165-1179, 2008

\Dynamic Evolution of a Quasi-Spherical General Polytropic Magnetofluid with Self-Gravity", Wang W. G., Lou Y.-Q., *Astrophysics and Space Science*, 315, 135-156, 2008

\The Energy Spectrum of All-Particle Cosmic Rays around in the Knee Region Observed with the Tibet-III Air-Shower Array", Lou Y-Q et al., *Acvances in Space Research*, 42, 467-472, 2008

\An Updated Search of Steady TeV °¡Ray Point Sources in Northern Hemisphere Using the Tibet Air Shower Array", Lou Y-Q et al., *High Energy Physics and Nuclear Physics*, in press, 2008

\Self-Similar Polytropic Champagne Flows in H II Regions", Hu R.Y., Lou Y.-Q., *Monthly Notices of the Royal Astronomical Society*, 2008 in press

\Supermassive Black Holes in Galactic Bulges", Lou Y.-Q., Jiang Y.F., *Monthly Notices of the Royal Astronomical Society Letters*, 2008, in press

Future plan for observation of cosmic gamma rays in the 100 TeV energy region with the Tibet air shower array: simulation and sensitivity", Lou Y.-Q et al. (The Tibet AS° Collaboration), *30th International Cosmic Ray Conference*, 2007 in press, (2007arXiv0710.2752A).

\Future plan for observation of cosmic gamma rays in the 100 TeV energy region with the Tibet air shower array: physics goal and overview", Lou Y.-Q et al. (The Tibet AS° Collaboration), *30th International Cosmic Ray Conference*, 2007 in press

\Intra-day Optical Variability of BL Lacertae", Bian F. Y.; Zhang Y. H.; Li J. Z.; Shang R. C.; Li T. P.; Lou Y.-Q.; Wang X. F.; Yang Y.; Zhang S. N.; Zhou J. F., in The Central Engine of Active Galactic Nuclei, ASP Conference Series, Vol. 373, Proceedings of the Conference held 16-21 October, 2006 at Xi'an Jiaotong University, Xi'an, China. Edited by Luis C. Ho and Jian-Min Wang, p.187, October 2007.

\Homologous Core Collapse in a Massive Star and Self-Similar Evolution of Rebound Shocks", Cao Y., Lou Y.-Q., in the Proceedings of 2008 Nanjing Gamma-Ray Bursts Conference, eds. Y. F. Huang, Z. G. Dai, B. Zhang, Nanjing University, June 22-27, 2008, JiangSu Province, China, in press

\Rebound Shock Breakouts of Exploding Massive Stars: A MHD Void Model", Hu R.Y., Lou Y.-Q., in the Proceedings of 2008 Nanjing Gamma-Ray Bursts Conference, eds. Y. F. Huang, Z. G. Dai, B. Zhang, Nanjing University, June 22-27, 2008, JiangSu Province, China, in press

\Mass and Mean Velocity Dispersion Relations for Supermassive Black Holes in Galactic Bulges", Lou Y.-Q., Jiang Y. F., in the Proceedings of Science, VII Microquasar Workshop: Microquasars and Beyond, eds. Emrah Kalemci et al., Sabanci University, September 1-5, 2008, Foca, Izmir, Turkey, in press

Mester John

Department:
Supervisor:
W.W. Hansen Experimental Physics Labs
Stanford University
Stanford, CA 94305-4085
mester@relgyro.stanford.edu

Mignard François

I Scientific Work

Research Interests:

Main Fields:

- Space Astrometry
- Space Reference frames

Secondary Fields:

- Solar System Dynamics
- Lunar Laser Ranging
- Gravitational Physics
- Time Metrology

Other

- Chair of the IAU Working Group on the ICRS
- Associate member of the Bureau des Longitudes

- Member of the French National Committee of Scientific Research (Astronomy)
- Chair of the High Scientific Committee of the Observatory of Paris
- Member of the Science Council of the Institut de Mécanique Céleste
- Member of the Science and Administrative Council of the Observatory of Côte d'Azur
- Member of the CNES advisory committee on fundamental physics
- Member of the Scientific Advisory Board of the Astronomisches Rechen-Institut

- Member of the GAIA Science Team (ESA)
- Chair of the GAIA Solar System working group
- Chair of the GAIA Relativity and Reference Frame working group

François Mignard is a member of the Gaia Science Team and chair of the Data Analysis Consortium Committee (DACC). In this latter role he leads the effort to form the Gaia Data Processing Consortium which will be responsible for treating the enormous dataset generated by Gaia. Prior to Gaia François played a key role in the Hipparcos mission as part of the FAST data reduction consortium. He also leads two of the Gaia working groups: the solar system working group, and the relativity and reference frame working group. This reflects his scientific interests which are in the fields of astrometry, reference frames, solar system objects and planetary detection.

Montani Giovanni

Position: Researcher

Period covered: 1991-present

I Scientific Work

Fundamental GR, Early cosmology, Quantum Gravity and Unification Theories.

II Conferences and educational activities:

Conferences and Other External Scientific Work

He works on Plasma Physics at ENEA CR. Frascati

Work With Students

He directs the CGM Group of ICRA-'Sapienza' University of Rome (www.icra.it/cgm).

Diploma thesis supervision

He was supervisor of 21 Degree Thesis and 8 PhD Thesis (someone of them yet in progress)

Other Teaching Duties

He gave Degree Lectures on Physics of Gravitation since 2001 at 'Sapienza' University of Rome. He gave three PhD lectures of the IRAP PhD on 2005-2006-2007.

Work With Postdocs

He is following the research activity of two Postdocs posistion.

III Service activities

Within ICRANet

He belongs to the Faculty of the IRAP PhD. He was in the scientific commetee of the I and II Stueckelberg Workshop.

Nagar Alessandro

Position: post-doctoral researcher

Period covered: one year

I Scientific Work

My field of research is General Relativity, in particular gravitational wave sources. My current research activity is essentially focused on binary black hole coalescence, aiming at bridging the gap between (post-Newtonian) analytic methods and massive numerical simulations on supercomputers. I'm also interested in numerical relativity projects concerned with gravitational wave emission from oscillating neutron stars.

Ohanian Hans

Position: Professor

Rensselear Polytechnic Institute, New York, USA

List of Publications

Books

1. **Physics for Engineers and Scientists**
   di Hans C. Ohanian, John Markert - W. W. Norton & Company - June 2007
2. **Classical Electrodynamics**
   di Hans C. Ohanian - Infinity Science Press - October 2006
3. **Modern Physics**
   di Hans C. Ohanian - Prentice Hall - January 1995
4. **General Physics V2**
   di Hans C. Ohanian - W. W. Norton & Company - January 1994
5. **Gravitation and Spacetime**
   di Hans C. Ohanian, Reno Rufkin - W. W. Norton & Company - November 1994
6. **Principles of Physics**
   di Hans C. Ohanian - W. W. Norton & Company - January 1994
7. **Ohanian's Physics**
   di Van E. Neie - W. W. Norton & Company - August 1989

Principles of Quantum Mechanics
di Hans C. Ohanian - Benjamin-Cummings Publishing Company

Perez Bergliaffa Santiago Esteban

Position: Professor – Department of Theoretical Physics, Institute of Physics, University of the State of Rio de Janeiro, since January 2008.

I Scientific Work

I am interested in alternative theories of gravity, such as f(R) theories, and in the analogies between nonlinear electromagnetism and gravitation. A spinoff of the latter which also attracted my attention is the effective geometry, and the building of analog models of gravity.

II Conferences and educational activities

Conferences and Other External Scientific Work

I have been part of the Organizing Committee of several meetings, such as the *workshop ''Analog Models of General Relativity''*, CBPF, Rio de Janeiro, Brazil, October 2000, the *X, XI, XII, and XIII editions of the Brazilian School of Cosmology and Gravitation*, the *Xth Marcel Grossmann Meeting*, Rio de Janeiro, july 2003.

Work With Students

I am currently working with several students at the graduate level, to complete their Graduation Thesis, in diverse topics in Gravitation and Cosmology.

III Other

I have visited the Pescara center three times, during which I managed to work in topics of my interest. During my last visit (October 2008), I worked on three different projects: (1) the relation between the effective metric and the energy-momentum tensor (in collaboration with E. Goulart – CBPF, Brazil), (2) the evolution of the polarization of the EM field interacting with a pseudoscalar field (in collaboration with J. Salim and M. Novello– CBPF, Brazil), (3) limits on charge loss using white dwarfs (in collaboration with H. Mosquera Cuesta, – CBPF, Brazil).

List of Publications

See
http://www.slac.stanford.edu/spires/find/hep/wwwrawcmd=find+a+bergliaffa&FORMAT=WWW&SEQUENCE=

Starobinsky Alexei A.

Position: Professor

I Scientific Work

1. Scalar-tensor models and baryon acoustic oscillations (with R. Gannouji, D. Polarski and A. Ranquet).
2. Axial inhomogemeities in WMAP's cosmic microwave background maps (with V. Gurzadyan et al.)

II Conferences and educational activities

Conferences and Other External Scientific Work

Organization and participation in the Cosmology workshop "Montpelleier-07",

Montpellier (France), 25-26.10.2007.

Other Teaching Duties

Course of lectures "Dark energy in the Universe"

III 2007-2008 List of Publications

K. A. Bronnikov, A. A. Starobinsky.
No realistic wormholes from ghost-free scalar-tensor phantom dark energy.
Pisma v Zh. Eksp. Teor. Fiz. 85, 3, 2007 (JETP Lett. 85, 1, 2007).

U. Alam, V. Sahni, A. A. Starobinsky.
Exploring the properties of dark energy using type Ia supernovae and other datasets.
J. Cosm. Astropart. Phys. 0702, 011, 2007.

C. Kiefer, I. Lohmar, D. Polarski, A. A. Starobinsky.
Pointer states for primordial fluctuations in inflationary cosmology.
Class. Quant. Grav. 24, 1699, 2007.

E. W. Kolb, A. A. Starobinsky, I. I. Tkachev.
Trans-Planckian wimpzillas.
J. Cosm. Astropart. Phys. 0707, 005, 2007.

A. A. Starobinsky.
Disappearing cosmological constant in f(R) gravity.
Pisma v Zh. Eksp. Teor. Fiz. 86, 183, 2007 (JETP Lett. 86, 157, 2007)

Benini Riccardo

Position: Post Doc at Physics Dept - University of Rome "Sapienza"

Period covered: 02/07/07 - 30/06/09

I Scientific Work

Dynamics of the Universe near the Big-Bang, Homogeneous Models, Quantum Gravity, Canonical Formalism in General Relativity and Statistical Mechanics.

II Conferences and educational activities

• II Stueckelberg Workshop on Relativistic Field Theories, September 3-7, 2007 - Pescara (Italy)

• 7 BritGrav, April 3-4, 2007 Cambridge (UK).

• XI Marcel Grossmann Meeting, July 23-29, 2006, Berlin (Germany).

• I Stueckelberg Workshop on Relativistic Field Theories, June 25 -July 1 2006 Pescara (Italy)

• III Italian-Sino Workshop on Cosmology and Relativistic Astrophysics, July 10-20 2005 Pescara (Italy)

III 2007-2008 List of Publications

Classical and Quantum Features of the Mixmaster Singularity.
G. Montani, M. V. Battisti, R. Benini and G. Imponente, January 2008
International Journal of Modern Physics A 23:2353-2503,2008
e-Print: arXiv:0712.3008.

Classical and quantum aspects of the inhomogeneous mixmaster chaoticity.
Riccardo Benini and Giovanni Montani, Gennaio 2007.
Proceedings of 11th Marcel Grossmann Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theories, Berlin, Germany, July 23-29, 2006.
e-Print: gr-qc/0701094

Covariant description of the inhomogeneous mixmaster chaos.
Riccardo Benini and Giovanni Montani, January 2007.

Proceedings of 11th Marcel Grossmann Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theories, Berlin, Germany, July 23-29, 2006.
e-Print: gr-qc/0701093

Vector field induced chaos in multi-dimensional homogeneous cosmologies.
Riccardo Benini, Alexander A. Kirillov and Giovanni Montani. January 2007.
Proceedings of 11th Marcel Grossmann Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theories, Berlin, Germany, July 23-29, 2006.

Riccardo Benini was born in Rome in 1979.
After obtaining his Master Degree in Physics in 2003 at “Sapienza” University of Rome, he won a fellowship for his PhD at “Alma Mater Studiorum” University of Bologna.
He spent 6 months during 2007 as visitor at the Queen Mary College, University of London working in the group of Prof. M.A.C. Callum.
Now he works as PostDoc at the Physics Deptartment of Sapienza.
He is author of more than 10 pubblications on international journals and partecipated in several international meetings.

Bernardini Maria Grazia

Position: Postdoctoral Research Fellow (Assegnista di Ricerca)

Period covered: April 2007 – present

I Scientific Work

Study of the association between Gamma-Ray Bursts and Type Ib/c Supernovae, with particular interest toward the induced gravitational collapse phenomenon as a possible explanation for this association.

II Conferences and educational activities

Conferences:

D.1) Probing Stellar Populations out to the Distant Universe, Cefalù (Italy), September 14-19, 2008.

D.2) 3rd Stueckelberg Workshop on Relativistic Field Theories, Pescara (Italy), July 8-18, 2008.

D.3) 2008 Nanjing GRB Conference, Nanjing (China), June 23-27, 2008.

D.4) 2nd Kolkata Conference on the Observational Evidence for Black Holes in the Universe, Kolkata (India), February 10-17, 2008.

Work With Postdocs

- Collaboration with the Swift Italian Team (Merate, Italy): statistical analysis of the properties of X-ray flares in the *Swift* catalog

III Services Activities

Member of the Scientific Organizing Committee and Local Organizing Committee for the ICRA Weekly Seminars organized by the Physics Department of the University of Rome “La Sapienza

IV 2007-2008 List of Publications

The Amati relation in the fireshell model, Roberto Guida, Maria Grazia Bernardini, Carlo Luciano Bianco, Letizia Caito, Maria Giovanna Dainotti, Remo Ruffini, A&A Lett 487 (2008) 37-40.

GRB970228 and a class of GRBs with an initial spikelike emission, Maria Grazia Bernardini, Carlo Luciano Bianco, Letizia Caito, Maria Giovanna Dainotti, Roberto Guida, Remo Ruffini, A&A Lett. 474 (2007) 13-17.

GRB060218 and GRBs associated with Supernovae Ib/c, Maria Giovanna Dainotti, Maria Grazia Bernardini, Carlo Luciano Bianco, Letizia Caito, Roberto Guida, Remo Ruffini, A&A Lett. 471 (2007) 29-32.

Maria Grazia Bernardini was born in San Benedetto del Tronto (AP) in 1979. She got her Diploma in the Scientific High School "B. Rosetti" in San Benedetto del Tronto (AP) in 1998. She got her Master Degree with the grade 110/110 cum laude in the Physics Department of the University of Rome "La Sapienza" in 2003. In the same year she was admitted to the International Relativistic Astrophysics Ph.D. Program (IRAP PhD) granted with a fellowship by the six participating institutions: ETH Zurich, Freie Universität Berlin, Observatoire de la Côte d'Azur, Université de Nice - Sophia Antipolis, Università di Roma "La Sapienza", Université de Savoie. She got the PhD degree in 2007.

Currently she is a Post-doctoral Research Fellow (Assegnista di Ricerca) in the Physics Department of the University of Rome "La Sapienza". Her activity is devoted mainly to the study of the association between Gamma-Ray Bursts and Type Ib/c Supernovae, with particular interest toward the induced gravitational collapse phenomenon as a possible explanation for this association.

During this period she also spent a few months in the Osservatorio Astronomico di Brera, Merate (LC) as a visitor of the Italian *Swift* team, performing a statistical analysis of the properties of X-ray flares in the *Swift* catalogue.

She attended to several international meetings concerning Gamma-Ray Bursts, High Energy Astrophysics and Cosmology, where she presented contributed talks and posters, and published Proceedings. She published as well in several research papers in international reviewed journals. She is member of the Scientific Organizing Committee and Local Organizing Committee for the ICRA Weekly Seminars organized by the Physics Department of the University of Rome "La Sapienza". She was also member of the Local Organizing Committee for the "4th Italian-Sino Workshop on Relativistic Astrophysics" held in Pescara (Italy) on July 20-30, 2007.

She is member of the American Physical Society (APS) and of the Italian Physical Society (Società Italiana di Fisica (SIF)).

Cherubini Christian

Position: University Researcher (Fis/02) in Theoretical Physics

Integrated Center for Research

Biomedical Engineering Faculty

University “Campus Bio-medico”

Period covered: 1st November 2007-present

I Scientific Work

- Astrophysics of self-gravitating fluids.
- General relativistic perturbation theory.
- Cosmology.
- Numerical Relativity.
- Acoustic black holes.
- Theoretical biophysics focused on pathological physiology of cardiac and neural tissues and on cancer growth modelling.

II Conferences and educational activities

Conferences and Other External Scientific Work

1999 -Second ICRA Network Workshop "Chaotic Universe" Rome-Pescara (ITALY).

-Third ICRA Network Workshop “Electrodynamics and Magnetohydrodynamics around Black Holes” Rome-Pescara (ITALY).

2000 -9th Marcel Grossmann a Roma (ITALIA).

2001 -Royal Astronomical Society meeting on Cosmological Models, London, (GREAT BRITAIN).

2002 -Wheeler Symposium, Princeton NJ (USA).

2003 -10th Marcel Grossmann in Rio de Janeiro (BRASIL).

-8th Italian-Korean Symposium on Relativistic Astrophysics in Pescara (ITALY).

-Inaugural Meeting of the Center for Gravitational Wave Astronomy, Brownsville, TX (USA)

2004 -Elba Meeting in Honour of Y. Choquet-Bruhat "Analysis, Manifolds And Geometric Structures in Physics", Isola d'Elba (ITALY).

2005 - Russian-Italian Lifshitz-Zeldovich Meeting on Relativistic Astrophysics, Pescara (ITALY)

-9th Italian-Korean Symposium on Relativistic Astrophysics, Seoul (SOUTH KOREA) and Mt.Kumgang (NORTH KOREA).

-COMSOL Italian Multiphysics Meeting, Milan (ITALY).

2006 -Bego scientific Rencontres, Nice (FRANCE).

-Eleventh Marcel Grossmann Meeting on General Relativity, Berlin (GERMANY).

-COMSOL Users Conference, Milan (ITALY).

2007 -Cardiac MEF and Arrhythmias Conference, Oxford (GREAT BRITAIN).

-10th Italian-Korean Symposium on Relativistic Astrophysics in Pescara (ITALY).

-4th Italian-Sino Workshop on Relativistic Astrophysics in Pescara (ITALY).

-APS Meeting in Jacksonville (USA)

2008 - Experimental Chaos Conference in Catania (Italy)

Teaching Duties

2003/04 Assistant "General Physics I"
(Engineering Faculty, University Campus Bio-Medico)

2004/05 Assistant "General Physics I" and "Dynamics of Complex Physiological Systems"
(Engineering Faculty, University Campus Bio-Medico)

2005/06 Assistant "General Physics I" and "Dynamics of Complex Physiological Systems"
(Engineering Faculty, University Campus Bio-Medico)

2006/07 Assistant "General Physics I" and "Dynamics of Complex Physiological Systems"

(Engineering Faculty, University Campus Bio-Medico)

2007/08 Lecturer “Physics” (Alimentation and Human Nutrition Sciences, Medicine Faculty, University Campus Bio-Medico) and Assistant “General Physics I” and “Dynamics of Complex Physiological Systems” (Engineering Faculty, University Campus Bio-Medico)

2008/09 Lecturer “Physics” (Alimentation and Human Nutrition Sciences, Medicine Faculty, University Campus Bio-Medico) and Assistant “General Physics I” and “Dynamics of Complex Physiological Systems” (Engineering Faculty, University Campus Bio-Medico)

Work With Postdocs

The main collaboration of Dr Cherubini with ICRANET postdocs has been with Dr Andrea Geralico, in relation with perturbation theory in General Relativity and quasilocal energy definitions in charged and rotating black hole spacetimes (Dyadotorii). Moreover in this context a collaboration with a doctoral student, Mr Jorge Rueda, has been established.

III Service activities

Within ICRANet

Organization of conference activities in the ICRA center of Pescara (3rd ICRA Network workshop and Sixth Italo-Korean Meeting 1999) as well as in the organization of the 9th Marcel Grossmann in Rome (2000).

Other

Dr Cherubini has a longstanding collaboration with other ICRANET scientists. In particular in collaboration with Dr Donato Bini, Prof. Robert T Jantzen and Prof. Remo Ruffini he has written plenty articles in various areas of General Relativity. In collaboration with Dr Giovanni Montani he has studied some problems of cosmology while with Prof. Simonetta Filippi he is involved in research activities in the fields of Stellar and Galactic Structures and Complex Systems in Nature.

IV 2007-2008 List of Publications

Bini D., Cherubini C. and Jantzen R.T, "The speciality index and the Lifshitz-Khalatnikov Kasner index parametrization" Class.Quantum. Grav. vol. 24, p. 5627 (2007).

Bini D., Cherubini C., Geralico A. and Jantzen R.T, “Circular Motion in Accelerating Black Hole spacetimes" Int.J.Mod.Phys.D 6, p.1813 (2007).

Bini D., Cherubini C., Geralico A. and Jantzen R.T, “Physical frames along circular orbits in stationary axisymmetric spacetimes" Gen. Rel. and Grav., vol 40, p.985 (2008).

Cherubini C., Filippi S., Nardinocchi P. and Teresi L., “An electromechanical model of cardiac tissue: Constitutive issues and electrophysiological effects”, Progress in biophysics and molecular biology, 97: 562 (2008).

D. Bini, Cherubini and S. Filippi, “Effective geometries in self-gravitating polytropes", Phys. Rev. D 78, 064024 (2008).

Bini D., Cherubini C., Geralico A. “Massless field perturbations of the spinning C metric” , J. Math. Phys. 49, 062502 (2008)

Bini D., Cherubini C., Chicone C. and Mashhoon M.“Gravitational induction” , Class.Quantum. Grav. vol. 25, in press (2008).

Bini D., Cherubini C., Geralico A. and Ortolan A., “Dixon’s extended bodies and weak gravitational waves" Gen. Rel. and Grav., in press (2008).

Cherubini C., Geralico A., Rueda J.H. and Ruffini R., “On the “Dyadotorus” of the Kerr-Newman Spacetime” AIP Conf. Proc, Volume 966, pp. 123 (2008).

Cianfrani Francesco

Position: Postdoctoral Research Fellow (Della Riccia grant)

Period covered: January- December 2008

I Scientific Work

Investigation on the semi-classical limit of the Dirac field on a curved space-time;

Extension of Loop Quantum Gravity formulation to a generic Lorentz frame

Study of phenomenological aspects of Kaluza-Klein theories and on the role of spinors in such models.

II Conferences and educational activities

Conferences:

3rd Stueckelberg Workshop on Relativistic Field Theories, Pescara (Italy), July 8-18, 2008.

III 2007-2008 List of Publications

Boost invariance of the gravitational _eld dynamics: quantization without time gauge, F. Cianfrani, G. Montani, Class. Quant. Grav., 24, (2007)4161.

Dixon-Souriau equations from a 5-dimensional spinning particle in a Kaluza-Klein framework, F. Cianfrani, I. Milillo, G. Montani, Phys. Lett. A, 366, (2007)7

Spinning particles in General Relativity, F. Cianfrani, G. Montani, Proceedings of the I Stueckelberg Workshop, Nuovo Cimento B, 122, (2007)173

The Electro-Weak model as low-energy sector of 8-dimensional General Relativity, F. Cianfrani, G. Montani, Proceedings of the I Stueckelberg Workshop, Nuovo Cimento B, 122, (2007)213

E.C.G. Stueckelberg: A Forerunner of modern physics., F. Cianfrani, O.M. Lecian, Proceedings of the I Stueckelberg Workshop, Nuovo Cimento B, 122, (2007)123

The electro-weak model as a phenomenological issue of multidimensions, F. Cianfrani, G. Montani, Proceedings of the XI Marcel Grossmann meeting on Recent Developments in Theoretical and

Experimental General Relativity, Gravitation, and Relativistic Field Theories, Berlin, Germany, 23-29 Jul 2006.

On the geometrization of the electro-magnetic interaction for a spinning particle, F. Cianfrani, I. Milillo, G. Montani, Proceedings of the XI Marcel Grossmann meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theories, Berlin, Germany, 23-29 Jul 2006.

Geometrization of the electro-weak model bosonic component, F. Cianfrani, G. Montani, Int. J. Theor. Phys., 46, (2007)471

Dirac equation in curved space-time versus Papapetrou spinning particles, F. Cianfrani, G. Montani, Europhys. Lett., in press.

Particles and _elds within a uni_cation scheme, F. Cianfrani, V. Lacquaniti, G. Montani, Proceedings of the X Italian-Korean Symposium on Relativistic Astrophysics, held in Pescara (Italy) on June 25-30 2007

The role of the time gauge in the 2nd order formalism, F. Cianfrani, G. Montani, Proceedings of the II Stueckelberg Workshop, Int. J. Mod. Phys. A, 23 (Issue 8), (2008)1214

Curvature-spin coupling from the semi-classical limit of the Dirac equation, F. Cianfrani, G. Montani, Proceedings of the II Stueckelberg Workshop, Int. J. Mod. Phys. A, 23, No: 8, (2008)1274

Elementary particle interaction from a Kaluza-Klein scheme, F. Cianfrani, G. Montani, Proceedings of the II Stueckelberg workshop, Int. J. Mod. Phys. A, 23 No: 8, (2008)1182

Synchronous Quantum Gravity, F. Cianfrani, G. Montani, Proceedings of the II Stueckelberg workshop, Int. J. Mod. Phys. A, 23, No: 8, (2008)1105

E.C.G. Stueckelberg: A Forerunner of modern physics II., F. Cianfrani, O.M. Lecian, Proceedings of the II Stueckelberg Workshop, Int. J. Mod. Phys. A, 23,No: 8, (2008)1112

General Relativity as Classical Limit of Evolutionary Quantum Gravity, G. Montani, F. Cianfrani, Class. Quant. Grav., 25, (2008)065007

Boost symmetry in the Quantum Gravity sector, F. Cianfrani, G. Montani, Proceedings of the \4th Italian-Sino Workshop on Relativistic Astrophysics", AIP Conf. Proc., 966, (2008)249.

Low-energy sector of 8-dimensional General Relativity: Electro-Weak model and neutrino mass, F. Cianfrani, G. Montani, Int. J. Mod. Phys. D, 17, No 5,(2008)785

Francesco Cianfrani was born in Isernia on January 1st 1982. He got a Master Degree in Physics at University of Roma “Sapienza" with a thesis on “Kaluza-Klein theories" under the supervision of Prof. Remo Ruffni and Dr. Giovanni Montani. Then he became an IRAP-PhD student and he focused his scientific research on unification geometrical theories and on quantum gravity. On April 2008 he got the Irap-PhD with the thesis “Classical and quantum fields coupling with geometry viewed in a unification picture". Then he won a post-doctoral fellowship (funded by “Fondazione Angelo Della Riccia" and University of Roma “Sapienza") for spending a period of six months at Queen Mary, University of London. There he participated at the activities of the group on gravitation and cosmology, supervised by Malcom MacCallum. He collaborated with several researchers within the Physics Department of Roma “Sapienza" and scientists of ICRANet. He participated at international meetings and workshops. He is the author of twenty scientific papers published on international journals. He is also a member of ICRA, ICRANet, SIF (Societ Italiana di Fisica) and APS (American Physics Society).

Geralico Andrea

Position: Postdoc

Period covered: October 1st, 2006 – present

I Scientific Work

1. $3+1$ splitting of spacetime: measurement processes and the role of observers in general relativity;
2. test particle dynamics in black hole spacetimes; motion of small extended bodies (neutral or charged test particle endowed with an internal structure described by its spin and quadrupole moment);
3. general relativistic perturbation theory of Einstein-Maxwell systems;
4. exact solutions of Einstein's field equations;
5. gravitational lensing techniques in strong gravitational fields;

II Conferences and educational activities

Conferences and Other External Scientific Work

ICRANet Workshops 2001-2008

Xth Brazilian School of Cosmology and Gravitation (Rio de Janeiro, Brazil, 2002)

Eleventh M. Grossmann Meeting (Berlin, DE, 2006)

APS April Meeting (Jacksonville, US, 2007)

III 2007-2008 List of Publications

Bini D., **Geralico A.**, Ruffini R.,
On the equilibrium of a charged massive particle in the field of a Reissner–Nordström black hole,
Physics Letters A, vol. 360, 515-517, 2007.

Bini D., Cherubini C., **Geralico A.**, Jantzen R. T.,

Circular motion in accelerating black hole spacetimes,
International Journal of Modern Physics D, vol. 16, 1813-1828, 2007.

Bini D., **Geralico A.**, Ruffini R.,
Charged massive particle at rest in the field of a Reissner–Nordström black hole,
Physical Review D, vol. 75, 044012, 2007.

Bini D., de Felice F., **Geralico A.**,
Strains and axial outflows in the field of a rotating black hole,
Physical Review D, vol. 76, 047502, 2007.

Bini D., **Geralico A.**, Ruffini R.,
Charged massive particle at rest in the field of a Reissner–Nordström black hole. *II. Analysis of the field lines and the electric Meissner effect*,
Physical Review D, vol. 77, 064020, 2008.

Bini D., Cherubini C., **Geralico A.**, Jantzen R. T.,
Physical frames along circular orbits in stationary axisymmetric spacetimes,
Gen. Relativ. Gravit., vol. 40, 985-1012, 2008.

Bini D., Fortini P., **Geralico A.**, Ortolan A.,
Quadrupole effects on the motion of extended bodies in Schwarzschild spacetime,
Classical and Quantum Gravity, vol. 25, 035005, 2008.

Bini D., Fortini P., **Geralico A.**, Ortolan A.,
Quadrupole effects on the motion of extended bodies in Kerr spacetime,
Classical and Quantum Gravity, vol. 25, 125007, 2008.

Lattanzi Massimiliano

Position: Postdoctoral fellow (Oxford University, UK)

I Scientific Work

His main research interest are in the areas of Cosmology and Astroparticle Physics. He has been studying the role of neutrinos in cosmological evolution, and the possibility of measuring neutrino-related quantities through cosmological observation.

Together with R. Ruffini and G. Vereschagin, he has obtained a robust upper limit on the cosmological lepton asymmetry from analysis of the cosmic microwave background data (see ML, Ruffini, Vereshchagin, PRD 72, 063003, 2005).

He has also studied, together with J.W.F. Valle, the possibility of relating the problem of dark matter to the issue of the origin of neutrino masses, proposing a new dark matter candidate, the majoron (ML, Valle, PRL 99, 121301, 2007) and studying the perspectives for its indirect detection (Bazzocchi, ML, Riemer-Sørensen, Valle, JCAP 0808:013, 2008).

He is also interested in primordial gravitational waves. The issue of their interaction with neutrinos has been studied in ML & Montani (Mod. Phys. Lett. A 20, 2607, 2005), while at the moment he is working on their interaction with spinning particles (Milillo, ML, Montani, IJMP A23, 1278, 2008).

In the last two years he has been working with J. Silk on the topic of indirect detection dark matter, focusing mainly on the signal produced by the annihilation of supersymmetric particles. In Cumberbatch, ML, Silk (submitted to MNRAS) they have studied the 21cm signal generated by neutralino and light dark matter annihilations.

II Conferences and educational activities

Conferences and Other External Scientific Work

2008

- UniverseNet: the 2nd Network School and Meeting, “Seeking links between fundamental physics and cosmology”, Oxford (UK).
- Neutrino Oscillation Workshop 2008, Otranto (LE), Italy.
- 3rd Stueckelberg Workshop on Relativistic Field Theories, Pescara, Italy

2007

- Royal Astronomical Society Specialist Discussion Meeting: “Statistical challenges in particle astrophysics and cosmology”, London, UK
- Institute of Physics **“**Theta13 half day meeting”, Oxford, UK
- 2nd Meeting of the “Red Nacional Temática de Astroparticulas” (RENATA), Valencia, Spain
- Workshop “The Path to Neutrino Mass”, Aarhus, Denmark.
- 4rd Italian-Sino Workshop on Relativistic Astrophysics: “Astrophysics at z>6”, Pescara, Italy.
- 10th Italian-Korean Symposium on Relativistic Astrophysics, Pescara, Italy.
- XIXèmes Rencontres de Blois: “Matter and Energy in the Universe: from nucleosynthesis to cosmology”, Blois, France.

2006

- 1st Meeting of the “Red Nacional Temática de Astroparticulas” (RENATA), Valencia, Spain
- 11th Marcel Grossmann Meeting on General Relativity, Berlin, Germany
- 3rd Italian-Sino Workshop on Relativistic Astrophysics: “Supernovae, GRBs and Cosmology”, Pescara, Italy.
- International School on Astro-Particle Physics: “Neutrinos in Physics, Astrophysics and Cosmology”, Munich, Germany.

2005

- IRAP Ph.D. School in Pescara, Italy.
- “Albert Einstein Century” International Conference, Paris, France
- 2nd Italian-Sino Workshop on Relativistic Astrophysics: “Probing the Dark Universe”, Pescara, Italy

2004

- “Testing the equivalence principle in space and on ground” meeting, Pescara, Italy.
- 1st Sino-Italian Workshop on Cosmology and Relativistic Astrophysics, Pescara, Italy

2003

- “VIII Italian-Korean Symposium on Relativistic Astrophysics”, Pescara, Italy
- “X Marcel Grossman Meeting on General Relativity”, Rio de Janeiro, Brazil.

2002

- “X Brazilian School of Cosmology and Gravitation”, Rio de Janeiro, Brazil.
- X ICRA Network Workshop on ‘Black Holes, Gravitational Waves and Cosmology’, Roma and Pescara, Italy.
- “Science and Ultimate Reality Symposium” in honour of J. A. Wheeler, Princeton N.J.

2001

- XI ICRA Network Workshop on 'Fermi and Astrophysics', Pescara, Italy.
- **VII Italian-Korean Meeting on Relativistic Astrophysics, Inje University, South Korea.**
- VI ICRA Network Workshop on 'Time Structures in Relativistic Astrophysics', Pescara, Italy.

Work With Students

Teaching Experiences:

2005 *Lecturer*: IRAP Doctorate School, Pescara, Italy

Delivered a lecture on the thermodynamics in the expanding Universe.

2002 *Postgraduate Teaching Assistant*: University of Rome 'La Sapienza'

Physics Laboratory. Supervised lab sessions, graded papers and exams.

2001 – 2005 *Substitute Lecturer*: University of Rome 'La Sapienza'

Delivered several lectures to the advanced general relativity class on the evolution of metric perturbations in a Friedmann Universe.

Work with graduate students

He has been working with graduate students from different institutions, including D. Cumberbatch (Oxford), U. França (Valencia), I. Milillo (Rome and Portsmouth), S. Riemer-Sørensen (Aarhus).

Diploma thesis supervision

He followed as an adjoint supervisor Roberto Guida, now an IRAP PhD graduate, during its diploma thesis work, titled "Fractality and cosmological initial conditions: the role of the velocity field" (graduation date 30/9/04).

III Service activities

Within ICRANet

2005 Research Assistant, ICRANET

Outside ICRANet

2007 – Present Postdoctoral Fellow, Physics Department, Oxford University (UK)

2006 Postdoctoral Fellow, Institute For Particle Physics, Valencia (ES)

IV 2007-2008 List of Publications

Submitted papers

- D. Cumberbatch, M. Lattanzi, J. Silk, submitted to *Mon. Not. Roy. Astron. Soc.* [arxiv:0808.0881] [astro-ph]
Signatures of clumpy dark matter in the global 21 cm background signal

Published papers

- M. Lattanzi, to appear in "Proceedings of the XIX Rencontres de Blois". In press.
Constraints on the cosmological lepton asymmetry: a reappraisal using WMAP third-year data

- M. Lattanzi, to appear in "Proceedings of the 10th Italian-Korean Symposium on Relativistic Astrophysics". In press.
The majoron: a new dark matter candidate

- M. Lattanzi, R. Ruffini, G.V. Vereshchagin, in "Proceedings of the Eleventh Marcel Grossmann Meeting on General Relativity", Eds. H. Kleinert, R.T. Jantzen and R. Ruffini, World Scientific, Singapore (2008).
Constraining the cosmological lepton asymmetry through cosmic microwave background observations

- F. Bazzocchi, M. Lattanzi, S. Riemer-Sorensen, J.W.F. Valle, *J. Cosmol. Astropart. Phys.* **08** (2008) 013 [arxiv:0805.2372] [astro-ph]
X-ray photons from late-decaying majoron dark matter

- I. Milillo, M. Lattanzi, G. Montani, in "Proceedings of the Second Stueckelberg Workshop on Relativistic Field Theories", Eds. F. Cianfrani, G. Montani, R. Ruffini, *Int. J. Mod. Phys. A.* **23** 1278 (2008) [arxiv:0804.0572] [astro-ph]
On the coupling between spinning particles and cosmological gravitational waves

- M. Lattanzi, in "Relativistic Astrophysics: 4th Italian-Sino Workshop", Eds. C.L. Bianco and S.-S. Xue, *AIP Conf. Proc.* **966**, 163 (2007) [arxiv:0802.3155] [astro-ph]
Decaying majoron dark matter and neutrino masses

- M. Lattanzi, J.W.F. Valle, *Phys. Rev. Lett.* **99**, 121301 (2007) [arxiv:0705.2406] [astro-ph]
Decaying warm dark matter and neutrino masses

Rotondo Michael

Position: postdoctoral researcher

Period covered:2008-2010

I Scientific Work

Supercritical electric fields in nuclei and neutron stars

II Conferences and educational activities

Conferences and Other External Scientific Work

APS April Meeting, St.Louis, Missouri (USA), 11-15 April, 2008.

3rd E.C.G. Stueckelberg Workshop, Pescara, Italy, 7-19 July, 2008.

III 2007-2008 List of Publications

Ruffini R., Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Dainotti M.G., Fraschetti F., Guida R., Rotondo M., Vareshchagin G., Vitagliano L. and Xue S.S., in COSMOLOGY AND GRAVITATION: XII th Brazilian School of Cosmology and Gravitation, M. Novello,S.E. Perez Berglia®a (eds.), AIP Conf. Proc., 910,55.

Ruffini R., Rotondo M., Xue S. S., IJMPD, vol.16, no.1, 1-9.

Rotondo M., Popov V., Ru±ni R., Xue S. S., Bull. Am. Phys. Soc. Vol. 52, No.3, 47 (C11-6).

Xue S. S., Popov V., Rotondo M., Ru±ni R., Bull. Am. Phys. Soc. Vol. 52, No.3, 47 (C11-8).

Rotondo M., Ruffini R., in J. of Korean Physical Society: "Proceedings of the 10th Italo-Korean Symposium on Relativistic Astrophysics", S.W. Kim, H. W. Lee, S. P. Kim, R. Ruffini, G. Vereshchagin (eds.) (in press).

Patricelli B., Rotondo M., Ruffini R., in RELATIVISTIC ASTROPHYSICS: 4th Italian-Sino Workshop, C.L. Bianco, S.S. Xue (eds.) , AIP Conf. Proc., 966, 143.
Rotondo M., Ruffini R., Xue S. S., in RELATIVISTIC ASTROPHYSICS: 4th Italian-Sino Workshop, C.L. Bianco, S.S. Xue (eds.) , AIP Conf. Proc., 966, 147.

Ruffini R., Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Dainotti M.G., Fraschetti F., Guida R., Rotondo M., Vareshchagin G., Vitagliano L. in the "Proceedings of the eleventh Marcel Grossmann meeting", R. Janzen, H. Kleinert, R. Ruffini (eds.), World Scientific (Singapore).

Ruffini R., Rotondo M., Xue S. S., in the "Proceedings of the eleventh Marcel Grossmann meeting", R. Janzen, H. Kleinert, R. Ru±ni (eds.), World Scientific (Singapore).

Ruffini R., Rotondo M., Xue S.S., (submitted to Phys.Rev.Lett.)

Ruffini R., Rotondo M., Xue S. S., panel discussion, Bull. Am. Phys. Soc. Vol. 53, No.5, (8HE 00094).

Rotondo M., Ruffini R., Xue S. S., panel discussion, Bull. Am. Phys. Soc.
Vol. 53, No.5, (8HE 00095).

Rueda J., Patricelli B., Rotondo M., Ruffini R., Xue S. S., panel discussion,
Bull. Am. Phys. Soc. Vol. 53, No.5, (8HE 00093).

Patricelli B., Rotondo M., Ruffini R., panel discussion, Bull. Am. Phys. Soc.
Vol. 53, No.5, (8HE 00092).

Michael Rotondo was born in Wuppertal (Germany) in 1971. He received his Master Degree in physics from University of Rome "Sapienza" in 2004. His dissertation titled "Il modello di Thomas-Fermi a temperature ¯nita", was under the guidance of Prof. R.Ru±ni. In 2008 Dr. Rotondo received his Ph.D. in relativistic astrophysics from University of Rome "Sapienza". His dissertation, titled "The role of the Thomas-Fermi approach to compact stars", was under guidance of Prof. R.Ru±ni. Rotondo's research has covered atomic physics, nuclear physics and compact star physics. Dr. Rotondo has been presenting his research activities in international meetings, having the results been published in many conference proceedings and international journals with referees. Now he is a postdoctoral researcher at University of Rome "Sapienza". He is a member of the Italian Physical Society (SIF), European Physical Society (EPS), American Physical Society (APS), Association for Physics Teaching (AIF), International Center for Relativistic Astrophysics Network (ICRANet), International Center for Relativistic Astrophysics (ICRA).

Alekseev Georgy

Position: Leading researcher,
Steklov Mathematical Institute
of the Russian Academy of Sciences
Moscow, Russia

Period covered: 1975 – present time

I Scientific Work

Collaborative work with Prof. V.A.Belinski during 2004 – present time

Visits to Pescara: 26.06.2005 – 03.07.2005
04.05.2006 –30.05.2006
01.06.2007 – 27.06.2007
13.05.2008 – 30.05.2008

Collaborative papers:

1. G.A. Alekseev and V.A. Belinski, ``Superposition of fields of two Reissner -Nordstrom sources'', in Proceedings of the Eleventh Marcel Grossmann Meeting on General Relativity, edited by H. Kleinert, R.T. Jantzen and R. Ruffini, World Scientific, Singapore (2007) (24 pages); arXiv:0710.2515 [gr-qc].

2. G.A. Alekseev and V.A. Belinski, "Schwarzschild black hole hovering in the field of a Reissner-Nordstrom naked singularity", Il Nuovo Cimento, **122 B**, N.2 (2007) (5 pages)

3. G.A. Alekseev and V.A. Belinski, ``Equilibrium configurations of two charged masses in General Relativity'', Phys. Rev. **D 76**, 021501(R) (2007); arXiv:0706.1981v1 [gr-qc].

II Conferences and educational activities

The conferences:

1. The Russian-Italian Lifshitz-Zeldovich Meeting on Relativistic Astrophysics (27.06.2005 – 03.07.2005)

2. Eleventh Marcel Grossmann Meeting (Berlin, July 23 - 29, 2006)

(ChairPerson of the GT6 section)

3. 10th Italian-Korean Symposium on *Relativistic Astrophysics (*June 25 - 30 2007, Pescara)

III 2007-2008 List of Publications

G.A. Alekseev, ``Monodromy transform approach in the theory of integrable reductions of Einstein's field equations and some applications'', submitted to Proceedings of the Eleventh Marcel Grossmann Meeting on General Relativity, edited by H. Kleinert, R.T. Jantzen and R. Ruffini, World Scientific, Singapore (2007) (3 pages).

G.A. Alekseev and V.A. Belinski, ``Superposition of fields of two Reissner -Nordstrom sources'', submitted to Proceedings of the Eleventh Marcel Grossmann Meeting on General Relativity, edited by H. Kleinert, R.T. Jantzen and R. Ruffini, World Scientific, Singapore (2007) (24 pages)
G.A. Alekseev and V.A. Belinski, ``Equilibrium configurations of two charged masses in General Relativity'', Phys. Rev. D 76, 021501(R) (2007); arXiv:0706.1981v1 [gr-qc].

G.A. Alekseev and V.A. Belinski, "Schwarzschild black hole hovering in the field of a Reissner-Nordstr\"om naked singularity", Il Nuovo Cimento, 122 B, N.2 (2007) (5 pages).

G.A. Alekseev, ``Integrability of the symmetry reduced bosonic dynamics and soliton generating transformations in the low energy heterotic string effective theory" , arXiv:0811.1358v1 [hep-th].

Cirilo-Lombardo Diego Julio

Position Phd Student
Bogoliubov Lab. of Theoretical Ph. Dubna

Period: 2004- present

I Conferences and educational activities

Conferences and Other External Scientific Work

Rotated Charged Black Holes in Einstein-Born-Infeld theories, Diego Julio Cirilo Lombardo. Presented in: A.I. Akhiezer Memorial Conference: "QED and Statistical Physics". Kharkov (Ucrania), Oct. of 2001.

The Simple Solution of Relativistic Wave Equations for Charged particles in Constant Electric Field and Pair Production, Diego Julio Cirilo Lombardo and Yu. P. Stepanovsky. Presented in A.I. Akhiezer Memorial Conference: "QED and Statistical Physics". Kharkov (Ucrania), Oct. of 2001.

Talk given as a Seminar in BLTP-Sector 5 (Gauge Theory and Gravitation, VN Pervushin-N Chernikov) : "*Static and Rotating Black Holes in EBI Theories*". Diego Julio Cirilo-Lombardo, Nov 2003

On the quantization of the superparticle action in proper time and the Lorentz group SO(3,1),Diego Julio Cirilo-Lombardo (Talk). Presented in the 8th International Conference: Path Integrals: from quantum information to cosmology. Prague, June 6-10, 2005.

Non-abelian Born-Infeld action, geometry and supersymmetry,Diego Julio Cirilo-Lombardo: talk in the Workshop on Gravitational Aspects of Strings and Branes: Gravity, Strings and Gauge Theories, Santiago de Compostela (Spain, 8-11 Feb.2006, Org. By A. Ramallo, J. Mas).

Quantum field propagator for extended-objects in the microcanonical ensemble and the S-matrix formulation, Diego Julio Cirilo-Lombardo, Talk in the Seminar Non-perturbative Methods in QFT (Leaders: S. Gerasimov, E. Kuraev, A. Dorokhov, JINR, 22 Feb. 2006).

Non-abelian Born-Infeld action, geometry and supersymmetry, Diego Julio Cirilo-Lombardo, Talk in the Seminar Symmetries and Integrable Systems (Leader: A. Sissakian, JINR, 30 June 2006).

On the Riemannian superspaces, the symmetry group and dimensionality, talk in the workshop Symmetries and Spin, Charles University, Prague (26-30 July 2006).

Seminars given at the *Physics Department of the Zaragoza University*: on topological theories, d-branes, F-theory and related
topics. Scientific supervisors: Profs.L. Boya and M. Asorey (March and April 2007).

The geometrical properties of the Riemannian superspaces, exact solutions and the mechanism of localization, presented in The International Conference in Quantum Symmetries and Integrable Systems (Prague,July 2007)

Seminars given at the *Department of theoretical physics of the Centro Brasileiro de Pesquisas fisicas (CBPF)*: On supersymmetrical models, d- branes and Born-Infeld theory. Scientific supervisor Jose A. Helayel-Neto (August 2007).

Quantum particle on a Möbius strip, coherent states and projection operators, Presented in: Path Integrals- New Trends and Perspectives International Conference - September 23 -28, 2007 (MPIPKS Dresden, Germany)

On the non-abelian extensions of the d-branes actions, presented at the Physics Department of the National Commission of Atomic Energy (Comision Nacional de Energia Atomica-Dec. 4-7, Buenos Aires Argentina).

Seminar given at the *International Center of Relativity and Astrophysics (ICRA-Net)*: Monopole Solutions and Regularity Conditions in Einstein-Born-Infeld Theories. Scientific supervisor: Remo Ruffini (June 8-23, 2008, Pescara, Italy).

Other participation in Congresses and workshops

Guest scientist to THE INTERNATIONAL SCHOOL OF ASTROPHYSICS "DANIEL CHALLONGE": 8^{th} course: Phase Transitions in the Early Universe: Theory and Observations. Director: Norma Sanchez, H.de Vega, I. Khalatnikov (Erice, Dec. of 2000). NATO school.

Guest scientist to THE INTERNATIONAL SCHOOL OF COSMOLOGY AND GRAVITATION: «Advances in the Interplay between Classical and Quantum Gravity: Theory and Observations" Director: V. de Sabbata, A. Zhelthukhin (Erice, May of 2001). NATO school

Guest Scientist to: THE INTERNATIONAL SCHOOL OF ASTROPHYSICS "DANIEL CHALLONGE": 9^{th} course: the Early Universe and the Cosmic Microwave Background: Theory and Observations. Directors: Norma Sanchez, Yu. Pariskij (Palermo-Sicily, September 2002).

Guest scientist to THE INTERNATIONAL SCHOOL OF COSMOLOGY AND GRAVITATION: 18th Course: «The Gravitational Constant: Generalized Gravitational Theories and Experiments" Director: V. de Sabbata-P.G. Bergmann (Erice, May of 2003). NATO school.

Scientific Secretary in: THE INTERNATIONAL SCHOOL OF ASTROPHYSICS "DANIEL CHALLONGE": 9th Paris Cosmology Colloquium: Physics of the Early Universe Confront Observations. Directors: Norma Sanchez, Hector de Vega (30 June, 1 and 2 of July 2005).

Scientific Secretary in: THE INTERNATIONAL SCHOOL OF ASTROPHYSICS "DANIEL CHALLONGE": 9th course: the Early Universe and the Cosmic Microwave Background: Theory and Observations. Directors: Norma Sanchez, Yu. Pariskij (Palermo-Sicily, September 2002).

Guest Scientist to The Zuoz School in Supersymmetry (Zuoz-Switzerland, 15-21 Aug. 2004).

Guest Scientist to the: Fourth Meeting on Constrained Dynamics and Quantum Gravity, Cala Gonone (Sardinia, Italy, Sept.12-16, 2005, Org. M. Cavaglia).

Guest Scientist to the: Particles and Fields: Classical and Quantum, Conference in Honor of George Sudarshan at Jaca (HU). Spain. Universidad de Zaragoza, September 18-21 2006 (Org. J.L. Boya).

Guest Scientist to the International Workshop: Classical and Quantum Integrable Systems (Dubna, Russia, 22-25 January 2007).

Guest Scientist to The International Workshop: The logarithmic conformal field theories and statistical mechanics (Dubna, Russia, 4-8 June 2007).

Guest Scientist to the International School in Integrable Systems, Prague 2007

Guest Scientist to the International Conference in Quantum Symmetries and Integrable Systems (Prague, July 2007)

Guest Scientist to the International Workshop: Supersymmetries and Quantum Symmetries QSS07 (Dubna, Russia, 30 July-4 August 2007).

Other Teaching Duties

Assistantship of Laboratory 2 (biologists and geologists). Period 2001. Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

Asistantship of: Theory of electronics circuits 1, Chemistry (general and inorganic) and Stability of structures 2. Period 1994-96. Facultad de Ingeniería, Universidad de Moron.

Asistantship of : Stability and aeronautical structures 3, Termodynamics 3. Period 1996. Facultad de Ingeniería Aeronáutica y Espacial, Universidad Tecnológica Nacional (Regional Oeste).

2007-2008 List of Publications

On the Lorentz group SO(3,1), geometrical supersymmetric action for particles and square root operators II: Squeezed States and Relativistic Wave Equations, Diego Julio Cirilo-Lombardo, Phys. Part. Nucl. Lett. v. 4, N**3**(138), (2007)

Diego Julio Cirilo-Lombardo; *On the mathematical structure and hidden symmetries of the Born-Infeld field equations*, Journal of Math. Phys. **48**, 032301 (2007).

Diego Julio Cirilo-Lombardo; *Non-compact groups, Coherent States, Relativistic Wave equations and the Harmonic Oscillator.* Foundations of Physics **37**: 919-950 (2007).

Diego Julio Cirilo-Lombardo; *Physical coordinates as dynamic variables for the superparticle from its geometrical action,* Romanian Reports in Physics, Vol. 59, No. 4, P. 1111–1117, 2007.

Diego Julio Cirilo-Lombardo and N.G. Sanchez; *Microcanonical model for a gas of evaporating black holes and strings, scattering amplitudes and mass spectrum*, International Journal of Modern Physics **A**, Vol. 23, Issue 20, 975-100 (2008).

Diego Julio Cirilo-Lombardo; The geometrical properties of Riemannian superspaces, exact solutions and the mechanism of localization. Physics Letters **B** 661, 186-191 (2008).

Diego Julio Cirilo-Lombardo; Riemannian superspaces, exact solutions and the geometrical meaning of the field localization. To appear in: Int. J. Theor. Physics, 2008.

Diego Julio Cirilo-Lombardo and N.G. Sanchez; *Microcanonical model for a gas of evaporating black holes and strings, scattering amplitudes and mass spectrum*, Aug. 2007. e-Print Archive: **hep-th/07080393**

Folomeev Vladimir

Position: Senior Staff Scientist
Institute of Physics of the National
Academy of Sciences of the Kyrgyz Republic

Period covered: 2000-2008

I Scientific Work

Investigations in the field of cosmology, gravitation and relativistic astrophysics. The main works are devoted to consideration of models of the early and present Universe: quantum cosmology, inflation in the early and present Universe, multidimensional models of the Universe, compact astrophysical objects, regular solutions with scalar fields and so on.

II Conferences and educational activities

Conferences and Other External Scientific Work

- Summer school in Cosmology, International Centre for Theoretical Physics, Trieste, Italy, July 2008.
- The seminar in the California State University, Fresno, USA, April 2008.
- The seminar in the International Center for Relativistic Astrophysics, Pescara, Italy, March 2008.
- Eleventh Marcel Grossmann Meeting on General Relativity, Berlin, Germany, July 2006.
- The International Conference on gravitation, cosmology and astrophysics, Moscow, Russia, March 2006.
- The seminar in the International Center for Relativistic Astrophysics, Pescara, Italy, Sept. 2005.
- The International Conference devoted to the 70^{th} anniversary of academician R. Sagdeev, Bishkek, Kyrgyz Republic, Feb. 2003.
- The seminar in the Department of Theoretical Physics in the Freie University, Berlin, Germany, Sept. 2001.
- The International Conference devoted to the 80^{th} anniversary of academician A. Sakharov, Bishkek, Kyrgyz Republic, May 2001.
- The All-Moscow Astrophysics Seminar, Sternberg Astronomical Institute, Moscow, Russia, Feb. 2000.
- The All-Moscow Astrophysics Seminar, Sternberg Astronomical Institute, Moscow, Russia, Dec. 1999.
- The International Conference devoted to the 120^{th} anniversary of A. Einstein, Bishkek, Kyrgyz Republic, Sept. 1999.
- The 10^{th} Russian Gravitational Conference, Vladimir, Russia, June 1999.

III 2007-2008 List of Publications

Cosmic string with two interacting scalar ¯elds, V. Dzhunushaliev, V. Folomeev, K. Myrzakulov, R. Myrzakulov, *Mod. Phys. Lett.*, A22, 407 Bianchi type I model with two interacting scalar ¯elds, V. Folomeev, *Int. J. Mod. Phys.*, D16, 1845

Thick branes from scalar ¯elds, V. Dzhunushaliev, V. Folomeev, D. Singleton, S. Aguilar-Rudametkin, *Phys. Rev.*, D77:044006, 8 p.

Thick brane in 7D and 8D spacetimes, V. Dzhunushaliev, V. Folomeev, K. Myrzakulov, R. Myrzakulov, *General Relat. and Grav.*, DOI 10.1007/s10714-008-0659-8, 8 p.

Viscous dark fluid, V. Folomeev, V. Gurovich, *Phys. Lett.*, B661, 75

4D static solutions with interacting phantom ¯elds, V. Dzhunushaliev, V. Folomeev, e-Print: 0711.2840 [gr-qc], Accepted for publication in *Int. J. Mod. Phys. D.*

Bouncing off and inflation of the Universe with phantom ¯elds, V.D. Dzhunushaliev, V.N. Folomeev, K. Myrzakulov, R. Myrzakulov, A. Temirova, *Herald of the Kyrgyz-Russian Slavic University*, 7, No. 8, 3

Phantom thick brane in 5D bulk, V. Dzhunushaliev, V. Folomeev, S. Myrzakul, R. Myrzakulov, *Mod. Phys. Lett.*, A23, No. 33, 2811

Non-singular solutions to Einstein-Klein-Gordon equations with a phantom scalar ¯eld, V. Dzhunushaliev, V. Folomeev, R. Myrzakulov, D. Singleton, *Jour. High Energy Phys.*, 0807:094, 14 p.

Star with phantom scalar ¯eld, V. Folomeev, *Proceedings of the Institutes of Higher Education*, No. 3-4, 28

Spherical relativistic detonation of scalar stars, V. Folomeev, *Proceedings of the Institutes of Higher Education*, No. 3-4, 186

Dark energy: conformal anomaly and bulk viscosity, V. Folomeev, *Herald of the Kyrgyz-Russian Slavic University*, 8, No. 10, 12

Gamma-ray bursts as relativistic detonation of scalar ¯elds, V. Folomeev, *Proceedings of the National Academy of Science*, No. 3, 23

Vladimir Folomeev was born in Bishkek (Kyrgyzstan) in 1974. He received his PhD diploma of physics from the All-Russian Research Institute of Metrological Service (Moscow, Russia) in 2000. After that he started to work in the Institute of Physics of the National Academy of Science of the Kyrgyz Republic, and he works there till now.

The ¯eld of his scienti¯c interests lies in the range from investigations of models of low-temperature plasma in terrestrial conditions and in the Universe to researches in the field of cosmology, gravitation and relativistic astrophysics. His main works are devoted to consideration of models of the early and present Universe: quantum cosmology, in°ation in the early and present Universe, multidimensional models of the Universe, compact astrophysical objects, regular solutions with scalar ¯elds and so on. He has published more than 30 scienti¯c papers and 1 book.

He got two research fellowships from the German Academic Exchange Service (DAAD) and a grant from the California State University (Fresno, USA). He also was a research worker in two projects of the International Scienti¯c & Technical Center (Moscow, Russia). He was a member of organizing committees of several international conferences which have been held in Kyrgyzstan.

Fraschetti Federico

Position: Postdoctoral fellow (CEA Saclay, DSM/DAPNIA/Service d'Astrophysique)

Period covered: 2006- present

I Scientific Work

My scientific activity is focused on Theoretical Astrophysics. I have wide interests also into plasma physics and black hole physics.

In the past I dealt with a theoretical model for the Gamma-Ray Bursts (GRBs), developing a hydrodynamics lagrangian code to study the temporal structure of the light curves. I arrived to an interpretation of the BATSE distribution of duration of GRBs. Under the assumption of a thermal spectrum in the comoving frame of the expanding shell, I produced theoretical predictions on the time-resolved and time-integrated spectra either in the so-called prompt emission and in the afterglow phase.

At present I work on an 3D Adaptive Mesh Refinement hydro code based on a second-order Godunov method, in order to study the evolution of Supernova Remnant since the onset of the Chevalier self-similar phase.

I'm working also on the basical physical processes of the acceleration of particles behind the shock of the Supernova remnant and on the intriguing problem of the Ultra High Energy Cosmic Rays.

My interests extends to Black Hole Physics as well.

II Conferences and educational activities

ATTENDED CONFERENCES AND WORKSHOPS

2007 August 6-17; "From Massive Stars to Supernova Remnants", Lorentz Center, University of Leiden (Holland).

2007 May 17-18; "Physics of the Universe Confronts Observations", Ecole Internationale d'Astrophysique Daniel Chalonge, Rencontre at the Colegio de Espana, Paris.

2006 November 13-15; "XMM-Newton SSC Consortium Meeting", AIP, Potsdam, (Germany).

2006 July 23-29; "XI Marcel Grossmann Meeting", in Berlin (Germany).

2006 May 5-9; "SWIFT and GRBs: Unveiling the relativistic Universe", in Venezia (Italy).

2005 May 2-7; "Congresso annuale della SAIt", in Catania (Italy).

2005 February 2; "5th AGILE Workshop on the Galactic Center and other Cosmic Accelerators" in Rome.

2004 October 18-22; "Fourth Rome Workshop on Gamma-Ray Bursts in the Afterglow Era" in Rome.

2004 September 20-23; "Testing the Equivalence Principle in Space and on Ground" in Pescara (Italy).

2004 July 07-17; "The 1st Italian-Sino Workshop and the XIV ICRANet Workshop on Cosmology and Relativistic Astrophysics" in Rome and Pescara (Italy).

2004 September 01-06; "XII Seminario Nazionale di Fisica Teorica" in Parma (Italy).

2003 July 20-26; "X Marcel Grossmann Meeting" in Rio de Janeiro (Brasil).

2002 September 17-20; "Third Rome Workshop on Gamma-Ray Bursts in the Afterglow Era" in Rome.

2002 July 15-20; "Black Holes, Gravitational Waves and Cosmology, a meeting in celebration of the 60th birthday of Remo Ruffini", Rome/Pescara.

2002 March 15-18; "Science \& Ultimate Reality: Celebrating the Vision of John Archibald Wheeler and Taking It Forward into a New Century of Discovery", Princeton University, Princeton, New Jersey (USA).

2001 July 23-28, ; "Seventh Korean-Italian meeting on Relativistic Astrophysics", Inje University (South Korea).

2001 July 02-13; "ICRA Network Workshop VI, Time structures in relativistic astrophysics", ICRA center of Pescara.

2000 August 02-08; "Marcel Grossmann Meeting IX" in University of Rome "La Sapienza".

1998 November 16, 1998; "Bruno Touschek Celebration Day" in "Laboratori Nazionali" in Frascati (Rome).

1998 October 05-10; "3K Cosmology Conference" in University of Rome "La Sapienza".

INVITED TALKS, SEMINARS AND POSTER PRESENTATIONS

Invited Talks

2007 May 17-18; "Theoretical model for the Afterglow of Gamma-Ray Bursts", Ecole Internationale d'Astrophysique Daniel Chalonge, Rencontre at the Colegio de Espana, Paris.

2007 May 25; "Afterglow of Gamma-Ray Bursts", CEA Saclay, DSM/DAPNIA/Service d'Astrophysique, Gif-sur-Yvette.

2007 February 13; "Afterglow of Gamma-Ray Bursts", University of Orleans.

2005 May 2-7; "Theoretical model for Gamma-Ray Bursts", Congresso annuale della SAIt, Catania (Italy).

2005 January 25; "Afterglow of Gamma-Ray Bursts", Osservatorio Astronomico di Brera, Merate (LC).

2003 November 24; "On the spectrum of the Afterglow of Gamma-Ray Bursts", Max-Planck-Institut fuer Astrophysik, Garching.

Contributes Talks

2006 July 23-29; "XI Marcel Grossmann Meeting", Berlin.

2004 September 20-23; "Testing the Equivalence Principle in Space and on Ground" in Pescara (Italy).

2004 July 07-17; "The 1st Italian-Sino Workshop and the XIV ICRANet Workshop on Cosmology and Relativistic Astrophysics" in Rome and Pescara (Italy).

2003 July 20-26; "X Marcel Grossmann Meeting" in Rio de Janeiro.

2002 July 15-20; "Black Holes, Gravitational Waves and Cosmology, a meeting in celebration of the 60th birthday of Remo Ruffini", Rome/Pescara.

2001 July 23-28, ; "Seventh Korean-Italian meeting on Relativistic Astrophysics", Inje University (South Korea).

2001 July 02-13; "ICRA Network Workshop VI, Time structures in relativistic astrophysics", ICRA center of Pescara.

Teaching Duties

AY 2006-2007, I semester, TP (Optique electrocinétique), Département de Physique, Université de Versailles, Paris, France.

AY 2002-2005; Supervision of Degree thesis within group at Department of Physics in University “La Sapienza” of Rome.

AY 1999-2000, II semester, Optics-electromagnetism, Department of Physics in University “La Sapienza” of Rome.

AY 1998-1999, II semester, Mechanics-electromagnetism, Department of Physics in University “La Sapienza” of Rome.

III Service activities

Within ICRANet

2006 Research Assistant

2004, September 20-23; Member of Local Organizing Committee of the XV ICRANet Workshop on "Testing the Equivalence Principle in Space and on Ground", Pescara.

2002, July 15-20; Member of Local Organizing Committee of the X ICRANet Workshop on "Black Holes, Gravitational Waves and Cosmology; a meeting in celebration of the 60th birthday of Remo Ruffini", University of Rome "La Sapienza".

2001, October 3-7; Member of Local Organizing Committee of the IX ICRANet Workshop on "Fermi and Astrophysics", University of Rome "La Sapienza" and Pescara.

2001, July 23-28; Member of Organizing Committee of the VII ICRANet Workshop on "Relativistic Astrophysics", Inje University (South Korea).

2001, July 2-14; Member of Local Organizing Committee of the VI ICRANet Workshop on "Time structures in Relativistic Astrophysics", Pescara.

Outside ICRANet

2006 June -present Post Doc at CEA Saclay, DSM/DAPNIA/Service d'Astrophysique.

2005 January-July. Fellowship by Brera Astronomical Observatory (Merate, Italy) within Swift mission for GRB.

Gurovich Viktor Ts.

Position: Senior Research Scientist
Department of Physics, Technion, Haifa, Israel

Period covered: 2002-present

I Scientific Work

Viktor Ts. Gurovich received the M.Sc. degree in physics and mathematics from the Kyrgyz University, Kirgizstan FSSU in 1961, the Ph.D. degree (1966) and the Doctor degree (1982) in physics and mathematics from the Moscow State University. From 1968 to 1971 he was with the Novosibirsk Physics Institute, Russia and from 1971 to 2002 he was with the Kyrgyz Academy of Science, Kirgizstan. Since 2002 has been with the Department of Physics, Technion, Haifa, Israel where is currently a Senior Research Scientist. His main research interests are related with cosmology, non-linear gravitation, plasma physics and relativistic gas.

II Conferences and educational activities

Conferences and Other External Scientific Work

Viktor Ts. Gurovich has been participating in numerous conferences in Kyrgyzstan, Russia, Israel, Germany, and Italy.

Work With Students

Over a long period of time Viktor Ts. Gurovich was a full professor at the Department of Physics, the Kyrgyz National University, Bishkek, Kyrgyzstan, where he has taught many general and special courses for undergraduate and graduate students.

Diploma thesis supervision

Viktor Ts. Gurovich has been supervising for the 10 Ph.D. diploma theses and numerous M. Sc. diploma theses.

Other Teaching Duties

Viktor Ts. Gurovich has managed scientific seminars at the Department of Physics, the Kyrgyz National University, Bishkek, Kyrgyzstan.

III Service activities

Within ICRANet

Repeated participation in workshops and meetings of ICRANet.
Foundation and management of ICRANet branch in the Kyrgyz Republic.
Outside ICRANet

Head of the Plasma Physics Laboratory at Kyrgyz Academy of Science.

IV 2007-2008 List of Publications

Grinenko, A; Gurovich, VT; Krasik, YE,Implosion in water medium and its possible application for the inertial confinement fusion target ignition, *Physics of plasmas* **14 (1)** 012701

Krasik, YE; Gleizer, S; Gurovich, V, et al, Plasma window characterization. *Journal of applied physics* **101 (5)** 053305

Gurovich, VT; Grinenko, A; Krasik, YE. Semianalytical solution of the problem of converging shock waves. *Phys Rev Lett* **99 (12)** 124503

Fedotov, A, Sheftman, D; Gurovich, VT, et al. Spectroscopic research of underwater electrical wire explosion. *Physics of plasmas* **15** (8) 082704

Yarmolich, D; Vekselman, V; Gurovich, VT, et al, Energetic particle and photon emission during dense plasma formation at the ferroelectric surface. *PLASMA SOURCES SCIENCE & TECHNOLOGY* **17 (3)** 035002

Krasik, YE; Grinenko, A; Sayapin, A, et al, Underwater electrical wire explosion and its applications, *IEEE TRANSACTIONS ON PLASMA SCIENCE* **36 (2)** 423

Gleizer, JZ; Hadas, Y; Gurovich, VT, et al, High-current electron beam generation in a diode with a multicapillary dielectric cathode. *Journal of applied physics* **103 (4)** 043302

Yarmolich, D; Vekselman, V; Gurovich, VT, et al, Coulomb microexplosions of ferroelectric ceramics. *Phys Rev Lett* **100 (7)** 075004 Folomeev, V and Gurovich, V. Viscous dark fluid, *Phys Lett B* **661 (2-3)**

Viktor Ts. Gurovich received the M.Sc. degree in physics and mathematics from the Kyrgyz University, Kyrgyzstan, USSR in 1961. In 1966 he has been earned one of the world first Ph.D. Degree on relativistic astrophysics.

This thesis reviewed by Academician Y.B. Zeldovich includes some widely used results, particularly the problem black hole weak rotation cited in classical Landau and Lifshitz `` Classical Field Theory'' textbook.

Another cycle of Victor Ts. Gurovich works is related to the pioneer researches of Academician A. D. Saharov and the school of Academician V.L. Ginzburg on the vacuum polarization in strongly curved space-time.

On this basis, in 1969, V.Ts. Gurovich built the first cosmological Friedman model without singularity. The model included the basic properties Early Universe Theory that was built in the future (1970-2000). For these achievements and results obtained in cooperation with A.

Starobinsky, he has been honored with Doctor Degree (the highest academic degree in the soviet scientific hierarchy) in 1982. It was the first Doctor Degree on Early Universe in USSR.

From 1968 to 1971 he worked as scientific researcher at plasma laboratory at the Novosibirsk Institute of Nuclear Physics of the Siberian Division of the Academy of Science of the USSR. From 1971 to 2002 he worked as Scientific researcher, Senior scientific researcher and Head of Laboratory of Plasma theory at Kyrgyz Academy of Science, Bishkek, Kyrgyzstan. There he created a physics school on gravity, cosmology and plasma physics. Since 2002 has been with the Department of Physics, Technion, Haifa, Israel, where is currently a Senior Research Scientist. His main research interests are related with**:** Cosmology and astrophysics, non-linear gravitation, quantum effects near

cosmological singularities; Plasma physics, the theory of electric arc, propagation of

electromagnetic waves through plasma; Relativistic gas mechanics; Impulse propagation along the nerve; Explosion physics.

Mosquera Cuesta Herman Julio

Position: Assistant Professor ICRA-BR

Period covered: 30 September – 1 December 2008

I Scientific Work

Papers published in 2007

1) Quark matter magnetization: Phase transition or upper limit of magnetic field?
A. Perez Martinez, H. Perez Rojas, H. J. Mosquera Cuesta, M. Orsaria
Published in Int. J. Mod. Phys. D16:255-260 (2007)

2) Is the Bardeen-Petterson effect responsible for the warping and precession in NGC 4258?
Anderson Caproni, Zulema Abraham, Mario Livio, Herman J. Mosquera Cuesta
Published in Mon. Not. Roy. Astron. Soc. 379:135-142 (2007)

3) Nonlinear electrodynamics and the Pioneer 10/11 spacecraft anomaly
Jean Paul Mbelek, Herman J. Mosquera Cuesta, M. Novello, Jose M. Salim
Published in Europhys. Lett. 77:19001 (2007)

4) General relativistic effects of strong magnetic fields on the gravitational force: A Driving engine for bursts of gamma rays in SGRs?
Manuel Malheiro, Subharthi Ray, Herman J. Mosquera Cuesta, Jishnu Dey
Published in Int. J. Mod. Phys. D16:489-499 (2007)

5) Natal pulsar kicks from back reaction of gravitational waves
Herman J. Mosquera Cuesta
Published in Journal of Magnetohydrodynamics, Plasma & Space Research, Vol 12, Number 1 / 2, 97-110 (2007)

Papers published in 2008

1) Confronting the Hubble Diagram of Gamma-Ray Bursts with Cardassian Cosmology
Herman J. Mosquera Cuesta, Habib Dumet M., Cristina Furlanetto
Published in JCAP 0807:004 (2008)

2) Hubble Diagram of Gamma-Rays Bursts calibrated with Gurzadyan-Xue Cosmology
H. J. Mosquera Cuesta, H. Dumet M., C. Furlanetto, H. G. Khachatryan, S. Mirzoyan, G. Yegorian
Published in Astronomy and Astrophysics 487, 47-54 (2008)

3) Nonlinear electrodynamics and the variation of the fine structure constant
Jean Paul Mbelek, Herman J. Mosquera Cuesta

Published in Mon. Not. Roy. Ast. Soc. 389, 199-204 (2008)

4) Neutrino mass spectrum from gravitational waves generated by double neutrino spin-flip in supernovae
Herman J. Mosquera Cuesta, Gaetano Lambiase
e-Print: arXiv:0809.0526 [astro-ph]
Published in Astrophysical Journal 689, 371 (2008)

5) Anisotropic Pressures in Very Dense Magnetized Matter
A. Perez Martinez, H. Perez Rojas, H. J. Mosquera Cuesta
e-Print: arXiv:0711.0975 [astro-ph]
Published Int. Journ. Mod. Phys. D 17, No. 11, 1-17 (2008)

6) Neutrino mass spectrum from gravitational waves generated by spin-gravity coupling
Herman J. Mosquera Cuesta, Gaetano Lambiase
To Be Published by Int. Journ. Mod. Phys. D (2008)

7) Gravitational wave signal of the short rise fling of galactic run away pulsars
Herman J. Mosquera Cuesta, Carlos A. Bonilla Quintero
e-Print: arXiv:0711.3046 [astro-ph]
Published in Journal of Cosmology and Astroparticle Physics (08/ ... November/2008)

II Conferences and educational activities

Conferences and Other External Scientific Work:

1) First Cesare Lattes Meeting on GRBs Black Holes and Supernovae
ICRaNet, Rio de Janeiro, February 26 - March 03, 2007

2) Xth Italo-Korean Meeting on Relativistics Astrophysics, Black Holes, Gamma-Ray Bursts and Cosmology
ICRANet, June 25-30, 2007 - Pescara, Italia

3) 4th Italian-Sino Workshop on Relativistic Astrophysics
ICRA-Net, July 20-30, 2007 - Pescara, Italia

4) International Workshop on Relativistic Astrophysics 2007 - IWARA 2007
João Pessoa, PB, October 3-6, 2007

5) XIII Brazilian School on Cosmology and Gravitation
Rio de Janeiro, July 20 – August 02, 2008

6) Scienighe 2008, Padova, Italy, September 7-10, 2008

Work With Students (currently one student)

We are studying the dynamical role of neutrinos when they are trapped inside the proto-neutron star. First, we consider the neutrino escaping process as a source of gravitational waves. It appears feasible to produce gravitational waves when the neutrinos start to push out the enshrouding PNS matter.

Diploma thesis supervisions

Master Science Thesis Dissertations Concluded

1) Diagrama de Hubble de surtos de raios-gama e cosmologia com dimensoes espaciais extras: Confrontando o Modelo Cardassiano

Student: Habib S. Dumet M. -- (Setembro 06, 2007)

2) Novas fontes de ondas gravitacionais: O caso dos pulsares galácticos acelerados

Student: Carlos A. Bonilla Quintero -- (Novembro 28, 2007)

Other Teaching Duties

Mini-Courses in "Programa Mínimo de Cosmologia ICRA-BR" (Minimun program for cosmology)

1) Astrofísica de Ondas Gravitacionais (Gravitational waves astrophysics)
Campos dos Goytacazes, RJ, Brasil (2007)
Fortaleza, CE, Brasil (2008)

2) Astrofísica de Objetos Compactos (Astrophysics of compacts objects)
Campos dos Goytacazes, RJ, Brasil (2007)
Fortaleza, CE, Brasil (2008)

Work With Postdocs

At the moment, I am collaborating with a couple of post-docs:
Roberto Guida (at ICRA-BR), Rio de Janeiro, Brasil

Christian Corda (Universidad de Barcelona), Barcelona, Espan~a.

III Service activities

Within ICRANet:

Participation in the Organization of International events

1) First Cesare Lattes Meeting on GRBs Black Holes and Supernovae
ICRaNet, Rio de Janeiro, February 26 - March 03, 2007

Outside ICRANet:

Participation in the Organization of International events

2) Primer Congreso Colombiano de Astronomia y Astrofisica – COCOA 2008
Medellín, Colombia, August 12-15 (2008)

IV Other

Chapters in Books 2007

1) Quantum magnetic collapse of a neutron gas: No magnetar formation
A. Perez Martinez, H. Perez Rojas, H. J. Mosquera Cuesta
Published in Trends in Pulsar Research
Nova Science Publishers, Inc., New york (2007)

2) Natal pulsar kicks from back reaction of gravitational waves
Herman J. Mosquera Cuesta
Published in Trends in Pulsar Research
Nova Science Publishers, Inc., New york (2007)

Pelster Axel

Position: Senior Scientific Assistant and Guest Professor
Faculty of Physics at the Free University

Period covered: 2004 - present

I Scientific Work

Aug. 1992 - Dec. 1995	scientific employee (BAT IIA/2) in the SFB 230 (Natural Constructions – Lightweight Construction in Architecture and Nature) at the University of Stuttgart
Jan. - April 1996	scientific collaborator (BAT IIA/2) at the Institute for Theoretical Physics and Synergetics of Prof. Dr. Dr. h.c. mult. Hermann Haken
April 1996 - April 1997	scientific collaborator (BAT IIA) in the DFG Project *Solution of Classical and Quantum Mechanical Problems with Anholonomic Space and Time Transformations* (KL 256/26-1) with Prof. Dr. Dr. h.c. Hagen Kleinert at the Institute for Theoretical Physics of the Free University of Berlin
May 1997 - Oct. 1999	scientific collaborator (BAT IIA) of Prof. Dr. Dr. h.c. Hagen Kleinert at the Institute for Theoretical Physics of the Free University of Berlin
Nov. 1999 - Jan. 2004	scientific assistant (C1) of Prof. Dr. Dr. h.c. Hagen Kleinert at the Institute for Theoretical Physics of the Free University of Berlin
Feb. 2004 - Sept. 2008	senior scientific assistant (C2) of Prof. Dr. Dr. h.c. Robert Graham at the Faculty of Physics of the University Duisburg-Essen
Okt. 2008 - March 2009	guest professor at the Faculty of Physics at the Free University of Berlin

Other Teaching Duties

Aug. - Sept. 1995	lecture tour in the USA (DFG grant): State University at Albany, Clarkson University at Potsdam, McGill University at Montreal, Florida Atlantic University, Center for Nonlinear Studies in Los Alamos
Aug. - Sept. 2000	lecture tour in the USA: University of Southern California in Los Angeles, University of California in Berkeley, University of California in Davis
Sept. - Oct. 2001	research stay at the Washington University in St. Louis with Prof. Dr. Carl M. Bender (DFG grant)
Sept. - Oct. 2002	research stay at the Massachusetts Institute of Technology in Cambridge with Prof. Dr. Roman W. Jackiw and Prof. Dr. Kerson Huang

[1] DFG Project KL 256/26-1 (1 BAT IIA position and funds of 3000 DM for 2 years):
Solution of Classical and Quantum Mechanical Problems with Anholonomic Space and Time Transformations

[2] DFG Project KL 256/30-1 (1/2 BAT IIA position and funds of 3000 DM for 2 years):
Convergent Variational Perturbation Theory for Path Integrals

[3] Application of Prof. Dr. Dr. h.c. Hagen Kleinert at the Permanent Commission for Research and Scientific Offspring (FNK) at the Free University of Berlin (funds of 92.000 DM for 2 years):
Field Theory at Strong Couplings and Critical Phenomena

[4] DFG Project KL 256/38-1 (2/3 BAT IIA position and funds of 3000 EUR for 3 years):
Solution of Closed Systems of Schwinger-Dyson Equations in different Quantum Field Theories

[5] DFG Project KL 256/41-1 within the Priority Program SPP 1116 *Interactions in Ultra-Cold Atomic and Molecular Gases* (co-applicant, 3/4 BAT IIA position and funds of 2000 EUR for 2 years):
Critical Properties of Homogeneous Bose-Einstein Condensates

[6] DFG Project KL 256/41-2 within the Priority Program SPP 1116 *Interactions in Ultra-Cold Atomic and Molecular Gases* (co-applicant, 3/4 BAT IIA position and funds of 4000 EUR for 2 years):
Critical Properties of Bose-Einstein Condensates

[7] DFG Project A3 within the SFB/TR 12 *Symmetries and Universality in Mesoscopic Systems* (co-applicant, 1 BAT IIA-Stelle for 2.5 years):
Nonlinear Quantum Dynamics of Interacting Quantum Fields in Bose-Einstein Condensates

[8] Coinvestigator of a 2-year Indo-German (DST-DFG) Programme of Co-Operation in Science & Technology with a budget of 30 000 EUR together with Prof. Dr. J. Bosse (Freie Universität Berlin) and Prof. Dr. G.S. Singh (Indian Institute of Technology Roorkee):
Dynamics of Trapped Quantum Gases

[9] Coinvestigator of a 2-year German-Uzbekistan Volkswagen Project with a budget of 50 000 EUR together with Prof. Dr. Dr. h.c. H. Kleinert (Freie Universität Berlin), Prof. Dr. A. Rakhimov, and Dr. A. Bakhodir (National University of Uzbekistan):
Quantum Field Theory and Quantum Monte-Carlo Approach to Bose-Einstein Condensation

[10] Principal Investigator of a 2-year German-Serbien DAAD Project with a budget of 14 000 EUR together with Prof. Dr. A. Bogojević (Scientific Computing Laboratory, Institute of Physics, Belgrade):
Fast Converging Path Integral Approach to Bose-Einstein Condensation

III Service activities

Within ICRANet

1) Gravitational Theories with Torsion

2) Bose Stars

IV Other

[1] Physics Colloquium at the University Duisburg-Essen in the winter term 2005/2006 and in the summer term 2006

[2] Member of the Local Organizing Committee of the *Eleventh Marcel Grossmann Meeting: On Recent Developments in Theoretical and Experimental General Relativity, Gravitation, and Relativistic Field Theories;* Berlin, Germany, July 23 – 29, 2006 (800 participants):
`http://www.icra.it/MG/mg11`

[3] Scientific Coordination together with Professor Dr. M. Holthaus (University of Oldenburg) of the Workshop *Quo Vadis BEC?;* Free University of Berlin, Berlin, Germany, October 27 – 29, 2006 (approx. 40 participants):
`http://www.theo-phys.uni-essen.de/tp/ags/pelster_dir/BEC/bec.html`

[4] Scientific Coordination together with Professor Dr. W. Janke (University of Leipzig) of *The 9th International Conference Path Integrals – New Trends and Perspectives;* Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, September 23–28, 2007 (approx. 120 participants):
`http://www.physik.uni-leipzig.de/~janke/PI07`

[5] Scientific Coordination of the Symposium *Controlling Dirty Bosons: Disorder Effects on BECs,* DPG Spring Conference; Berlin, February 25 – 29, 2008:
`http://www.theo-phys.uni-essen.de/tp/ags/pelster_dir/DPG-berlin/index.html`

[6] Scientific Coordination together with Professor Dr. M. Holthaus (University of Oldenburg) of the 422nd Wilhelm and Else Heraeus Seminar *Quo Vadis BEC?;* Bad Honnef, October 29 – 31, 2008 (60 participants):
`http://www.theo-phys.uni-essen.de/tp/ags/pelster_dir/Heraeus/index.html`

[7] Workshop *Delayed Complex Systems;* Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, October 5 – 9, 2009 (80 participants) together with Priv.-Doz. Dr. W. Just (University of London), Priv.-Doz. Dr. M. Schanz (Universität Stuttgart), and Prof. Dr. Eckehard Schöll, PhD (Technische Universität Berlin):
`http://ipvs.informatik.uni-stuttgart.de/BV/dcs09`

V 2007-2008 List of Publications

W. Janke and A. Pelster (Editors): Proceedings of the 9th International Conference Path Integrals – New Trends and Perspectives, Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, September 23–28, 2007; World Scientific, 1-610 (2008)

P. Navez, A. Pelster, and R. Graham: Bose Condensed Gas in Strong Disorder Potential With Arbitrary Correlation Length; Applied Physics B 86, 395-398 (2007)

K. Glaum, A. Pelster, H. Kleinert, and T. Pfau: Critical Temperature of Weakly Interacting Dipolar Condensates; Physical Review Letters 98, 080407/1-4 (2007)

G.M. Falco, A. Pelster, and R. Graham: Thermodynamics of a Bose-Einstein Condensate with Weak Disorder; Physical Review A 75, 063619/1-11 (2007)

S. Kling and A. Pelster: Thermodynamical Properties of a Rotating Ideal Bose Gas; Physical Review A 76, 023609/1-6 (2007)

M. G¨ußmann, A. Pelster, and G. Wunner: Synergetic Analysis of the H¨aussler-von der Malsburg Equations for Manifolds of Arbitrary Geometry; Annalen der Physik (Leipzig) 16, 379-394 (2007)

M. G¨ußmann, A. Pelster, and G. Wunner: Solutions of the H¨aussler-von der Malsburg Equations in Manifolds with Constant Curvatures; Annalen der Physik (Leipzig) 16, 395-425 (2007)

K. Glaum and A. Pelster, Bose-Einstein Condensation Temperature of Dipolar Gas in Anisotropic Harmonic Trap; Physical Review A 76, 023604/1-11 (2007)

G.M. Falco, A. Pelster, and R. Graham: Collective Excitations in Trapped Bose-Einstein Condensed Gases in the Presence of Weak Disorder; Physical Review A 76, 013624/1-5 (2007)

S.F. Brandt, A. Pelster, and R. Wessel, Controlling the Phase in a Neuronal Feedback Loop through Asymmetric Temporal Delays; Europhysics Letters 79, 38001/1-5 (2007)

S. R¨othel and A. Pelster: Density and Stability in Ultracold Dilute Boson-Fermion Mixtures; European Physical Journal B 59, 343-356 (2007)

K. Glaum, A. Pelster, and H. Kleinert: Condensation of Ideal Bose Gas Confined in a Box within a Canonical Ensemble; Physical Review A 76, 063604/1-12 (2007)

R. Graham and A. Pelster: Order Via Nonlinearity in Randomly Confined Bose Gases; International Journal of Bifurcation and Chaos (in press), eprint: cond-math/0508306

F.E.A. dos Santos and A. Pelster: On the Quantum Phase Diagram of Bosons in Optical Lattices; Physical Review A (in press), eprint: arXiv:0806.2812

B. Bradlyn, F. E. A. dos Santos, and Axel Pelster: Effective Action Approach for Quantum Phase Transitions in Bosonic Lattices Physical Review A (in press), eprint: arXiv:0809.0706

R. Graham and A. Pelster: Functional Integral Approach to Disordered Bosons; in W. Janke and A. Pelster (Editors): Proceedings of the 9th International Conference Path Integrals – New Trends and Perspectives; Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, September 23–28, 2007; World Scientific, 376-383 (2008)

K. Glaum, A. Pelster, and H. Kleinert: Thermodynamical Properties for Weakly Interacting Dipolar Gases Within Canonical Ensembles; in W. Janke and A. Pelster (Editors): Proceedings of the 9th International Conference Path Integrals – New Trends and Perspectives; Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, September 23–28, 2007; World Scientific, 403-408 (2008)

M. Sch¨utte and A. Pelster: Critical Temperature of a Bose-Einstein Condensate With 1/r Interactions;
in W. Janke and A. Pelster (Editors): Proceedings of the 9th International Conference Path Integrals – New Trends and Perspectives; Max-Planck Institute for the Physics of Complex

Systems, Dresden, Germany, September 23–28, 2007; World Scientific, 417-420 (2008)

B. Kl¨under, A. Pelster, and R. Graham: Critical Temperature of Dirty Bosons; in W. Janke and A. Pelster (Editors): Proceedings of the 9th International Conference Path Integrals – New Trends and Perspectives; Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, September 23–28, 2007; World Scientific, 421-424 (2008)

S. R¨othel and A. Pelster: Density and Stability in Ultracold Dilute Boson-Fermion Mixtures; in W. Janke and A. Pelster (Editors): Proceedings of the 9th International Conference Path Integrals – New Trends and Perspectives; Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, September 23–28, 2007; World Scientific, 425-428 (2008)

A. Lima and A. Pelster: Spinor Fermi Gases; in W. Janke and A. Pelster (Editors): Proceedings of the 9th International Conference Path Integrals – New Trends and Perspectives; Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, September 23–28, 2007; World Scientific, 429-432 (2008)

Aksenov Alexey

Position: Senior scientific staff member

Laboratory for Astrophysics and Plasma Physics

Inst. for Theoretical and Experimental Physics, Moscow

Period covered: 2000-present

I Scientific Work

Stellar rotation, collapse of stars cores, neutrino transport, neutrino luminosity curves, gravitational radiation, Z-pinches, heavy ion fusion, multidimensional multi-temperature hydrodynamic simulations, one dimensional radiative transfer codes, a numerical modeling of electron-positron pairs and photons transfer from the surface of a Strange Star, etc.

II Conferences and educational activities

2007: Plasma Physics, Febrary, Zvenigorod, Russia; 4th Italian-Sino Workshop, July, Pescara; Zababakhin scientific talks, September, Snezhinsk, Russia; 2006: Plasma Physics, Febrary, Zvenigorod, Russia; Phys. Of neutron stars, April, London; Marsell Grossmann General Relativity, June, Berlin

Regular conferences: Plasma Physics, Febrary, Zvenigorod, Russia one Conference per year, from 2003; Neutron star workshop, June, St.-Petersburg one Conference per two year from 1997; Heavy Ions Fusion one Conference per two year (San Diego, 2000; Moscow 2002; Princeton 2004); High Energy Astrophysics December, Space Res. Inst., Moscow, one Conference per year, 2002—2005

III Service activities

Within ICRANet

2007-2008 Visitor at Icranet 3-4 months per a year

Outside ICRANet

1989—1992 engineer, Laboratory for Astrophysics and Plasma Physics of the Institute for Theoretical and Experimental Physics (ITEP); 1992—1999 Junior sci. staff member, ITEP; 1999—

2008 scientific staff member, ITEP; 2008—now Senior scientific staff member, department for mathematical modeling and turbulence, Institute for Computer-Aid design, Russian academy of Sciences.

1993, 1997 2—3 months Visitor at Max-Planck Institute for Astrophysics, Garching, FRG; 2000/11—2001/10 Postdoc Fellow, Cond. Matt. Dept., Weizmann Institute of Science, Rehovot, Israel; 2002—2008 Visitor at Weizmann Institute of Science, Rehovot, Israel 1—3 months per a year

IV 2007-2008 List of Publications

Structure of pair winds from compact objects with application to emission from bare strange stars. Aksenov, A. G.; Milgrom, M.; Usov, V. V. Ap&SS, 308, 613.

Thermalization of a nonequilibrium electron-positron-photon plasma. Aksenov, A. G.; Ru¢ ni, R.; Vereshchagin, G. V. Phys. Rev. Lett., 99, 125003.

From massive neutrinos and inos and the upper cut-o¤ to the fractal structure of the Universe to recent progress in theoretical cosmology. Aksenov, A. G.; Lattanzi, M.; Ru¢ ni, R.; Vereshchagin, G. V. Il Nuovo Cimento B, 122, 1377.

Thermalization of Electron-Positron-Photon Plasmas with an application to GRB. Aksenov A.G., Ru¢ ni R., Vereshchagin G.V. AIP Conf. Proc., 966, 191.

GRBs and the thermalization process of electron-positron plasmas. Aksenov A.G., Bianco C.L., Ru¢ ni R., Vereshchagin G.V., AIP Conf. Proc., 1000, 309.

The thermonuclear burning wave in the target for the relativistic heavy ions driver. Aksenov, A.G. et al. Questions of Atomic Science and Technics (VANT) in press (in russian).

Aksenov Alexey bas born inMoscow in 1966. From1983 till 1989 he was a student ofMoscow State Engineering Physics Institute (Technical University) of the Faculty of Experimental and Theoretical Physics. He received his diploma of physics in 1989. From 1991 till 1995 he was a post-graduate student (postal tuition) of Institute for Theoretical and Experimental Physics (Supervisors: V.S. Imsheniik and D.K. Nadyozhin). The PhD thesis .Neutrino luminosity curves, the gravitational radiation and the SNe explosion at a gravitational star.s core collapse. defended in 1998 at Space Research Institute of RAS.

He worked in Laboratory of Astrophysics and plasma physics of Institute of Theoretical and Experimental Physics in Moscow as an engineer (1989.1992), Junior sci. sta¤ member (1992. 1999), Sci. sta¤ member (1999.2000), and Senior sci. sta¤ member (2000.2008). Also from 2000/11 till 2001/10 he has Postdoc Fellow (with host professors V.V. Usov and M. Milgrom), Condensed Matter Physics Department, Weizmann Institute of Science, Rehovot, Israel. From 2008 he is working in Department for mathematical modeling and turbulence, Institute for Computer-Aid Design, Russian Academy of Sciences as Senior sci. sta¤ member.

Aksenov.s research includes astrophysics (the gravitational star.s core collapse and SN mechanisms, neutron stars) and thermonuclear plasma physics (the heavy ions fussion and Z-pinches). The investigation methods for those di¤erent objects are based on the computational physics and the development of original numerical methods (multidimensional hydrodynamic, one-dimensional radiative transfer, magnetohydrodynamic codes).

Hoang Ngoc Long

Position: Professor of Physics

Head of High Energy Physics section

Vietnamese Academy of Science and Technology

Period covered: 1996 – present

I Scientific Work (in 2008)

1. H. N. Long: Right-handed neutrinos as self-interacting dark matter in supersymmetric economical 3-3-1 model, [arXiv:0710.5833(hep-ph)](2007), to appear in **Advanced Studies in Theoretical Physics**.

2. P. V. Dong, D. T. Huong, N. T. Thuy and H. N. Long: Higgs phenomenology of supersymmetric economical 3-3-1 model, [arXiv:0707.3712(hep-ph)], **Nucl. Phys**. **B 795**, (2008) 361 -- 384.

3. P. V. Dong and H. N. Long: Neutrino masses and lepton flavor violation in the 3-3-1 model with right-handed neutrinos,[arXiv:0801.4196(hep-ph)](2008), Preprint KEK-TH-1223**, Phys. Rev. D 77**, (2008) 057302 (4 pages).

4. P. V. Dong and H. N. Long: The economical SU}(3)_C X SU}(3)_L X U(1)_X model, [arXiv:0804.3239(hep-ph)](2008), Preprint KEK-TH-1245, **Advances in High Energy Physics, Volume 2008**, Article ID 739492, 74 pages; doi: 10.1155/2008/739492.

5. D. T. Huong and H. N. Long: Neutralinos and charginos in supersymmetric economical 3-3-1 model, [arXiv:0804.3875(hep-ph)](2008), **J. High Energy Phys. 07** (2008) 049 (18 pages).

6. Do T. Huong and Hoang N. Long: Inflationary scenario in the supersymmetric economica 3-3-1 model, [arXiv: 0807.2346(hep-ph)](2008), submitted to Phys. Rev.D.

II Conferences and educational activities

Conferences and Other External Scientific Work

1. Local Organizer of the 2nd, 3rd, 4th and 5th International Schools in Particle Physics, held in Vietnam, from 1995 to 1998.

2. Organizer, The Osaka University - Asia Pacific - Vietnam National University Forum on Frontiers of Basic Science: Towards New Physics - Earth and Space Science - Mathematics, September 27 - 29 (2005), Hanoi, Vietnam

3. Member of International Advisory Committee, Conference on Astro Particle CPV in Topical Physics, Yongpyong APCTP 2007, Yongpyong, Korea, February 21 - 24, 2007 and February 25 - 29, 2008.

4. Member of International Advisory Committee and Organizer of the 5th International Conference on Flavor Physics, (ICFP 2009) to be held in Hanoi, Vietnam Sept. 24 – 30, 2009.

Work With Students

I have many undergraduate students at Universities in Hanoi and Ho Chi Minh cities.

Diploma thesis supervision

I was supervisor for 20 Master Degree and 10 Ph. D. degree. One my student (Le Duc Ninh) successfully defended Ph.D thesis at Univ.of Savoie, France, July 24th, 2008.

Other Teaching Duties

I am an author of 3 books in Physics at University and higher level.

Work With Postdocs

At present I have one postdoc.

III Service activities

Within ICRANet

I visit ICRANet as visiting Professor and I have finished one paper:

H. N. Long: Right-handed neutrinos as self-interacting dark matter in supersymmetric economical 3-3-1 model, [arXiv:0710.5833(hep-ph)](2007), to appear in **Advanced Studies in Theoretical Physics**.

Outside ICRANet

At present our group is translating the book of Professor R. Ruffini and H. Ohanian: **Gravitation and Spacetime**.

IV Other

I am a *referee* for Physical **Review D and Review of Modern Physics**, and other Int. Journals and *referee* for Doctor Degree in Physics**.**

V 2007-2008 List of Publications

Supersymmetric Economical 3 - 3 - 1 Model, P. V. Dong, D. T. Huong, M. C. Rodriguez and H. N. Long, [arXiv: hep-ph/0701137], *Nucl. Phys.* B 772, (2007) 150 - 174.

Photon-axion conversion cross section in a resonant cavity, Dang Van Soa, Hoang Ngoc Long and Le Nhu Thuc, [arXiv: hep-ph/0611258], *Mod. Phys. Lett*. A 22, (2007) 1411-1416.

Neutrino masses in the economical 3-3-1 model, Phung Van Dong, Hoang Ngoc Long and Dang Van Soa, [arXiv: hep-ph/0610381], *Phys. Rev*. D 75, (2007) 073006 (13 pages).
Sfermion masses in the supersymmetric economical 3-3-1 model, P. V. Dong, Tr. T. Huong, N. T. Thuy and H. N. Long, [arXiv:0708.3155(hep-ph)] (2007), *J. High Energy Phys.* 11 (2007) 073 (38 pages).

Right-handed sneutrinos as self-interacting dark matter in supersymmetric economical 3-3-1 model, H. N. Long,[arXiv:0710.5833(hep-ph)](2007), accepted for publication in *Advanced Studies in Theoretical Physics*.

The Economical SU(3)C - SU(3)L - U(1)X *Gauge Models* (a book), P. V. Dong and H. N. Long, Statistics Publishes, Hanoi (2008), 207 pages.

Higgs phenomenology of supersymmetric economical 3-3-1 model, P. V. Dong, D. T. Huong, N. T. Thuy and H. N. Long, [arXiv:0707.3712(hep-ph)] (2007), *Nucl. Phys.* B 795, (2008) 361 - 384.

Self-interacting dark matter in the beyond standard models, N. Q. Lan, H. N. Long and N. C. Soi, Talk presented in the 7th East Asian Meeting on Astronomy, Fukuoka, Japan, October 2007.

Neutrino masses and lepton °avor violation in the 3-3-1 model with right-handed neutrinos, P. V. Dong and H. N. Long, [arXiv:0801.4196(hep-ph)](2008), Preprint KEK-TH-1223, *Phys. Rev*. D 77, (2008) 057302 (4 pages).

The economical SU(3)C - SU(3)L - U(1)X model, P. V. Dong and H. N. Long, [arXiv:0804.3239(hep-ph)](2008), Preprint KEK-TH-1245, *Advances in High Energy Physics*, Volume 2008, Article ID 739492 (2008), 74 pages. Doi: 10.1155/2008/739492.

Neutralinos and charginos in supersymmetric economical 3-3-1 model, D. T. Huong and H. N. Long, [arXiv:0804.3875(hep-ph)](2008), *J. High Energy Phys.* 07 (2008) 049 (18 pages).

Bilepton contributions to the neutrinoless double beta decay in the economical 3-3-1 model, Dang Van Soa, Phung Van Dong, Trinh Thi Huong and Hoang Ngoc Long, [arXiv:0805.4456 (hep-ph)](2008).

Inflationary scenario in the supersymmetric economical 3-3-1 model, Do T. Huong and Hoang N. Long, [arXiv: 0807.2346(hep-ph)](2008), submitted to Phys. Rev. D.

Hoang Ngoc Long was born in Thaibinh, Vietnam in 1952. He received his diploma of Theoretical Physics from St. Peterburg (Leningrad) University in Russia in 1978. Returning Vietnam, he joined the Institute of Physics, National Centre for Science and Technology in Hanoi as a junior researcher. In 1982, he visited the Joint Institute for Nuclear Research (JINR) in Dubna and joined the Laboratory for Theoretical Physics. Returned back Hanoi in 1983, he worked as a researcher at the Centre for Theoretical Physics. He defended Doctor Thesis in 1987 at Institute of Physics, Hanoi. In 1996 he became an Associate Professor of Physics. From 1997 - 2002 he was a deputy director of Centre for Theoretical Physics and a head of group of High Energy section. He became a full Professor of Physics in 2003. Since 1996, he is a chairman of Theoretical Particle Physics section, Graduate School of the Hanoi Institute of Physics.

In the period of 1998-1999, he visited Chuo University, Tokyo as a fellow of the Japanese Society for Promotion of Science (JSPS). Long visited many Institutions around the world such as the ICTP, CERN, KEK, ICRA,...

Long's research has been focused in Theoretical Particle Physics, namely, in phenomenology of the beyond standard models and interface with cosmology. He has constructed a model of electroweak unification based on the SU(3)*C*-SU(3)*L*-U(1)*X* gauge group in which there exist right-handed neutrinos. Recently one of these models carries his name - Long's model. He is the author, co-author of three books. He serves as a referee for journals of American Physical Society and other international journals; and for Doctor Theses.

Long is a senior associate of the Asia Pacific Center for Theoretical Physics (Seoul, Korea), the Abdus Salam ICTP (Trieste, Italy). He organized many international schools and conferences in physics. He gives lectures and supervises Ph.D students for many universities in Vietnam. Now his students are working in main research institutes and universities of Vietnam.

Kim Jik Su

Position: Senior researcher

Period covered: July 1st, 2002 – October 31st, 2007

I Scientific Work

- Inflationary behavior of scalar field theory scenario and the speed of light. Physics (in Korean), 2003 – 2.8.
- A scalar field model of Supergravity and accelerated expansion of the Universe. Physics (in Korean), 2006 – 2.15.
- Cosmological significance of a generalization of Brance-Dicke Scalar-tensor theory. Physics (in Korean), 2008. Submitted.

II Conferences and educational activities

Conferences and Other External Scientific Work

2002. July 9th – July 15th. ICRA Regional Workshop, participant.

Work With Students

Special lectures: Gravitation and General Relativity, (80 hours/year) (2004 – 2006)

Cosmology, general and special courses, (140 hours/year) (2005 – 2006)

Particle physics, (70 hours/year) (2005 – 2007)

Diploma thesis supervision

Kim Chul-Jun: Non-minimally coupled scalar fields and accelerated expansion of the Universe, (2004 – 2007)

Kim Guang-Ill: Dynamics of the accelerated expansion of the Universe according to a scalar field model of Supergravity, (2004 – 2007)

III Other

October 16, 2003 – November 15, 2003: Visiting ICRA and Astronomical Observatories of Italy (Asiago and Napoli), and discussing further collaboration between ICRA and Korean scientists.

IV 2007-2008 List of Publications

Cosmological significance of a generalization of Brans-Dicke scalar-tensor theory. Physics (in Korean). 2007. Submitted

Gadri Mohamed

Position: Teaching Staff Member in Physics Department

Al-Fateh University

Period covered: 1983-present

I Scientific Work

I published thee papers ;
- Solid State Ionic
- Super Conductivity
- Evolution of Binary Stars

I wrote a text book in Arabic titled International Mechanics
I have translated a text book, from English to Arabic , in relativistic astrophysics titled Gravitation and Space Time by Ohanian and Ruffini.

II Conferences and educational activities

Conferences and Other External Scientific Work

I have participated in many scientific conferences out of it the following;
- Super Ionic Conductivity in Stuttgart in Germany , 1987
- 24th International Cosmic Ray in Rome, 1995
- First ICRA Network Workshop in Rome 1998
- Ninth MG meeting in Rome 2000
- Eleventh MG meeting in Berlin 2006

Work With Students

I worked as a supervisor to a freshman and senior students in my institution

Diploma thesis supervision

I was oral examiner to graduate students to obtain a master degree in many fields in physics.

Other Teaching Duties

And I presented many physics courses in many in deferent Faculties of Al-Fateh University and other institutions in Tripoli

III Service activities

Within ICRANet

I participated many conferences in Pescara (city of stars) and attended the celebration of the first opening ICRA net in Pescara

Ri Chang Hyok

Position: Senior researcher in Pyongyang Astronomical Observatory

Period covered: July 1st, 2002 – October 31st, 2007

I Scientific Work

- The equation of state in quark matter and quark star structure. Physics (in Korean), 2003 – 4.10.
- The mass distribution of galaxy cluster by lensing. Scientific bulletin (in Korean), 2006 – 2.40.
- The cosmic equation of state by lensing. Physics (in Korean), 2007 – 1.

II Conferences and educational activities

Conferences and Other External Scientific Work

National Scientifical Conference (Physics) 2006. 4. (D.P.R. Korea).

Wiltshire David L.

Position: Senior Lecturer, Department of Physics & Astronomy,
University of Canterbury, Christchurch, New Zealand

Period covered: 2001-present

I Scientific Work

Prof. Wiltshire completed work for two research papers during his three month visit to ICRANet. Both papers relate to his current program of investigating the possibility that effects attributed to dark energy and cosmic acceleration have their origin in a misidentification of gravitational energy gradients within the inhomogeneous structure of the universe, once structures form. This "radically conservative" solution to the problem of dark energy has begun to attract a reasonable amount of interest, and has already featured prominently in the popular press, with a cover feature in *New Scientist* in March, 2008.

1. "Cosmological equivalence principle and the weak-field limit", Phys. Rev. D 78 (2008) 084032

The first paper he wrote in Pescara was a conceptual one, in which he returned to the first principles of general relativity, and posed the question: "what is the largest scale on which the Equivalence Principle can be applied?" His proposed solution involves an extension of the Strong Equivalence Principle in application to averaged dynamical fields in cosmology to include the role of the average density in the determination of inertial frames. He applied the resulting Cosmological Equivalence Principle is applied to the problem of synchronization of clocks in the observed universe.

Once density perturbations grow to give density contrasts of order one on scales of tens of Mpc, the integrated deceleration of the local background regions of voids relative to galaxies must be accounted for in the relative synchronization of clocks of ideal observers who measure an isotropic cosmic microwave background. The relative deceleration of the background can be expected to represent a scale in which weak-field Newtonian dynamics should be modified to account for dynamical gradients in the Ricci scalar curvature of space. He estimated the acceleration scale using the best-fit nonlinear bubble model of the universe with back-reaction. At redshifts $z<0.25$ the scale is found to coincide with the empirical acceleration scale of modified Newtonian dynamics. At larger redshifts the scale varies in a manner which is likely to be important for understanding dynamics of galaxy clusters, and structure formation. Although the relative deceleration, typically of order 10^{-10} ms^{-2}, is small, when integrated over the lifetime of the universe it amounts to an accumulated relative difference of 38% in the rate of average clocks in galaxies as compared to volume-average clocks in the emptiness of voids. He also discussed a number of foundational aspects of the cosmological equivalence principle, including its relation to Mach's principle, the Weyl curvature hypothesis and the initial conditions of the universe.

This paper was accepted “emphatically” by the referee, in an extremely positive report, just 10 days after he submitted it to the journal in September, and has already been published.

2. “Dark energy without dark energy: Average observational quantities”, in preparation

The second paper he has been busy with in Pescara examines observational tests on the new cosmological paradigm he has developed, which will provide means for distinguishing it from the standard ΛCDM model, or other models for dark energy which modify gravity or add exotic fields while maintaining the absolute homogeneity and isotropy of space. Many observational projects are either already running, or being planned, which will be able to test some of these predictions. These include missions such as WiggleZ, Pan-STARRS, HETDEX, the Dark Energy Survey, JDEM, Euclid, and the ELT.

He firstly determined the equivalent of the commoving distance test, a measure equivalent to the determination of “the dark energy equation of state”. He finds that the non-linear bubble model which best-fits type Ia supernovae (SneIa) without exotic dark energy effectively interpolates between the comoving distance of curves for ΛCDM models with different values of Ω_Λ at different redshifts. At redshifts $z<1.5$ it closely matches the curve for the ΛCDM model with the value of Ω_Λ which best-fits SneIa only, while at the largest redshifts near last scattering it closely matches the curve for the ΛCDM model with the higher value of Ω_Λ which best-fits WMAP5 measurements of the cosmic microwave background spectrum. At intermediate redshifts, $2 < z < 10$, it interpolates between the two curves. These differences are certainly in the regime which will be probed and tested by future dark energy surveys.

In addition, he determined quantities which are a test of the (in)homogeneity of the universe. In particular, Clarkson, Bassett and Lu (*Phys. Rev. Lett.* **101** (2008) 011301) have constructed quantities which have constant values for all redshifts for any cosmology which obeys the Friedmann equation, irrespective of the dark energy model, but is non-zero otherwise. In his model cosmology, which is inhomogeneous, the (in)homogeneity functions turn out to have a particular characteristic form with redshift, which again will be testable in the coming decade. The test of inhomogeneity ideally requires the determination of *H(z),* the Hubble parameter as a function of redshift in model-independent way. This can be achieved over a 10-20 year period by a measurement of the time-variation of *z*, as might be achieved by precision measurements on the Lyman α forest over redshifts, $2 < z < 5$, with the next generation of Extremely Large Telescopes. This leads to a further refined test of inhomogeneity, as has been discussed by Uzan, Clarkson and Ellis (*Phys. Rev. Lett.* **100** (2008) 191303). Once again, he has determined the distinctive observational signature in his model cosmology.

At present he is completing the investigation of an equivalent of the Alcock- Paczynski test to wrap up the paper, and when this is completed he will submit the paper to arXiv.org, and to *Physical Review D*.

In addition to the above 2 papers, he also spent some time proof-reading the manuscript of *The Kerr Spacetime: Rotating Black Holes in General Relativity*, which he is editing with Matt Visser and Susan Scott, and to which both Prof. Kerr and Prof. Ruffini have contributed. Cambridge University Press inform him that the book should appear just before Christmas.

He presented two research seminars on his work in Pescara, on 4th August, and on 23rd October.

II Conferences and educational activities

Conferences and Other External Scientific Work

He presented a talk at the *3rd Bienniel Leopoldina Conference on Dark Energy,* at the Ludwig-Maximilians-University, Munich, Germany, 7-11 October 2008.

On his return from the conference, he presented a seminar in Pescara, giving an overview of the new scientific results presented at the Munich conference.

Work With Students

He participated in the interview of new students for the IRAP PhD program. (He also interacted with his own PhD student back in New Zealand, Peter Smale, by email.)

III Service activities

Within ICRANet

With Professor Ruffini he is planning to organize an ICRANet workshop/conference in Christchurch, New Zealand, in December 2009, to complete ICRANet's programme of activities to mark the *International Year of Astronomy*. He is also chairing a session on *Inhomogeneous Cosmologies, Averaging and Backreaction*, at the 12th Marcel Grossmann Meeting.

Outside ICRANet

He continued his usual refereeing duties for *Physical Review* and *Physical Review Letters,* and his activities as a committee member of the *Australasian Society for General Relativity and Gravitation*. He is also preparing a popular article on his solution to dark energy for the *Olbers Astronomical Society* in Bremen, Germany.

IV 2007-2008 List of Publications

Cosmic clocks, cosmic variance and cosmic averages, D.L. Wiltshire, New J. Phys. 9, 377. [arXiv:gr-qc/0702082]

Exact solution to the averaging problem in cosmology, D.L. Wiltshire, Phys. Rev. Lett. 99, 251101. [arXiv:0709.0732]

Gravitational energy as dark energy: Concordance of cosmological tests, B.M. Leith, S.C.C. Ng and D.L. Wiltshire, Astrophys. J. 672, L91{L94. [arXiv:0709.2535]

Gravitational energy and cosmic acceleration, D.L. Wiltshire, Int. J. Mod. Phys. D 17, 641-649. [arXiv:0712.3892]

Dark energy without dark energy, D.L. Wiltshire, in Dark Matter in Astroparticle and Particle Physics: Proceedings of the 6th International Heidelberg Conference, eds. H.V. Klapdor{Kleingrothaus and G.F. Lewis, (World Scienti_c, Singapore), pp. 565-596. [arXiv:0712.3894]

Cosmological equivalence principle and the weak{_eld limit, D.L. Wiltshire, Phys. Rev. D 78, 084032. [arXiv:0809.1183]

David Wiltshire was born in New Zealand in 1962, and did undergraduate studies at the University of Canterbury in Christchurch, NZ followed by a Ph.D. in the Relativity and Gravitation Group at the University of Cambridge, UK, in the mid 1980s. After a variety of postdoctoral research and lecturing positions in Trieste, Italy, Necastle{Upon{Tyne, UK, and Adelaide, Australia he returned to NZ in 2001, where he is now Senior Lecturer at the University of Canterbury, Christchurch. He is known for his work in higher{dimensional gravity, brane worlds, black holes and quantum cosmology. Most recently his research has turned to the problem of dark energy, the averaging of the inhomogeneous universe in general relativity, and its implications for the foundations of theoretical and observational cosmology.

Zalaletdinov Roustam M.

Position: Professor

Period covered: 1 July 2007 – 30 June 2008

I Scientific Work

Cosmology and Macroscopic Gravity

1. Analysis of the structure of the system of macroscopic gravity equations with one connection correlation tensor.
2. Development of analytic methods for the exact solving of the macroscopic gravity equations.
3. Exact cosmological solutions of the macroscopic gravity by the computer algebra methods using The MG Eqs Code developed by R. van den Hoogen and R.M. Zalaletdinov (2005-2007).

Foundations of the Kaluza-Klein Theory
(in collaboration with Dr. Giovanni Montani and Francesco Cianfrani, University of Rome, Rome, Italy):

1. Formulation of the Kaluza-Klein theory by a compactification scheme based on averaging out the extra dimensions.

Physical Applications of the non-Riemannian Geometry with an Asymmetric Metric
(in collaboration with Dr. Giovanni Montani and Orchidea Maria Lecian, University of Rome, Rome, Italy):

1. Study on physical implications of the classification of the non-Riemannian geometry with an asymmetric metric in the spirit of Schouten proposed earlier.

Gravitational Waves in the Inhomogeneous Lemaitre-Tolman space-time
(in collaboration with Dr. Giovanni Montani and Dr. Massimiliano Lattanzi, University of Rome, Rome, Italy and University of Oxford, Oxford, UK):

1. Development of a formalism for the description of gravitational waves propagating on the inhomogeneous Lemaitre-Tolman background.

II Conferences, Educational and Scientific Activities

Conferences

1. Astrophysics at z>6, 4th Italian-Sino Meeting, ICRANet Coordinating Center, Pescara, Italy, July 20 - 28, 2007.

2. A Century of Cosmology - Past, Present and Future, San Servolo, Venice. Italy, August 27 - 31, 2007.

3. The Second Stueckelberg Workshop, ICRANet Coordinating Center, Pescara, Italy, September 3 -7, 2007 - plenary lecture, session chairperson.

External Scientific Activity

1. Referee of the General Relativity and Gravitation Journal (USA), Classical and Quantum Gravity Journal (UK), Journal of Physics A: Mathematical and Theoretical (UK), The European Physical Journal B (France).

2. Assistance to the Editor of the International Journal of Modern Physics D (Singapore).

The European Academy of Sciences, Physics and Earth Science Division, Brussels, Belgium, EU

1. Academician of the European Academy of Sciences and a nominated Elector for the Physics and Earth Science Division.

III 2007-2008 List of Publications

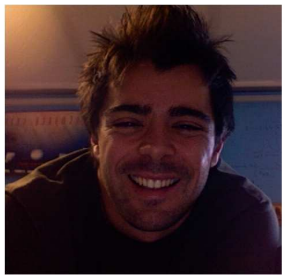
R. Zalaletdinov, Averaging problem in cosmology and macroscopic gravity, Online Proceedings of the Atlantic Regional Meeting on General Relativity and Gravitation, Fredericton, NB, Canada, May 2006, ed. R.J. McKellar (http://www.math.unb.ca/atgr/, University of New Brunswick, Fredericton, 2006), 23 p.;e-print gr-qc/0701116 (2007), 23 p.

B.J. Ahmedov, R.M. Zalaletdinov, Z.Ya. Turakulov, S.N. Nuritdinov, K.T. Mirtadjieva, Relativistic astrophysics and cosmology in Uzbekistan, in: The International Astronomical Union Proceedings, Astronomy for the Developing World, IAU Special Session no.5, Prague, Czech Republic, August 2006, eds. J.B. Hearnshaw and P. Martinez (Cambridge University Press, Cambridge, 2007) p. 159-166.

S. Casanova, O.M. Lecian, G. Montani, R. Ru_ni and R, Zalaletdinov, Extended Schouten classi_cation for non-Riemannian geometries, Modern Physics Letters A, Vol. 23, No. 1 (2008) p. 17-23; e-print arXiv:0712.3716 [gr-qc] (2007), 7 p.

R. Zalaletdinov, The averaging problem in cosmology and macroscopic gravity, in: Proceedings of The Second Stueckelberg Workshop, ICRANet Coordinating Center, Pescara, Italy, September 2007, International Journal of Modern Physics A, Vol. 23, No. 8 (Special Issue) (2008), p. 1173 - 1181;e-print arXiv:0801.3256v2 [gr-qc], 8 p.

Guida Roberto



Position: Post Doc

Period covered: June 2008 – December 2008

I Scientific Work

Gamma Ray Burst (GRBs) and cosmology.

The Amati relation within the fireshell model for GBRs.

Hubble diagram of GRBs calibrated with different cosmological models.

II Conferences and educational activities

Conferences and Other External Scientific Work

XIII Brazilian School of Gravitation and Cosmology, Mangaratiba (Brazil), 20 luglio- 2 agosto, 2008.

III 2007-2008 List of Publications

1 - Caito L., Bernardini M. G., Bianco C. L., Dainotti M. G., Guida R., Ruffini R., “GRB060614 analysis within the fireshell" model", submitted to Astron. & Astrophys.

2 - Guida R., Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Ruffini R., “The Amati relation in the fireshell" model", Astron. & Astrophys. 487, L37, 2008.

3 - Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Guida R., Ruffini R., “GRB970228 and a class of GRBs with an initial spikelike emission", Astron. & Astrophys. 474, L13, 2007.

4 - Dainotti M. G., Bernardini M. G., Bianco C. L., Caito L., Guida R., Ruffini R., “GRB060218 and GRBs associated with Supernovae Ib/c", Astron. & Astrophys., 471, L29, 2007.

Yegoryan Gegham

Position: IRAP Ph.D. student

Period covered: 2004-2007

I Scientific Work

Observational cosmology: study of Cosmic Microwave Background maps, dark energy cosmological models.

II Conferences and educational activities

ICRANet workshops (2005,2006, 2007)

Battisti Marco Valerio

Position: PhD Student

Period covered: 2005-present

I Scientific Work:

Aspects of Quantum Cosmology

II Conferences and educational activities:

Invited scientific collaborations:

-October 2008 Rudjer Boskovic Institute of Zagreb,

Theoretical and Mathematical Physics group directed by Prof. S.Meljanac

Meetings, workshops and PhD schools:

-September 2008 Quantum Spacetime and Noncommutative Geometry,

-July 2008 The 3rd Stueckelberg Workshop,

-June 2008 NEB-XIII Recent Developments in Gravity,

-September 2007 The 2nd Stueckelberg Workshop,

-July 2007 4th Italian-Sino Workshop on Relativistic Astrophysics,

-March 2007 Noncommutative Spacetime Geometries,

-December 2006 High Energy, Cosmology and Strings,

-September 2006 XII Brasilian School of Cosmology and Gravitation,

-July 2006 XI Marcel Grossmann Meeting on General Relativity,

-June 2006 The 1st Stueckelberg Workshop,

-June 2006 Planck scale in Astrophysics and Cosmology,

-February 2006 1st Bego Rencontre,

-January 2006 Mathematical aspects of GR,

-June 2005 The Russian-Italian Lifshitz-Zeldovich Meeting on Relativistic Astrophysics,

-June 2005 2nd Italian-Sino Workshop on Relativistic Astrophysics,

Given talks and seminars:

-October 2008 Invited talk at the Rudjer Boskovic Institute, Zagreb.

Title of talk:

Quantum Cosmology and Minimal Length

-July 2008 ``The 3rd Stueckelberg Workshop'', (main lectures by Prof. G.'t Hooft) Pescara, 8-18 July.

Title of talks:

1) *Time evolution in a generic quantum Universe*

2) Quantum cosmology in the GUP approach

3) Extended approach to the canonical quantization in the minisuperspace

-June 2008 ``NEB-XIII Recent Developments in Gravity'', (plenary speakers Prof. A.Ashtekar, Prof. R.Loll and Prof. G.Ellis), Thessaloniki, 4-6 June.

Title of talk:

Phenomenological framework for loop and braneworlds cosmologies

-January 2008 ``ICRA seminars on Quantum Gravity'', Rome.

Title of seminar:

GNS construction and the polymer representation

-September 2007 ``The 2nd Stueckelberg Workshop'', (main lectures by Prof. T.Thiemann) Pescara, 3-8 September.

Title of talks:

1) *Quantum cosmology in a generalized uncertainty principle framework*

2) *Cosmological implications of an evolutionary quantum gravity*

-July 2007 ``4th Italian-Sino Workshop on Relativistic Astrophysics'', Pescara, 20-30 July.

Title of talk:

Minisuperspace dynamics in a generalized uncertainty principle framework

-June 2007 ``ICRA seminars on Quantum Gravity'', Rome.

Title of seminar:

Mixmaster dynamics from the Loop Quantum Cosmology point of view

-July 2006 ``Eleventh Marcel Grossmann Meeting on General Relativity '', Berlin, 23-29 July.

Title of talk:

Generic evolutionary quantum universe

-June 2006 ``The 1st Stueckelberg meeting'', (main lectures by Prof. A.Ashtekar) Pescara, 26-30 June.

Title of talk:

Generic evolutionary quantum cosmology

-June 2006 ``Planck scale in Astrophysics and Cosmology'', (organized by Dr. G.Amelino-Camelia and Dr. A.Melchiorri) Rome, 19-20 June.

Title of talk:

Is minisuperspace arena for GUP approach?

-May 2006 ``ICRA seminars on Quantum Gravity'', Rome.

Title of seminar:

The framework of Loop Quantum Cosmology

-April 2006 ``ICRA seminars on Quantum Gravity'', Rome.

Title of seminar:

Gereralized uncertainty principle and noncommutative spacetime

III Work With Students

Diploma thesis supervision

-2007: Assigned as tutor to the undergraduate student Riccardo Belvedere for his degree thesis at University of Rome ``La Sapienza'': *"On the semiclassical limit of a quantum Universe"*

IV 2007-2008 List of Publications

G.Montani, M.V.Battisti, R.Benini and G.Imponente, *Primordial Cosmology,* World Scientific (2009), in preparation.

G.Montani, M.V.Battisti, R.Benini and G.Imponente, *Classical and quantum features of the Mixmaster singularity*, Int.J.Mod.Phys.A 23 (2008) 2353-2503, [arXiv:0712.3008].

11) R.Belvedere, M.V.Battisti and G.Montani, *Semi-classical isotropization mechanism for a generic Universe*, submitted to Phys.Rev.D.

10) M.V.Battisti and G.Montani, *The Mixmaster Universe in a generalized uncertainty principle framework*, submitted to Phys.Rev.D, [arXiv:0808.0831].

9) M.V.Battisti, O.M.Lecian and G.Montani, *Polymer quantum dynamics of the Taub Universe*, to appear on Phys.Rev.D, [arXiv:0806.0768].

8) M.V.Battisti, *Loop and braneworlds cosmologies from a deformed Heisenberg algebra*, submitted to Phys.Rev.D, [arXiv:0805.1178].

7) M.V.Battisti and G.Montani, *Quantum cosmology with a minimal length*, Int.J.Mod.Phys.A 23 (2008) 1257-1265, [arXiv:0802.0688].

6) M.V.Battisti and G.Montani, *Cosmological implications of an evolutionary quantum gravity*, Int.J.Mod.Phys.A 23 (2008) 1235-1239, [arXiv:0801.4690].

5) M.V.Battisti and G.Montani, *Minisusperspace dynamics in a generalized uncertainty principle framework,* AIP Conf. Proc. 966 (2007) 219-226, [arXiv:0709.4610].

4) M.V.Battisti and G.Montani, *Quantum dynamics of the Taub Universe in a generalized uncertainty principle framework,* Phys.Rev.D 77 (2008) 023518, [arXiv:0707.2726].

3) M.V.Battisti and G.Montani, *The big-bang singularity in the framework of a generalized uncertainty principle*, Phys.Lett.B 656 (2007) 96-101, [gr-qc/0703025].

2) M.V.Battisti and G.Montani, *Evolutionary quantization of cosmological models*, Nuovo Cim.B 122 (2007) 179-184, [gr-qc/0701095].

Dainotti Maria Giovanna

Position: PhD student

Period covered: 2005-present

I Scientific Work

PUBLICATIONS IN REFEREED JOURNALS\bf:

1) Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Corsi A., Dainotti M. G., Fraschetti F., Guida R., Ruffini R., Xue S. S., ``GRB970228 as a prototype for short GRBs with afterglow'', Nuovo Cimento, 121B, 1439-140, 2006.

2) Dainotti M. G., Bernardini M. G., Bianco C. L., Caito L., Guida R., Ruffini R., ``GRB060218 and GRBs associated to Supernovae Ib/c'', Astron. \& Astrophys., 471, L29-L32, 2007. This is enclosed as one of three publication record and it is topic of my dissertation.

3) Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Guida R., Ruffini R., ``GRB970228 and a class of GRBs with an initial spikelike emission'', Astron. \& Astrophys. 474, L13-L16 , 2007. It is topic of my dissertation.

4) Guida R., Bernardini M. G., Bianco C. L., Caito L.,Dainotti M. G., Ruffini R. `` The Amati relation in the fireshell model'' Astron. \& Astrophys, 487, L37-L40 (2008). It is enclosed as one of the three publication record and it is topic of my dissertation.

5) Dainotti M. G., Bernardini M. G., Bianco C. L., Caito L., Guida R., Ruffini R., ``The astrophysical trypthic: GRB, SN and URCA can be extended to GRB060218?'', to appear on Journal of the Korean Physical Society. It is topic of my dissertation

6) Caito L., Bernardini M. G., Bianco C. L., Dainotti M. G. Guida R., Ruffini R., ``GRB 060614: a progress report'', to appear on Journal of the Korean Physical Society. It is topic of my dissertation

7) Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Guida R., Ruffini R., ``GRB 970228 in the canonical GRB scenario'' to appear on Journal of the Korean Physical Society. It is topic of my dissertation

8) Dainotti M. G., Cardone V.F. and Capozziello S. ``A time luminosity correlation for GRBs in the X-rays '', to appear on Monthly Notice Astron. Physical Society. This is enclosed as one of three publications record together with the acceptance letter of MNRAS.

PUBLICATIONS SUBMITTED AND IN PREPARATIONS\bf:

9) Caito L., Bernardini M. G., Bianco C. L., Dainotti M. G. Guida R., Ruffini R., ''GRB060614 analysis within the “fireshell” model'' submitted to Astron. \& Astrophys.

10) Dainotti M. G.., Bernardini M. G., Bianco C. L., Caito L., Guida R., Ruffini R.,``GRB 060418: flares and spectral lag'' (in preparation)\\

11) Dainotti M. G. et al. ``Further evidence for the L-Ta correlation for GRBs in the X-ray afterglow''(in preparation)\\.

PROCEEDINGS\bf:

1) Ruffini R., Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Dainotti M. G., Fraschetti F., Guida R., Rotondo M., Vereshchagin G., Vitagliano L., Xue S. S., “The role of GRB031203 in clarifying the astrophysical GRB scenario”, in the Proceedings of “6th INTEGRAL Workshop – The obscured universe” in Moscow, Russia, July 2-8, 2006, ed. S. Grebenev, R. Sunyaev and C. Winkler, ESA Special Publication 622 (2007) 561-568. It is topic of my dissertation.

2) Dainotti M. G., Bernardini M. G., Bianco C. L., Caito L., Guida R., Ruffini R., ``On GRB 060218 and the GRBs related to Supernovae Ib/c'', in the Proceedings of ``XI Marcel Grossmann meeting on General Relativity'' in Berlin, Germany, July 23-29, 2006, World Scientific Singapore 2008, in press.

3) Guida R., Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Dainotti M. G., Fraschetti F., Ruffini R., Xue S. S., ``Theoretical interpretation of GRB060124'', in the Proceedings of ``XI Marcel Grossmann meeting on General Relativity'' in Berlin, Germany, July 23-29, 2006, World Scientific Singapore 2008, in press.

4) Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Corsi A., Dainotti M. G., Fraschetti F., Guida R., Ruffini R., Xue S. S., ``GRB970228 as a prototype for the class of GRBs with an initial spikelike emission '', in the Proceedings of ``XI Marcel Grossmann meeting on General Relativity'' in Berlin, Germany, July 23-29, 2006, World Scientific Singapore 2008, in press.

5) Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Corsi A., Dainotti M. G., Fraschetti F., Guida R., Ruffini R., Xue S. S., ``GRB980425 and puzzling URCA 1 emission'', in the Proceedings of ``XI Marcel Grossmann meeting on General Relativity'' in Berlin, Germany, July 23-29, 2006, World Scientific Singapore 2008, in press. This is topic of my dissertation.

6) Caito L., Bernardini M. G., Bianco C. L., Dainotti M. G., Guida R., Ruffini R., ``Theoretical interpretation of GRB011121'', in the Proceedings of ``XI Marcel Grossmann meeting on General Relativity'' in Berlin, Germany, July 23-29, 2006, World Scientific Singapore 2008, in press. This is topic of my dissertation.

7) Ruffini R., Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Dainotti M. G., Fraschetti F., Guida R., Rotondo M., Vereshchagin G., Vitagliano L., Xue S. S., ''Gamma Ray Bursts'' in the Proceedings of ``XI Marcel Grossmann meeting on General Relativity'' in Berlin, Germany, July 23-29, 2006, World Scientific, Singapore 2008, in press.

8) Bianco C. L., Bernardini M. G., Caito L., Chardonnet, P., Dainotti M. G., Fraschetti, F., Guida R., Ruffini R. and She Sheng, X. ``Theoretical interpretation of short and long GRBs'' in the Proceedings of ``XI Marcel Grossmann meeting on General Relativity'' in Berlin, Germany, July 23-29, 2006, World Scientific, Singapore, 2008. This is topic of my dissertation.

9) Ruffini R., Bernardini M. G., Bianco C. L., Caito L., Chardonnet P., Dainotti M. G., Fraschetti F., Guida R., Rotondo M., Vereshchagin G., Vitagliano L., Xue S. S., ``The Blackholic energy and the canonical Gamma-Ray Burst'', in the Proceedings of ``XII Brazilian School of Cosmology and Gravitation'' in Mangaratiba, Brazil, September 10-23, 2006, AIP Conference Proceedings, 910, 55-217, 2007.

10) Bianco C. L., Bernardini M. G., Caito L., Dainotti M. G., Guida R., Ruffini R., ``The fireshell model and the GRB scenario'' in the Proceedings of ``4th Italian-Sino Workshop on Relativistic Astrophysics'' in Pescara, Italy, July 20-30, 2007, AIP Conf. Proc. 966, (2008), 12-15. This is topic of my dissertation.

11) Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Guida R., Ruffini R., Xue S. S., ``GRB 970228 and the class of GRBs with initial spikelike emission: do they follow the Amati relation?'', in the Proceedings of ``4th Italian-Sino Workshop on Relativistic Astrophysics'' in Pescara, Italy, July 20-30, 2007, AIP Conf. Proc.966, (2008), 7-11.

12) Dainotti M. G., Bernardini M. G., Bianco C. L., Caito L., Guida R., Ruffini R., ``On GRB 060218 and binaries as progenitors of GRB-SN systems '', in the Proceedings of ``4th Italian-Sino Workshop on Relativistic Astrophysics'' in Pescara, Italy, July 20-30, 2007 AIP Conf. Proc. 966, (2008), 25-30. This is topic of my dissertation.

13) Guida R., Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Ruffini R., ``The Amati relation within the fireshell model'' in the Proceedings of ``4th Italian-Sino Workshop on Relativistic Astrophysics'' in Pescara, Italy, July 20-30, 2007AIP Conf. Proc.966, (2008), 46-51.

14) Guida R., Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Ruffini R. “Theoretical interpretation of the Amati relation within the fireshell model”, in the Proceedings of the Conference “Gamma-Ray Bursts 2007” in Santa Fe, New Mexico (USA), November 5-9, 2007, ed. M. Galassi, D. Palmer, E.E. Fenimore, AIP Conf. Proc., 1000 (2008) 60-63.

15) Caito L., Bernardini M. G., Bianco C. L., Dainotti M. G., Guida R., Ruffini R. “GRB060614: a fake short Gamma-Ray Burst”, in the Proceedings of the Conference “Gamma-Ray Bursts 2007” in Santa Fe, New Mexico (USA), November 5-9, 2007, ed. M. Galassi, D. Palmer, E.E. Fenimore, AIP Conf. Proc., 1000 (2008) 301-304.

16) Bianco C. L., Bernardini M. G., , Caito L., Dainotti M. G., Guida R., Ruffini R. “Short and Canonical GRBs”, in the Proceedings of the Conference “Gamma-Ray Bursts 2007” in Santa Fe, New Mexico (USA), November 5-9, 2007, ed. M. Galassi, D. Palmer, E.E. Fenimore, AIP Conf. Proc., 1000 (2008) 305-308.

17) Dainotti M. G., Bernardini M. G., Bianco C. L., Caito L., Guida R., Ruffini R., ''GRB 060218: the density mask and its peculiarity compared to the other sources'', in the Proceedings of the ``Second Kolkata Conference on experimental evidence for Black holes in the Universe'', February 10- 17, 2008, AIP Conf. Proc. 1053 (2008), 283-289. This is topic of my dissertation.

18) Bernardini M. G., Bianco C. L., Caito L., Dainotti M. G., Guida R., Ruffini R., '' The “Canonical” GRBs within the fireshell model'' in the Proceeding of ``Second Kolkata Conference on experimental evidence for Black holes in the Universe'', February 10- 17, 2008, AIP Conf. Proc. 1053 (2008), 267-273.

19) Bianco C. L., Bernardini M. G., , Caito L., Dainotti M. G., Guida R., Ruffini R., Xue, S. S.,Vereshchagin,G, ''The Equations of motion of the "fireshell" '', in the Proceedings of the ``Second Kolkata Conference on experimental evidence for Black holes in the Universe'', February 10- 17, 2008, AIP Conf. Proc. 1053 (2008), 259-265. This is topic of my dissertation.

20) Caito L., Bernardini M. G., Bianco C. L., Dainotti M. G., Guida R., Ruffini R., ''GRB 060614 in the canonical fireshell model'' to appear on the Proceedings of the ``Second Kolkata Conference on experimental evidence for Black holes in the Universe'', February 10- 17, 2008, AIP Conf. Proc. 1053 (2008), 291-298.

21) R. Ruffini, A. G. Aksenov, M. G. Bernardini, C. L. Bianco, L. Caito, M.G. Dainotti, G. De Barros, R. Guida, G. V. Vereshchagin, and S.-S. Xue 'The Canonical Gamma-Ray Bursts and Their "Precursors"' in the Proceedings of the Conference of Nanjing, June 23-27, 2008, AIP Conf. Proc. 1065 (2008), 219-222.

22) Bianco C. L., Bernardini M. G., Caito L., Dainotti M. G., Guida R., Ruffini R. 'The "Fireshell" Model and the "Canonical GRB" Scenario' in the Proceedings of the Conference of Nanjing, June 23-27 2008, AIP Conf. Proc. 1065 (2008), 223-226.

23) M. G. Bernardini, C. L. Bianco, L. Caito, M. G. Dainotti, R. Guida, and R. Ruffini 'Preliminary analysis of GRB060607A within the fireshell model' in the Proceedings of the Conference of Nanjing, June 23-27, AIP Conf. Proc. 1065 (2008), 227-230.

24) G. de Barros, M. G. Bernardini, C. L. Bianco, L. Caito, M. G. Dainotti, R. Guida, and R. Ruffini 'Is GRB 050509b a "Genuine" Short GRB?' in the Proceedings of the Conference of Nanjing, June 23-27, AIP Conf. Proc. 1065 (2008), pag. 231-233.

II Conferences and educational activities

Conferences and Other External Scientific Work

Ph.D. SCHOOL ATTENDED:
September 2007“Scuola Nazionale di Astrofisica IX ciclo”, Venezia (Italy), September 16-22, 2007, http://www.merate.mi.astro.it/scuolasanservolo2007 September 2006“XII Brazilian School of Gravitation and Cosmology”, Mangaratiba (Brazil),September 10-23, 2006, Http://www.cbpf.br/$\sim$cosmogra/bscgxxii.htm.

July 2006“Astrofisica Gamma e Multifrequenza: Analisi Dati e Problematiche Astroparticellari”, Perugia (Italy), July 3-7, 2006, http://glastweb.pg.infn.it/school2006/index.htm.

February 2006“1st Bego Scientific Rencontre”, Nice (France), February, 6-17, 2006. http://www.icra.it/IRAPPhD/Bego/First/Welcome.htm.

January 2006 ”Mathematical Problems in General Relativity”, at ETH in Zurich (Switzerland) by Prof. Christodoulou on January, 8-31, 2006.

February -April 2007 ”From classical to quantum gravity”, at ”La Sapienza” in Rome (Italy) by Dr Montani.

April -June 2006 ” Geometrodynamics and matter fields ” at ”La Sapienza” in Rome (Italy) by Dr Montani.

November 2005-June 2006 ”Theoretical physic: general relativity, cosmology, gravitational collapse”at ”La Sapienza” in Rome (Italy) by Prof. Ruffini.

November 2006-June 2007 ”Gravitational physic and relativistic linear theory of elettrodymamic” at ”La Sapienza” in Rome (Italy) by Prof. Ruffini.

2005 - Present Weekly seminars on high energy astrophysics, cosmology and general relativity held at University of Rome“La Sapienza”.

MEETINGS AND WORKSHOPS ATTENDED:
September 2007 “The II Stueckelberg Workshop on Relativistic Field Theories”, Pescara (Italy),September 3-7, 2007.

July 2007 : ”4th Italian-Sino Workshop on Relativistic Astrophysics”, Pescara (Italy), July 20-30, 2007. http://www.icra.it/Italian-Sino_Workshop/fourth/english/welcome.htm

July 2007 : ”Astrofisica Gamma dallo Spazio: AGILE e GLAST”, Frascati (Italy), July 2-3, 2007. http://glast.pi.infn.it/ASI_Workshop/index.htm

June 2007 “10th Italian-Korean Symposium on Relativistic Astrophysics“, Pescara, (Italy), June 25-30, 2007, . http://www.icra.it/ITKO/10/welcome.htm.

April 2007 “The April Meeting 2007 of the American Physical Society”, Jacksonville (Florida), April 14-17, 2007 http://www.aps.org/meetings/april/index.cfm.

February 2007 “I Cesare Lattes meeting on Gamma-Ray Bursts, Black Holes and Supernovae”, Mangaratiba (Brazil), February 25 - March 3, 2007, http://www.icra.it/ICRA_Networkshops/lattes_meeting/first/welcome.htm.

November 2006 ’Swift Birthday 2006’, Merate (Italy), November 30-1 December, 2007. http://www.merate.mi.astro.it/swiftbirthday06.

May 2006 'ENEA per la tecnologia e il territorio' , Rome (Italy), 17 May, 2006.
http://www.enea.it

July 2006 "XI Marcel Grossmann Meeting on General Relativity", Berlin (Germany), July 23-29, http://www.icra.it/mg/mg11/welcome.htm.

June 2006 "Swift and GRBs: Unveiling the Relativistic Universe" in Venice, Italy, June 5-9, 2006. http://www.merate.mi.astro.it/docM/OAB/Research/SWIFT/sanservolo2006/index.html.

Contributed talks:
July 2007 "GRB 060218 and the binaries as progenitors of GRB-SN system", presented at the "4th Italian-Sino Workshop on Relativistic Astrophysics", Pescara (Italy), July 20-30, 2007, http://www.icra.it/Italian-Sino_Workshop/fourth/english/welcome.htm.

June 2007 "GRB 060218 and the the comparison with the other GRBs ", presented at the "10th Italian- Korean Symposium on Relativistic Astrophysics, Pescara (Italy), June 25-30, 2007. http://www.icra.it/ITKO/10/welcome.htm.

April 2007 "GRB060218: a good example of GRB-SN connection", presented at the "The April Meeting 2007 of the American Physical Society", Jacksonville (Florida), April 14-17, 2007, http://www.aps.org/meetings/april/index.cfm.

February 2007 "GRB 060218 within the theoretical framework of the fireshell", presented at the "Cesare Lattes meeting on Gamma-Ray Bursts, Black Holes and Supernovae", Mangaratiba (Brazil), February 25 - March 3, 2007,
http://www.icra.it/ICRA_Networkshops/lattes_meeting/first/welcome.htm

September 2006 "On GRBs 060218: one of the most peculiar source", presented at "XII Brazilian School of Gravitation and Cosmology", Mangaratiba (Brazil), September 10-23, 2006, http://www.cbpf.br/$\sim$cosmogra/arquivos/princbscg.htm.

July 2006 "On GRB 060218 and the GRBs related to Supernovae Ib'¸', presented at "XI Marcel Grossmann Meeting on General Relativity", Berlin (Germany), July 23-29, 2006, http://www.icra.it/mg/mg11/welcome.htm.

Poster:
June 2006 : "Theoretical interpretation of GRB970228" in the conference
"Swift and GRBs: Unveiling the Relativistic Universe", Venezia (Italy), June 5-10, 2006.
November 2007 : "Short and canonical GRBs";
"Gamma-Ray Bursts 2007", Santa Fe, New Mexico (USA), November 5-9, 2007.
November 2007 "Theoretical interpretation of the Amati relation within the "Fireshell" model";
"Gamma-Ray Bursts 2007", Santa Fe, New Mexico (USA), November 5-9, 2007.
November 2007 "GRB060614: a progress report" "Gamma-Ray Bursts 2007", Santa Fe, New Mexico (USA), November
5-9, 2007.

Khachatryan Harutyun

Position: IRAP Ph.D. student

Period covered: 2005-2008

I Scientific Work

Observational cosmology: study of Cosmic Microwave Background maps, dark energy cosmological models.

II Conferences and educational activities

ICRANet workshops

Lecian Orchidea Maria

Position: Phd Student

Period covered: 1st November 2005-31st October 2008

I Scientific Work

Modern approaches to generalized theories of gravity

II Conferences and educational activities

Conferences and Other External Scientific Work:

1) Education

- Winter-Spring 2008: followed the lectures Early Cosmology (Sapienza PhD lectures) held by Prof. G. Montani at University '' Sapienza'', Rome.

- 11-20 September 2007: followed the doctoral school Central European School in Particle Physics, held at Charles University, Prague.

- Winter-Spring 2007: followed the lectures (Sapienza PhD lectures) Phenomenology of the Standard Model and its Supersymmetric extensions, held by Dr. Franco, Dr.ssa Mele, Dr. Mena, Dr. Silvestrini at University ''Sapienza'', Rome.

- 28 November-17 December 2006: followed the doctoral school “Gravitational Waves, Relativistic Astrophysics and Cosmology”, held at Centre Emil Borel, Institut Henri Poincar\'{e}, Paris.

- Autumn 2006: followed the lectures “Riemannian Geometry” given by Prof. S. Marchiafava, and “Group Representation Theory” given by Prof. C. De Concini, held at University “Sapienza”, Mathematics department.

- Spring 2006: followed the doctoral lectures (IRAP PhD) “Geometrodynamics and matter fields” held by Dr. G.Montani at University “Sapienza”, Rome.

- January 2006: followed the doctoral lectures (IRAP PhD) “Mathematical Problems Of General Relativity Theory” held by Prof. D. Christodoulou at ETH, Zurich.

- Autumn 2005: followed the lectures “An introduction to Quantum Gravity” held by Dr. G.Amelino-Camelia at University “Sapienza”, Rome.

2) Talks

- 8-18 July 2008: participated in the workshop “The III Stueckelberg Workshop” (main lecturer: Prof. G. 't Hooft), in Pescara (Italy), with three contributions “Stueckelberg: a forerunner of Modern Physics III ”, “Recent approaches to modified-gravity theories” and “The Taub Universe viewed in a Polymer Quantization Approach”.

- 24-29 September 2007: participated in the meeting “ XCIII Congresso Nazionale Società Italiana di Fisica” in Pisa (Italy), with the contribution “Dark energy as a relic of the vacuum-energy cancellation”.

- 3-8 September 2007: participated in the workshop “ II Stueckelberg Workshop” (main lecturers: Prof. T. Thiemann, Prof. T. Damour), in Pescara (Italy), with three contributions “Stueckelberg: a forerunner of Modern Physics II ”, “Exponential Lagrangian for the gravitational field and the problem of vacuum energy” and “Fundamental symmetries of the extended space-time”.

- 20-30 July 2007: participated in the meeting “4th Italian-Sino Workshop on Relativistic Astrophysics”, in Pescara (Italy), with the contribution “Scalar-tensor analysis of an exponential Lagrangian for the Gravitational Field”.

- 25-30 June 2007: participated in the meeting “10th Italian-Korean Symposium on Relativistic Astrophysics”, in Pescara (Italy), with the contribution “The role of torsion in fermion interactions”.

-13-17 April 2007: participated in the “APS April Meeting”, in Jacksonville (Florida, USA), with the contribution “Lorentz Gauge Theory and its Phenomenological Implications”.

- 18-23 September 2006: participated in the meeting “XCII Congresso Nazionale Società Italiana di Fisica” in Turin (Italy), with the contribution “The role of torsion within a gauge theory of the Lorentz group”.

- 23-29 July 2006: participated in the meeting “Eleventh Marcel Grossmann Meeting on General Relativity” in Berlin (Germany), with the contribution “Electro-Weak Model within a 5-dimensional Lorentz group theory”.

-10-20 July 2006: participated in the meeting “The third Italian-Sino Workshop on Relativistic Astrophysics”, in Pescara (Italy), with the contribution “Accelerated Universe from an exponential Lagrangian of the metric field”.

-26 June-3 July 2006: participated in the meeting “I Stueckelberg Workshop” (main lecturer: Prof. A. Ashtekar), in Pescara (Italy), with two contributions “Stueckelberg: a forerunner of Modern Physics” and “Electro-weak Model within the framework of Lorentz gauge theory: Ashtekar variables?”.

- 5-16 February 2006: participated in the international meeting “The first Bego Scientific Rencontre” in Nice (France), with the contribution “Lorentz gauge theories and the Electro-Weak model”.

3) Seminars

- CGM Seminars 2008 (Sapienza)

(i) 25.01.08 : “Polymer representation and GNS construction: fundamentals and applications”

- CGM Seminars 2007 (Sapienza)

(i) 30.03.07 : “An introduction to spin foams”.

- ICRA Seminars on Quantum Gravity 2006 (Sapienza):

(i) 11.04.2006 : “Generalized uncertainty principle, noncommutative spacetime and the scalar field”.

(ii) 23.05.2006 : “Functional approach to quantum gravity”.

4) Meetings

-29 September-4 October 2008: participated in the meeting “Quantum Spacetime and Noncommutative Geometry”, held at Department of Mathematics, University of Rome Sapienza, Italy.

- 19-20 June 2006: participated in the meeting “Plank scale in astrophysics and cosmology”, held at “Università degli Studi di Roma Sapienza”, Rome;

- 10-20 June 2005: participated in the meeting “II Italian-Sino Workshop on Relativistic Astrophysics: Probing the Dark Universe”, Pescara (Italy);

- 27 June-1 July 2005: participated in the meeting “The Russian-Italian Lifshitz-Zeldovich Meeting on Relativistic Astrophysics”, Pescara (Italy).

Work With Students

-November 2007 -January 2008: Collaboration grant by University Sapienza as teaching assistant (50 hours) of Prof. R.Capitanelli for the lectures ''Fundamentals of Calculus and Analysis II''.

III 2007-2008 List of Publications

S. Casanova, O.M. Lecian, G. Montani, R. Ruffini and R. Zalaletdinov, A generalization of Schouten classification for non-Riemannian geometries with asymmetric metric, Mod. Phys. Lett. A, 23, 17-23 (2008) [arXiv:0712.3716].

O.M. Lecian and G. Montani, Scalar-tensor analysis of an exponential Lagrangian for the Gravitational Field, AIP Conference Proceedings, 966 Relativistic Astrophysics: 4th Italian-Sino Workshop, p.264 [arxiv: 0710.0544] (refereed).

O.M. Lecian and G. Montani, Electro-weak Model within the framework of Lorentz gauge theory: Ashtekar variables?, - Nuovo Cim. B122, 207 (2007) [gr-qc/0702026].

N. Carlevaro, O.M. Lecian and G. Montani, Macroscopic and microscopic paradigms for the torsion field: from the test-particle motion to a Lorentz gauge theory, Ann. Fond. L. de Broglie, 32 (2-3), 281-295 (2007) (invited paper) [arXiv:0711.3538].

F. Cianfrani, O.M. Lecian and G. Montani, Fundamentals and recent developments in non-perturbative canonical Quantum Gravity [arXiv:0805.2503]

O.M. Lecian, G. Montani, Riemannian and non-Riemannian extensions of geometrodynamics versus Einsteinian gravity, to appear on J. Korean Phys. Soc. [arxiv:0712.3726].

F. Cianfrani and O.M. Lecian, Stueckelberg: a forerunner of Modern Physics, Il Nuovo Cim. B122 , 123 (2007)[physics/0701340].

N. Carlevaro, O.M. Lecian, and G. Montani, Lorentz Gauge Theory and Spinor Interaction, Int. J. Mod. Phys. A, 23(8), 1248 (2008) [arXiv:0801.4242].

O.M. Lecian and G. Montani, Fundamental symmetries of the extended space-time, Int. J. Mod. Phys. A, 23(8), 1266 (2008)[arXiv:0803.1629].

O.M. Lecian and G. Montani, Exponential Lagrangian for the gravitational field and the problem of vacuum energy, Int. J. Mod. Phys. A, 23(8), 1286 (2008) [arXiv:0803.1620].

F. Cianfrani and O.M. Lecian, Stueckelberg: a forerunner of Modern Physics II, Int. J. Mo-O.M. Lecian, G. Montani, Implications of non-analytical f(R) gravity at Solar-System scales, submitted to CQG, [arXiv:0807.4428].

M.V. Battisti, O.M. Lec ian, G. Montani, Polymer Quantum Dynamics of the Taub Universe, to appear on PRD, [arXiv:0806.0768].

O.M. Lecian and G. Montani, Novel Analysis of Spinor interactions and non-Riemannian geometry, submitted to Journ. Math. Phys.

N. Carlevaro, O.M. Lecian, G. Montani, Fermion dynamics by internal and Spacetime Symmetries, submitted to Europhysics Letters.

O.M. Lecian and G. Montani, Dark Energy as Relic of the Vacuum Energy Cancellation?, Int. J. Mod. Phys. D, 17, 111 (2008)[arXiv:0709.1400].d. Phys. A, 23(8), 1105 (2008)[arxiv:0803.1583].

Orchidea Maria Lecian was born in Rome on December 15th 1980. She got a Master Degree in Physics at University of Roma Sapienza with a thesis on “Kaluza-Klein theories” under the supervision of Dr. Giovanni Montani and Prof. Remo Ruffini.
Then she became an IRAP-PhD student and he focused her research activity on General Relativity and its extensions. Orchidea Maria Lecian has followed, during the three years of her Ph.D., all the lectures of the PhD program and also other lectures held at University of Rome La Sapienza, both at the Physics Department and at the Mathematics Department. She has been presenting her research in international meetings and workshops, having the results been published in many conference proceedings and international refereed journals.
She is also a member of ICRA, SIF (Societa’ Italiana di Fisica) and APS (American
Physics Society).

Pizzi Marco

Position: Ph. D. Student (IRAP Ph.D., IV Cycle)

Period covered: 1 November 2005- present

I Scientific Work

The main results of my three IRAP PhD. years have been summarized in the thesis “A sequence of four works on exact solutions of the Einstein-Maxwell equations”, which I will dicuss in a date that has to be estabished. My supervisor is prof. V. Belinski.

The thesis is divided into four chapters, which are based on a sequence of four independent works. Each of them makes use of an exact solution of the Einstein-Maxwell equations; they are concatenated in a logical way.

The first chapter is devoted to a special 2-soliton solution, constructed by a Schwarzschild metric “dressed” with a Kerr-Newman soliton. We drowned the electric force lines, and a special configuration is considered with a negligible conical singularity.

The second chapter is dedicated to the analysis of the Alekseev-Belinski solution, which is again a special case of a 2-soliton solution. We considered the different equilibrium configurations, stressing the presence of non-Newtonian cases: also two opposite-signed charges can be in equilibrium, due to the repulsive nature of the naked singularity.

The third chapter is devoted to construct a membrane-model of naked singularity which avoids the center-infinity source and allows an external region with “repulsive-gravity”. We found that a radially-stable configuration with a radius smaller than Q^2/M is indeed possible. This give a more sensible physical meaning also to the Alekseev-Belinski solution.

Using the same technique of the previous work, in the last chapter we consider the motion, and in particular the intersection, of charged shells. This is a generalization of an article by Barkov-Belinski-Bisnovatji-Kogan to the electric case. We found that the ejection mechanism can be magnified in presence of charges.

II Conferences and educational activities

Conferences and Other External Scientific Work

- Geometria Riemanniana, Marchiafava
- Onde non lineari e solitoni, A. Degasperis

- Teorie di Gauge, L. Maiani
- Lectures on General Relativity by Prof. Christodoulou (ETH, Zurich, Switzerland)

- Motion, Radiation and Timing of Compact Binaries by Prof. Damour (IHES, Bures-sur-Yvette, France)
- The Reference Frame: from Earth to CMB by Prof. Mignard (Observatoire de la Côte d'Azur, France) and Dr. Klioner (Lohrmann Observatory, Dresden, Germany)
- The Binary Pulsars: Theory and Observations by Prof. Kramer (Jodrell Bank Observatory, Manchester, United Kingdom)

- Teoria dei campi, M. Testa , University of Rome "La Sapienza"

- 1 month in Paris for the school: Gravitational Wawes, Relativistic Astrophysics and Cosmology, 1 November-4 December; organizer T. Damour, N. DeRuelle
- I Cesare Lattes Meeting on GRBs, Black Holes and Neutron Stars, Rio de Janeiro, February 25-3March 2007
- 10th Italian-Korean Symposium on Relativistic Astrophysics, June 25 - 30 2007, Pescara
- 4th Italian-Sino Workshop on Relativistic Astrophysics, July 20 - 30 2007, Pescara, Italy
- II Stueckelberg Workshop, 3-8 September, Pescara
- APS april meeting, St. Louis, Missouri (USA)
- III Stueckelberg Workshop, 8-19 July, Pescara
- Lectures delivered by prof. t'Hooft in Pescara.

Talk and Poster-sections delivered:

- "A peculiar 2-soliton solution", talk delivered at Uviversity of Rome "La Sapienza", Physics Department.
- "The fields of a naked singularity and black hole in mutual equilibrium " at the 4th Italian-Sino Workshop
- "Electric force lines of the double Reissner-Nordstrom solution" at the II Stueckelberg Workshop
- "Electric force lines and Stability in the Alekseev-Belinski solution" Talk delivered at the III Stueckelberg Workshop
- "Electric force lines in the Alekseev-Belinski solution " Poster-Section at the APS april meeting, St. Louis, Missouri (USA).

III 2007-2008 List of Publications

1. M. Pizzi, "Gravitational field and electric force lines of a new 2-soliton solution", International Journal Of Modern Physics D, Vol.16, No. 6 (2007) 1087-1108.
2. M. Pizzi, "Electrical force lines of a 2-soliton solution of the Einstein-Maxwell Equations", proceeding of the XI MGM, in press.

3. M. Pizzi, A. Paolino, “Equilibrium configurartions in the double Reissner-Nordstrom exact solution”, International Journal of Modern Physics A.,Vol. 23, No. 8 (30 March 2008).
4. A. Paolino, M. Pizzi, “The fields of a naked singularity and a black hole in mutual equilibrium”, AIP Conf. Proc.966, pagg. 272-279, 2008.
5. A. Paolino, M. Pizzi, “Electric Force Lines of the double Reissner-Nordstrom exact solution”, International Journal Of Modern Physics D, Vol.17, No.8, pagg.1159–1177, 2008.
6. V. Belinski, M. Pizzi, A. Paolino, “Charged membrane as a source for repulsive gravity”, accepted for pub. by IJMPD.
7. V. Belinski, M. Pizzi, A. Paolino, “A membrane model of the Reissner-Nordstrom singularity with repulsive gravity”, proceeding of III Stueckelberg Workshop.
8. M.Pizzi, A. Paolino, “Intersections of self-gravitating charged shells in a Reissner-Nordstrom field” submitted to IJMPD.

Caito Letizia

Position: PhD student

Period covered: November 2007 – present

I Scientific Work

She works on the analysis of Gamma-Ray bursts (GRBs), making theoretical simulations based on the *Fireshell* model and comparing them with observational data, in order to infer theoretical implications and interpretation about GRBs. In particular, she has worked on the investigation of a possible intermediate new class of *fake* short bursts.

II Conferences and educational activities

Conferences and Other External Scientific Work

- "2nd Kolkata Conference on Observational Evidence for Black Holes in the Universe", held in Kolkata, India, from February 10th 15th, 2008 and "Satellite Meeting on Black Holes, Neutron Stars, and Gamma-Ray Bursts", held in Kolkata, India, from February 16th to 17th, 2008

- "3rd Stueckelberg workshop on relativistic field theories", held in Pescara, Italy, from July 8th to 18th, 2008

- "XIII Brazilian School of Cosmology and Gravitation", held in Mangaratiba (Rio De Janeiro), Brazil, from July 20th to August 2nd, 2008

- "Probing stellar populations out to the distant universe", international meeting held in Cefalu' (Palermo), Italy, from September 14th to 19th, 2008

III 2007-2008 List of Publication

The Amati relation in the fireshell model, Roberto Guida, Maria Grazia Bernardini, Carlo Luciano Bianco, Letizia Caito, Maria Giovanna Dainotti, Remo Ruffini, A&A Lett 487 (2008) 37-40.

GRB970228 and a class of GRBs with an initial spikelike emission, Maria Grazia Bernardini, Carlo Luciano Bianco, Letizia Caito, Maria Giovanna Dainotti, Roberto Guida, Remo Ruffini, A&A Lett. 474 (2007) 13-17.

GRB060218 and GRBs associated with Supernovae Ib/c, Maria Giovanna Dainotti, Maria Grazia Bernardini, Carlo Luciano Bianco, Letizia Caito, Roberto Guida, Remo Ruffini, A&A Lett. 471 (2007) 29-32.

Letizia Caito was born in Roma in 1981. She received her diploma in physics from Sapienza University of Roma in May 2006. In November of the same year she was admitted to the International Relativistic Astrophysics Ph.D. Program (IRAP PhD). She is currently attending the third year of her PhD

De Barros Gustavo

Position: Dottorando Irap Phd

Period covered: October 2006 - present

I Scientific Work

I am studying from the beginning, the equations of the plasma formed in the *dyadosphere.* We are trying to develop the numerical code to see the evolution of this plasma.

I fitted the GRB 050509B, which we expect to be the first “genuine” short GRB.

I studied the work of Cavallo e Rees and the work of Aksenov, Vereshchagin and Ruffini about thermalisation in pair plasma.

II Conferences and educational activities

Conferences and Other External Scientific Work

2006 November 28, December 17 – “Gravitational waves, relativistic astrophysics and cosmology” doctoral School, Institut Henry Poincaré – Université Pierre et Marrie Curie. Paris (France)

2007 February 25, March 3 - Cesare Lattes Meeting on GRBs, black holes and supernovae. Rio de Janeiro – Brasil

2007 September, 16-22 - National School of Astrophysics, 9o cycle, 2o course. Isola di San Servolo - Venezia (Italy),

2008 February, 10-15 - Observational evidences for Black-holes in the universe. Kolkata (India)

2008 February, 16-17 - Black-holes, Neutron Stars and Gamma ray bursts. Kolkata (India)

2008 June, 23-27 - Nanjing GRB conference. Nanjing (China)

2008 July, 8 -18 - Stueckelberg Workshop on Relativistic Field Theories. Pescara (Italy)

2008 July 20, August 2 - XIII Brazilian School of Cosmology and Gravitation. Rio de Janeiro (Brasil)

2008 September, 7-19 - Probing stellar populations out to the distant universe. Cefalù (Italy)

Minazzoli Olivier

Position: Ph.D, student

Period: 2006-present

Speaker and Posters

-SF2A2007 *(*http://sf2a2007.obs.ujf-grenoble.fr/php/abstracts.php?id=43 *)* : speaker and poster

-ILRS2007 *(*http://www.oca.eu/gemini/ecoles_colloq/colloques/ilrs2007/articles.php?lng=en&pg=142) : speaker and poster

-EDSFA2008 : poster

Publications in Proceedings of Meetings and Workshops

- *Relativistic analysis of an earth-satellite time transfer , ILRS2007 (* http://arxiv.org/abs/0709.4604*)*

- *General 2PM metric of General Relativity*, EDSFA2008 (http://arxiv.org/abs/0804.3863)

Meetings, Courses and Workshops

-IHP2006 (http://luth2.obspm.fr/IHP06/) (Paris 2006)

-Semaine de l'Astrophysique Française 2007 (Grenoble 2007) (http://sf2a2007.obs.ujf-grenoble.fr/)

-Ecole de Gravitation du CNRS (Barèges 2008)

-Courses on General Relativity, Nathalie Deruelle (Nice 2008)

-Courses on Special Relativity epistemology, Christian Bracco (Nice 2008)

-Courses on MHD (Magneto-Hydro Dynamic), Jean-François Pinton (Nice 2008)

-Workshop on"Theoretical Aspects of the ACES Mission" (Firenze 2008)

2007-2008 List of Publications

-*The Maxwell_Lodge effect : significance in classical Electromagnetism*, Germain Rousseaux, Richard Kofman & Olivier Minazzoli, 2008EPJD...49..249R

-*Relativistictime-transfer in the T2L2 experiment including the J_2 contribution to the Earth potential*, O. Minazzoli, B. Chauvineau, E. Samain, P. Exertier and P. Vanckren, in preparation

-*2 PM and 2,5 PM metrics of General Relativity in the continuity of the IAU2000,* O. Minazzoli, B. Chauvineau, in preparation

Patricelli Barbara

Position: Phd Student

Period covered: 2007 - 2009

I Scientific Work

- ✓ **Neutron Cores and Heavy Nuclei:** The relation between the total number of protons Np and the mass number A of nuclei and neutron cores with a Thomas-Fermi approach is studied. In particular, with this model a relation between these two quantities for A ranging from the typical values of nuclei, that are well reproduced, to the ones of Neutron Stars is obtained. The effects of the penetration of electrons into the core by increasing A are also studied.
- ✓ **Critical Fields in Massive Cores:** The existence of electric fields of the order of the critical field of Sauter-Heisenberg-Euler-Schwinger for electron-positron pair production in massive cores with the Thomas-Fermi model is studied. We are extending the treatment to the General Relativistic case.
- ✓ **Neutron Star Crust:** The characteristics of the Crust of Neutron Stars is studied; in particular, by using a general relativistic treatment is calculated the mass of the thickness of this physical region for different sets of initial conditions, finding that in general the Crust is smaller in mass and in radial extension for more compact stars. It is also investigated a possible correlation between the properties of the Crust of Neutron Stars and Gamma Ray Burst within the Fireshell Model.
- ✓ **Gamma Ray Bursts:** It is studied a particular gamma ray source, GRB080319B. In particular, are analyzed the light curve and the spectrum of this source and the data are interpreted within the Fireshell Model.

II Conferences and educational activities

Conferences and Other External Scientific Work

- ✓ First Cesare Lattes Meeting on Gamma Ray Bursts, Black Holes and Supernovae, Mangaratiba (Brazil), February 25 - March 3, 2007
- ✓ Tenth Italian-Korean Symposium on Relativistic Astrophysics, Pescara (Italy), June 25 - 30, 2007
- ✓ Fourth Italian-Sino Workshop on Relativistic Astrophysics, Pescara (Italy), July 20 - 30, 2007

- ✓ National School of Astrophysics, ninth cycle, second course, Isola di San Servolo - Venezia (Italy), September 16 - 22, 2007
- ✓ April Meeting of the American Physical Society, St. Louis (Missouri - USA), April 12-15, 2008
- ✓ Fifth Italian-Sino Workshop on Relativistic Astrophysics, Taipei-Hualien (Taiwan), May 28 - June 1, 2008
- ✓ Third Stueckelberg Workshop on Relativistic Field Theories, Pescara (Italy), July 8 - 18, 2008
- ✓ XIII Brazilian School of Cosmology and Gravitation, Rio de Janeiro (Brazil), July 20 - August 2, 2008.
- ✓ Probing stellar populations out to the distant universe, Cefal\`u (Italy), September 7 - 19, 2008

III 2007-2008 List of Publications

Patricelli, M. Rotondo, R. Ruffini, “On the charge to mass ratio of neutron cores and heavy nuclei”, 4th Italian-Sino Workshop. AIP Conference Proceedings, Vol. 966, pp. 143-146 (2008).

Patricelli, M. Rotondo, J. A. Rueda H., R, Ruffini, “The Electrodynamics of the Core and the Crust components in Neutron Stars”, AIP Conference Proceedings, Vol. 1059, pp. 68-71 (2008)

R. Ruffini et al, “On Gamma Ray Bursts”, to appear on the Proceedings of the Eleventh Marcel Grossmann Meeting, Berlin (Germany), July 2006.

Rangel Lemos, Luis Juracy

Position: PhD student

Period covered: 2006 - present

I Scientific Work

During this year I mainly studied the production of gamma rays in hadronic interactions. During the time spent at the University of Rome I collaborated with Prof. Ru±ni on the interpretation of the high energy gamma ray emission from Gamma Ray Bursts (GRBs) arising from hadronic interactions of GRB protons with the Circum Burst Medium (CBM). This work was presented at the *II* Kolkata Conference on `Observational Evidence for Black Holes in the Universe', held in Kolkata-India.

II Conferences and educational activities

Conferences and Other External Scientific Work

July 2007 - Fermi's approach to the study of hadronic interactions,

Italian-Sino Workshop on Relativistic Astrophysics, Pescara--Italy

II Kolkata Conference on `Observational Evidence for Black Holes in the Universe', 2008, February 10-16, Kolkata, India. In this conference I presented the talk \Fermi's approach to the study of hadronic interactions", which will be published in the proceedings series of the American Institute of Physics.

2008 Nanjing GRB Conference, 2008, June 23-27, Nanjing, Chine. In this conference I presented the poster \GRB 060714 in the Fireshell Model".

XIII Brazilian School of Cosmology and Gravitation, 2008, July 25-August 2, Mangaratiba/Rio de Janeiro, Brazil.

III Stueckelberg Workshop on Relativistic Field Theories, 2008, July 8-18, Pescara, Italy. In this workshop I presented the talk \Threshold energies of pions from pp interactions".

X Italian School of Astrophysics - `Probing Stellar Populations out to the Distant Universe', 2008, September 7-19, Cefalu-Sicily, Italy.

III 2007-2008 List of Publications

Fermi's approach to the study of hadronic interactions, Rangel Lemos, L.J., Casanova, S., Kelner, S. R., Ru±ni, R., RELATIVISTIC ASTROPHYSICS: 4th Italian-Sino Workshop. AIP Conference Proceedings, Volume 966, 2008, pp. 325-330.

Spatial and observational homogeneities of the galaxy distribution in standard cosmologies, Rangel Lemos, L. J.; Ribeiro, M. B. Astronomy and Astrophysics, Volume 488, Issue 1, 2008, pp.55-66.

Rueda Hernández Jorge Armando

Position: PhD Student-University of Rome “La Sapienza”

Period covered: 2006-2009

I Scientific Work

- **Relativistic Astrophysics**: The general properties of Neutron Stars as mass and radius are studied on the light of general relativity. Particular attention is devoted to the electromagnetic properties and their influence on these properties and eventually on the gravitational collapse to a black hole. Also the most external part of neutron stars, the crust, is studied and its connection with the Fireshell model of GRBs is established.
- **Critical Fields in Massive Cores:** The existence of electric fields of the order of the critical field of Sauter-Heisenberg-Euler-Schwinger for electron-positron pair production in massive cores within the Thomas-Fermi model is studied. We have extended the treatment to the General Relativistic case.
- **Vacuum polarization processes**: It is studied the effect of critical fields for pair creation on the geometry and energetics of compact objects like black holes.

II Conferences and educational activities

Conferences and Other External Scientific Work

- First Cesare Lattes Meeting on Gamma Ray Bursts, Black Holes and Supernovae, Mangaratiba (Brazil), February 25 - March 3, 2007
- Tenth Italian-Korean Symposium on Relativistic Astrophysics, Pescara (Italy), June 25 - 30, 2007
- Fourth Italian-Sino Workshop on Relativistic Astrophysics, Pescara (Italy), July 20 - 30, 2007
- April Meeting of the American Physical Society, St. Louis (Missouri - USA), April 12-15, 2008
- Third Stueckelberg Workshop on Relativistic Field Theories, Pescara (Italy), July 8 - 18, 2008

III 2007-2008 List of Publications

General Relativistic Radiant Shock Waves in the Post-Quasistatic Approximation, Jorge A. Rueda H. and L. A. Nu˜nez , Journal of Physics: Conf. Series 66 012042

On the “Dyadotorus" of the Kerr-Newman Spacetime, Christian Cherubini, Andrea Geralico, J. A. Rueda H. and Remo Ruffini, AIP Conf. Proceedings 966 pp. 123-126

The Electrodynamics of the Core and the Crust components in Neutron Stars, B. Patricelli, M. Rotondo, J. A. Rueda H. and R. Ruffini, AIP Conf. Proceedings 1059 pp. 68-71

On Gamma Ray Bursts, Remo Ruffini et al., To appear on the Proceedings of the Eleventh Marcel Grossmann Meeting, Berlin (Germany), arXiv:0804.2837

Izzo Luca

Position: IRAP PhD student

Period covered: 2007-2010

I Scientific Work

Cosmography by GRBs, A&A 2008, 490 31, in collaboration with *S. Capozziello*

Constraining the cosmological Equation of State by Gamma Ray Bursts, submitted, in collaboration with *M. Capaccioli, S.Capozziello and G. Covone*

II Conferences and educational activities

Conferences and Other External Scientific Work

- *Observational Evidence for Black Holes in the Universe*, February 10-15 (2008) and the satellite meeting *Black Holes, Neutron Stars and Gamma Ray Bursts*, February 16-17, S. N. Bose Centre for Basic Sciences, Kolkata, India.

- *3th Stueckelberg Workshop*, July 8-18 (2008), Pescara, Italy.

- *13th Brazilian school of Cosmology and Gravitation*, July 20-August 2 (2008), Mangaratiba, Brazil.

- *Probing Stellar Populations out to the Distant Universe*, September 14-19 (2008), Cefalù, Italy.

- *18th SIGRAV Conference*, September 22-25, Cosenza, Italy.

Contributed and Invited Talks

- *3th Stueckelberg Workshop*, July 8-18 (2008), Pescara, Italy. In this workshop he presented the following talks: “GRB061007: A progress report”, and “Detection of Cosmological Stochastic Background of Gravitational waves in f(R) gravity with FASTICA”, which will be published in the proceedings of the meeting itself.

- *18th SIGRAV Conference*, September 22-25, Cosenza, Italy. In this workshop he presented the talk “Cosmography by Gamma Ray Bursts: GRB as distance indicators?”, which will be published in the proceedings series of the meeting itself.

Pugliese Daniela

Position: Ph.D. Student

Period covered: 2007-2010

I Scientific Work

My actual research activity is related to the study of the self-gravitating systems of elementary particles. In particular I considered static, spherically symmetric self-gravitating (cold) systems of scalars minimally coupled to a U(1) gauge field (charged boson stars). They are localized solutions of the coupled system of Einstein and general relativistic Klein-Gordon equations of a complex scalar field with a local U(1) symmetry. The study of boson stars were first introduced by Ruffini and Bonazzola in 1969. They used field quantization of a real scalar field and, considering the ground state of N particles, they found for spherical symmetric equilibrium, the solutions of the Einstein-Klein- Gordon equations. A method of self-constituent field was used to study the equilibrium configurations of a system of self-gravitating scalar bosons and fermions in their ground state without considering the traditional perfect fluid approximations or equations of state. The general relativistic treatment eliminates completely some difficulties present in the non relativistic Newtonian approximation, where it was noted that at an increase of number of particles correspond an increase of the total energy of the system until the energy reaches a maximum value and then decreases to negative values. Furthermore from this analysis it was also evident that one cannot treat such a system of many bosons (with a constant temperature) as perfect fluid since the pressure of the system is anisotropic. On the other hand this treatment introduced for the fist time the concept of a critical mass for these objects. In fact as for other compact objects as white dwarfs and neutron stars, there is a critical mass and a critical number of particle , below which this system is stable against complete gravitational collapse to a black hole. In my study particular attention is given to the analysis of the stability and equilibrium of this systems in particular for values boson charge near the critical values and for different values of the mass-charge ratio of these systems.

In general, attention is due to the problem of stability of matter, bosons or fermions, confined by its self-generated gravity. Gravitational attraction for spherically symmetric self gravitating systems of scalars(charged as neutral) counter{balances the repulsion due to kinetic energy. On the other hand, Heisenberg uncertainty principle prevent neutral boson stars from a complete gravitational collapse, meanwhile the radius R should satisfy the condition $R>3R_S$ where R_S is Schwarzschild radius, to avoid complete gravitational collapse. Stable charged boson stars can exist if the gravitational attraction is larger than the Coulomb repulsion: if the repulsive Coulomb force is bigger than the attractive gravitational one the system should be instable. Moreover as for

other charged objects, if the radius of these systems is less than the electron Compton wavelength and if is super critically charged then pair production of electrons and positrons occurs.

A great interest is involved in this study of the phenomena related to the formations and stability of self-gravitating systems. Compact objects play an important role in the astrophysical researchand also they involve a great amount of physic of nuclei and of elementary particles. Moreover some authors conjectured that a boson stars could model a self-gravitating Bose-Einstein condensate on an astrophysical scale. These systems provide also an ideal model to investigate the behaviour of elementary particles in the context of general relativity, involving the study of field equations on a semi-riemannian manifold and in particular for the charged boson stars the Einstein-Maxwell equations. On the other hand if no fundamental elementary scalar particle has been detected so that the existence of the spin 0-particles is still an open issue, nevertheless in the theory of Glashow-Weinberg-Salam, a real scalar particle, the Higgs particle after symmetry breaking is introduced. Moreover the study of gravitational equilibrium solutions of scalar fields is motivated also by the idea that the collapse of charged compact objects of bosons in principle could to lead charged black holes. In this way these configurations may represent also an initial condition for the process of gravitational collapse and in many respects of the physic of black hole as for example in the explanation and modelling of gamma ray emission (GRBs)that postulates the existence of critical and overcritical (electrical) fields in black holes in order to extract their blackholic energy. After the numerical resolutions of the Einstein-Klein-Gordon-Maxwell equations for different values of the radial function at the origin and for different values of the charge, I focused attention on the stability of these configurations for boson charge near or greater the critical valued. In particular, from the numerical integrations it is evident that stable charged configurations of self{gravitating charged bosons are possible even with particle charge $q = q_{crit}$. It is also evident for different values of $q > q_{crit}$ stable solutions without nodes are possible only for little value of central density; meanwhile for value $q > q_{crit}$ and higher central densities the boundary conditions at the origin are not more satisfied, only stable configurations for solutions with one or more nodes are possible. The behaviour of the radius such as the total charge and mass of the system near the critical point is studied. In this line the future analysis is also devoted to the study of a generic quantized system of boson and anti-bosons such as charged self-gravitating fermions.

II Conferences and educational activities

December 2007-July 2008 :

- Fisica gravitazionale II *by Prof. R. Ruffini*
- Fisica teorica II: relatività generale, cosmologia, collasso gravitazionale *by Prof. R. Ruffini*
- Fisica teorica III: buchi neri, polarizzazione del vuoto, Big Bang e cosmologia *by Prof. R. Ruffini*
- Fisica teorica: meccanica analitica *by Prof G. Gallavotti*

— Cosmologia primordiale *by Dr G. Montani*

February 2008

- "Second Kolkata Conference on Observational Evidence for Black Holes in the Universe"
and
- "SNBNCBS-ICRANet workshop on Black Holes, Neuton Stars and Gamma Ray Bursts", February 10th-17th 2008, Kolkata.

July—August 2008

- "Third Stuckelberg Workshop", July 8-18 (2008) , Pescara, Italy.

- " XIII Brazilian school of cosmology and gravitation", 24 July- 02 August (2008) Mangaratiba Rio de Janeiro Brazil

September 2008

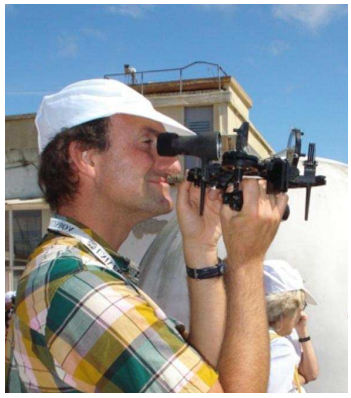
- "Probing stellar populations out to the distant Universe" 14-19 September, 2008 Cefalù Sicily

Given Talks and Seminars

July—August 2008

-***"Deformation of space—time metrics"***
Third Stuckelberg Workshop, July 8-18 (2008) , Pescara, Italy.

Sigismondi Costantino



Position in ICRANet: PhD Student

Period covered: 2008

I Scientific Work

Solar Variability: Ground Based Measurements of the Solar Diameter.

The recent history of solar diameter is being recovered through central eclipses data. Method and data analysis procedure has been implemented for 2006 total eclipse (papers submitted to Solar Physics and to Science in China).

The largest negative oscillation ever published (-0.41") of solar diameter has been found for 2006 march 29 total eclipse, as well as the evidence of short timescales of such oscillations (half year for 0.5" oscillation).

Publications:

1. C. Sigismondi, *Long Waves Perturbations to Astronomical Tides in Adriatic and Tyrrenian Sea*, Proc. IV Sino-Italian Workshop, Pescara, July 22-29, 2007 AIP Conference Proceedings **966**, 333-340, 2008.
2. C. Sigismondi, *Solar Radius Variations Measured in Central Eclipses*, Proc. IV Sino-Italian Workshop, Pescara, July 22-29, 2007 AIP Conference Proceedings **966**, 341-348, 2008.
3. C. Sigismondi, Effemeridi - Introduzione al Calcolo Astronomico, Ateneo Pontificio Regina Apostolorum Roma (2008). ISBN - 9788889174708
4. C. Sigismondi, La Sfera da Gerberto al Sacrobosco, Ateneo Pontificio Regina Apostolorum Roma (2008). ISBN - 9788889174760
5. C. Sigismondi, ed. CVLMINA ROMVLEA, Fede e Scienza in Gerberto, Papa Filosofo, Ateneo Pontificio Regina Apostolorum Roma (2008).
   ISBN – 9788889174753
6. C. Sigismondi, Measures of Solar Diameter With Eclipses: Data Analysis, Problems and Perspectives, in Light from Dark Universe, Proc. of V Sino-Italian Workshop, May 28-June 1, 2008 (AIP Conf. Proc., in press).
7. C. Sigismondi, J. Arnaud, European Projects of Solar Diameter Monitoring, in Light from Dark Universe, Proc. of V Sino-Italian Workshop, May 28-June 1, 2008 (AIP Conf. Proc., in press).
8. C. Sigismondi, Guidelines for Measuring Solar Radius with Baily Beads Analysis, Science in China, submitted
9. C. Sigismondi, A. Kilcik, J-P. Rozelot, K. Guhl, Solar Radius Determination from Solar Eclipse Observations of March 29, 2006, Solar Physics, submitted.

II Conferences and educational activities

Conferences and Other External Scientific Work

1) Light from Dark Universe, Taipei-Hualien, May 28 - June 2, 2008 (Taiwan; talk)
2) III Stueckelberg Workshop on Relativisitc Field Theories, Pescara July 8-18, 2008 (talk)
3) Solar Magnetism, Corona and Space Weather-Chinese Space Solar Telescope Science, 28 Luglio-1 Agosto, 2008, Jiuquan, Gansu (China; contributed poster)
4) XXVII European Symposium on Occultation Programs, Drebach August 29-September 2 , 2008 (Germany; invited talk)
5) XXVII SIC, Scientific Instruments Commission, Lisboa September 16-21, 2008 (Portugal; talk + poster)
6) Cycle des Grandes Conferences: L'origine de l'Unviers entre cosmologie et astrophysique, Nice, October 15, 2008 (invited)
7) Mensura Caeli, National Congress of Archeoastronomy Italian Society, Ferrara, October 17-18, 2008 (talk)
8) XVI GAD congress on Digital Astronomy and First National Meeting on Extrasolar Planets, Ravenna October 18, 2008 (talk)

Visit to IRSOL, Istituto Ricerche Solari Locarno (CH) from April 29 to May 7 and from July 30 to August 15, 2008 for research on solar diameter measurements with hourly circle transits.

Work With Students

Laboratory of Astrophysics, team of Prof. Paolo de Bernardis (Sapienza University)

Micol Benetti, Alessandra Mastrobuono Battisti, Paolo Fermani, Marco Innocenti, Irene di Palma, Luca Naticchioni.

Diploma thesis supervision

Sapienza University: Licia Mangione, Il Sistema Tolemaico e quello Copernicano al Vaglio delle Grandi Meridiane. Diploma in Geography (February 2008).

Other Teaching Duties

Courses at "Sapienza" University of Rome Geography Department

"La Terra nel Sistema Solare" (4 credits).

"Geodesy (GPS)" (2 credits)

"Oceanography" (2 credits)

All courses with about 20 undergraduate students.

III 2007-2008 List of Publications

C. Sigismondi, *Relativistic Corrections to Lunar Occultations,* Proc. of Tenth Italian-Korean Meeting on Relativistic Astrophysics, Pescara, June 25-30, 2007 (Journal of Korean Physics in press).

C. Sigismondi*, La Terra come osservatorio astronomico: le misure del diametro solare in eclissi e durante i transiti di Venere e di Mercurio*, Geografia (2007).

C. Sigismondi, *Gerberto e la Misura delle Canne d'Organo*, Archivum Bobiense 29 355-398 (2007).

C. Sigismondi, *Long Waves Perturbations to Astronomical Tides in Adriatic and Tyrrenian Sea*, Proc. IV Sino-Italian Workshop, Pescara, July 22-29, AIP Conference Proceedings 966, 333-340, 2008.

C. Sigismondi, *Solar Radius Variations Measured in Central Eclipses*, Proc. IV Sino-Italian Workshop, Pescara, July 22-29, AIP Conference Proceedings 966, 341-348, 2008.

C. Sigismondi, *Effemeridi - Introduzione al Calcolo Astronomico*, Ateneo Pontificio Regina Apostolorum Roma (2008). ISBN – 9788889174708

C. Sigismondi, *La Sfera da Gerberto al Sacrobosco*, Ateneo Pontificio Regina Apostolorum Roma (2008). ISBN – 9788889174760

C. Sigismondi, ed. *CVLMINA ROMVLEA*, Fede e Scienza in Gerberto, Papa Filosofo, Ateneo Pontificio Regina Apostolorum Roma (2008) ISBN – 9788889174753

C. Sigismondi, *Measures of Solar Diameter With Eclipses: Data Analysis, Problems and Perspectives*, in Light from Dark Universe, Proc. of V Sino-Italian Workshop, May 28-June 1, 2008 (AIP Conf. Proc., in press).

C. Sigismondi, J. Arnaud, *European Projects of Solar Diameter Monitoring*, in Light from Dark Universe, Proc. of V Sino-Italian Workshop, May 28-June 1, 2008 (AIP Conf. Proc., in press).
C. Sigismondi, *Guidelines for Measuring Solar Radius with Baily Beads Analysis*, Science in China, submitted

C. Sigismondi, A. Kilcik, J-P. Rozelot, K. Guhl, *Solar Radius Determination from Solar Eclipse Observations of March 29, 2006*, Solar Physics, submitted.

Graduated in Astrophysics in 1994 and in Theology in 1998, earned his PhD in Theoretical Physics in 1998. Visiting Scholar at Yale Astronomy department from 2000 to 2002 and 2006 on Solar Physics, he is now professor of Physics and Laboratory in Alessandro Volta Institute in Rome and Faculty member in the department of Geography at Sapienza University since 2002/2003 and in the Pontifical University Regina Apostolorum since 2005/2006. Since 2003 he organizes yearly international meetings on Gerbert of Aurillac on May 12th.Research topics on Solar Astrometry (now also with PICARD team) and Solar Secular Variability; Pinhole Astronomy and Historical Meridian Lines; Gerbert of Aurillac and X century science.

Science
The method of measuring the solar diameter through eclipses has been deeply investigated in the last 8 years. The main contributions in developing this field of research have been

1) the studies of the effect of different filters on the measurements of the disappearing and appearing times of Baily beads;

2) the definition of the method of computing the ΔR correction to the standard radius with a spreadsheet;

3) the publication of a Baily Beads atlas, through which the analysis made with different ephemerides and/or different observers can be compared;

4) the comparison between eclipse and astrolabe observations in the same period of time,

5) the revival of hourly circle transits with high temporal frequency imaging (60 fps) to overcome seeing effects.

All publications listed in 2008 are related with these topics.
In History of Astronomy he is studying the onset of Copernican Revolution during XVII and XVIII centuries, focusing on the methods of alignment of the great meridian lines in the Churches.
He has completed the astrometric recognition of the following meridian lines

1) S. Maria degli Angeli, Roma (Bianchini) 1702 +4’29”

2) S. Petronio, Bologna (Cassini) 1655 +2’ 09”

3) S. Maria del Fiore, Firenze (Toscanelli) 1475 -19’ 54”

4) S. Maria del Fiore, Firenze (Ximenes) 1761 -0’ 27”

5) Duomo, Milano (De Cesaris) 1786 +0’ 06”

6) Piazza S. Pietro, Roma (Gigli) 1817 -5’ 36”

The azimut of those lines is not exactly Northward, this difference is about 300 times the uncertainty on the latitude, whch was measured up to a few arcseconds of accuracy.

The errors on azimut, already present in the meridian of Tycho at Uraniborg (-17’), are too large to be attributed to building errors, they are reliably related to the methods of solution of Kepler’s equation in the computation of the ephemerides.

These results have been presented in Lisbon at the Scientific Instrument Commission meeting of 2008.

The method used for measuring the alignment of the meridian lines has been applied to the orientation of μ telescopes in the project EEE, Extreme Energy Events – Science in the School promoted by the Centro Fermi and Italian Ministry of Education.

On Gerbert of Aurillac, besides the organization of yearly international congresses on May 12 sonce 2003, he has studied his treatise on Organ Pipes, showing the algorithm used for computing the second lower octave and interpreting it in a Pythagorean-Boethian framework.

D'Angelo Veronica

PERSONAL INFORMATION

Place and date of birth: Ortona (CH), 21/07/1974
Nationality: Italian
Address: Pescara, c/o ICRANET
Phone: (+39) 085 / 23054200 Fax: 085 / 4219252
E-mail: veronica.dangelo@icranet.org

EDUCATION AND TRAINING

Qualification

- Qualification in "Public Facilitated Financing Expert to Firms", got after attending a regional course organized by the Association CNOS FAP, c/o the Partner NEXUS S.r.l., lasting 150 hours, from November 2004 until March 2005.
- Qualification in "Management Audit Technician", got attending a regional course organized by EUROBIC ABRUZZO E MOLISE S.c.r.l. in collaboration with a business consulting company, *De Marinis e Di Giambattista associati*, lasting 500 hours, concluded in October 2002, after one month **stage** at "Sporting Hotel Villa Maria" in Francavilla al Mare and "Villa Serena" in Città S'Angelo.
- Degree in Economics and Business**,** achieved on the 8th OF March, 2002, at Università degli Studi "G. D'Annunzio" di Pescara, upholding a theory entitled *Implicazioni strategiche dei meccanismi di finanziamento delle Aziende Ospedaliere.* Relator Prof.ssa A. Consorti, subject: Business Strategy. Mark: 110/110 *cum laude*
- Accountancy High School Degree got in 1993 at I.T.C. "Aterno" in Pescara.

WORK EXPERIENCE

- *From 03/01/2006 – present: accountancy - administrative employed* ***at ICRANet, where I started to work with a project contract, followed, after a first renewal, by an employment contract.***

  Here, I am charged of:

  - Managing the relationships with suppliers,
  - Controlling entrance invoices,
  - Calculating reimbursement and rewards to our scientific visitors,
  - Preparing payment orders for the bank,
  - Executing and verifying on-line the payments,
  - Meeting our bank referents for particular payment operations,
  - Cash holding,
  - Book-keeping. I use a specific software created *ad hoc* for our Centre.

- *From 25/07/2005 al 30/12/05: stage in PERSONNEL RESEARCH AND SELECTION at Agency ADECCO in Pescara, Via G. D'Annunzio,* ***during winch I got the following competences:***

  - ***Reception of applicants, personal interview, screening of curricula and data entry,***
  - Managing relationships with customs in case of personnel requests; research and selection of the requested profiles,
  - ***Knowledge of D.lgs 276/03.***
  - ***Explaining the forms to be filled-in by the chosen applicants at the moment of the employment,***

- **In the year 2005: little experience as promoter for Wind, at IPER in Città S.Angelo, and as person charged of inventory at AUCHAN.**
- *March 2003 – June 2004: training at a Work Consulting* ***Company****, "****Team Consulting Snc", in Pescara, during which I I learned how to manage the administrative file related to the personnel engaged in companies/firms. Referents: Rag. Fuschini Mario.***
- *September 2002: stage in Management Auditing* ***at "Sporting Hotel Villa Maria" in Francavilla al Mare e "Villa Serena" in Città S'Angelo, during which I analysed, in a strategic view and in terms of efficiency and effectiveness / efficacy, the processes*** **business administration** ***relevant to storehouse-pharmacy and stationery, with the purpose of getting and establishing a system of a Total Quality Management. Referent: Director of Sporting Hotel, Angelo Tirolesi.***

Foreign Languages

- ***Good standard of written English; fairly good level of written and spoken English. At present, I am attending a course based on the*** **Sandwich Method** ***in order to improve my skills.***
- Title of attendance of a first level course of French language (nov. 2003 – feb. 2004), at Centro Territoriale Permanente in Pescara, in collaboration with Italian MIUR.

Use of PC

At present: Windows'98 and 2000. Good knowledge of Word and faily good of Excel; navigation in Internet; good knowledge of ICRANet accountancy software.

AKNOWLEDGEMENTS

Scholarship awarded at the course in "Management Audit Technician".

APTITUDES AND SKILLS

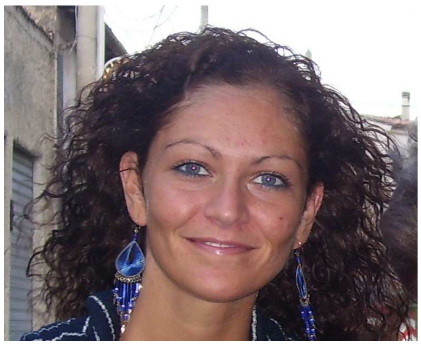
Good will, devotion to my job, adaptability; good skills in relationship, organization, integration and collaboration.

INTERESTS

Acqua–gym, swimming, painting rochs, Gustav Klimt paintings, participating to artistic and cultural events in my city, cinema, language courses.

Del Beato Annapia

ICRANet
P.zza della Repubblica 10
65122 Pescara
Tel: +39 085 23054206
Fax: +39 085 4219252
e-mail: annapia.delbeato@icranet.org



Personal Information

- Nationality: Italian
- Date of birth: 02 September 1981
- Place of birth: Pescara
- Status: single

Education

- 1999-2000

High School Degree at Liceo Socio-Psico-Pedagogico "B.Spaventa" Città S.Angelo (Pescara), with final mark: *100/100.*

- Summer 1998 and Summer 2000

Summer School Camps in UK (Westminster College, Oxford and Roehamton College, Putney London)

- 2004-2005

Degree in Foreign Languages and Literature (courses on Touristic Management) Università degli Studi *G. D'Annunzio* Pescara, with final mark: *110 cum laude.* Final Thesis on American Literature, title: "Charles W. Chesnutt: The Marrow of Tradition"

- September 2003 – March 2004

Erasmus EU-funded Scholarship at the University of Warwick (UK) attending courses in: English Literature, American Literature, History and Marketing.

- 2006

I° level Master "How to teach English" organized by Università degli Studi *G. D'Annunzio* of Chieti and Pescara, including 240 training hours as English teacher at Liceo Scientifico *C. D'Ascanio* Montesilvano.

Work

- Meeting Hostess at a Communication Agency
- English Teaching in the Project *Comunicare in Europa* POR – Asse C –

Experiences

Misura 2 Az. 3 funded by CEE, realised by Liceo Scientifico *C. D'Ascanio* in Montesilvano in collaboration with Regione Abruzzo

- Employed at Azienda Speciale *Deborah Ferrigno* of the Municipality of Montesilvano from 09/04/06 to 09/06/06 and from 07/07/06 to 31/12/06 for the opening of a EURODESK. A particular attention was given to the social integration and assistance, as well as to the activities aiming at making easier the access and the fruition of the municipal facilities to disadvantage and needy subjects.
- English teaching in courses organized by *Centro Studi Stoa Institute* in the following public schools: I° Circolo "Ravizza" Chieti, Istituto comprensivo S. Giovanni Teatino (via Di Nisio, via Mazzini, via V.Emanuele) from 15/02/07 to 31/05/07.
- English Teaching in a Training Course at the Engineering Office *Studio Proima s.r.l.* from 04/06/07 to 31/01/08.
- Responsible for the external relations of the Azienda Speciale *Deborah Ferrigno* of the Municipality of Montesilvano from 13/06/07 to 31/12/08 in the information point called *Sportello Sociale*.
- Responsible for the Documentation Center of *ICRANet* (International Center for Relativistic Astrophysics Network) with the following tasks:

- library management
- collection and cataloguing of scientific publications
- journals submissions and books purchase
- website contents
- meeting planning
- press contacts

Foreign Languages

Mother tongue: Italian

Other Languages: English and French

Other Skills

ECDL (European Computer Driving Licence)

Microsoft Office (Word, Excel, Powerpoint, Access, Publisher, Outlook)

Di Berardino Federica

PERSONAL INFORMATION

PHONE	**0039-085-23054200**
FAX	**0039-085-4219252**
E-MAIL	**federica.diberardino@icranet.org**
NATIONALITY	Italian
DATE AND PLACE OF BIRTH	31-03-1980 PESCARA

WORK EXPERIENCE

November 2005-November 2007
- Head of Secretariat at ICRANet Pescara: coordination of secretariat work, logistic organization for meetings and workshops, translations.

May-October 2005
- Travel Agent at "Beg Viaggi" Pescara;

September-June 2005
- Italian language training courses for foreign students;

April 2005
- Congress Hostess for IN FIERA S.r.l., at "ECOTUR 2005"-Montesilvano;

December 2004
- Congress Hostess (Marcinelle 2005) for Manoppello Municipality (PE);

October-December 2004
- Customer service assistant for Terravision S.r.l. at Aeroporto d'Abruzzo, Pescara;

January-December 2004
- English courses for elementary and high school italian students;
- Translations from/to English;
- Work for Ajilon Agency, Pescara, for distribution of books in the local schools;

May 2004
- Interviews for Customer Satisfaction, for "NETWORK Istituto di ricerca S.r.l." at Iper - Città Sant'Angelo;

March 2004
- Researcher for "Informazione e servizi senza barriere"(Agency: NETWORK S.r.l.).

2001-2004
- Exhibition Hostess for IN FIERA S.r.l., at "ECOTUR –Turismo in fiera" 2001, 2002, 2003, 2004 (at Palacongressi, Montesilvano – PE);

2001-2003
- Hostess and sales promoter for the agency "Image Service", Città Sant'Angelo (PE);
- Birthday party organizer for kids;

1998-2000
- Educator and entertainment organizer in summer camps of E.N.I. in Cesenatico; additional training courses (Cooperativa Sociale D.O.C. S.c.r.l., Torino).

EDUCATION

June 2004
- Foreign Language and Literature College degree, 110/110 *cum*

laudem, at University G. D'annunzio (Pescara). Final thesis on Spanish and Economic -Tourism Geography: "Problemi, tendenze e prospettive dello sviluppo socio-economico in Spagna. Casi di studio" (supervisor Prof. G. Massimi);

January 2004

- Researches in Spain for graduation thesis and improvement of Spanish knowledge.

September-December 2002

- 4 months courses at "Nazareth College" di Rochester, N.Y. (U.S.A.)and final examson English, Marketing and Spanish.

1998

- High School degree at Liceo Linguistico "G. Marconi", Pescara.

Ottobre 1996

- 1 month English classes at "Irondequoit High-School" in Rochester (N.Y.)

1992, 1994, 1995

- Repeted visits to England to attend english colleges for training courses;

- Visits to the USA (N.Y. e Massachussetts) to improve oral American-English knowledge.

SOCIAL-CULTURAL EXPERIENCES

January-March 2005: Trip to Vanuatu (Melanesian archipelago, old "New Hebrides ") for humanitarian aid experience. Voluntary work in a few islands of the archipelago and elementary learning of local language, the Bislamar.

PERSONAL SKILLS

Main studies and job experiences focused on foreign cultures and languages. University degree on Spanish and English. Daily practice with both languages through conversation and readings.
The work experience in touristic exhibition and in the "in store promotion" field, in addition to the experience as entertainment organizer, helped to develop interpersonal abilities.

MOTHER-TONGUE **ITALIAN**

OTHER LANGUAGES **ENGLISH, SPANISH, FRENCH**

RELATIONAL ABILITIES

Team work experience, mainly in multi-cultural contexts.
The two main training experiences in the US high school and later in college supported the personal and professional growth, helped to acquire an open-minded attitute towards other cultures, which are essential for cooperation and mutual respect.
The work as customer service assistant, hostess and sales promoter have been relevant in acquiring professional skills in the relationship with customers: importance of communication, wich is the ability to listen to and to be listened.
Development of a positive attitude towards any kind of problematic

	situation; problem-solving skills and working method based on the achievement of goals.
ORGANIZING COMPETENCES	Organizing ability mainly acquired trough team work in summer camps for kids and teen-agers, where showing a coordinating attitude in the group. In the same work field has been developed the spirit of adaptability, in addition to the creativity (namely invention of new games and artistic creation for entertainment). Open and charismatic personality, flexible, active, dynamic, loving challenges. Professionality based on accuracy, punctuality and strong attitude to work towards goals.
TECHNICAL SKILLS	Computer competences: Windows; Softwares: Word, Excel, Power Point. Daily use of personal computer at work: 80% of the work is based on the use of PC. 2004: Certificate for Informatics Course on “Basic Office” (Word, Excel, Internet e E-mailing) organized by: “E-Work”, Pescara in cooperation with “Ok Work”, Milano.
ARTISTIC SKILLS	Great passion for music (jazz, acoustic, ethnic, rock and classic), dance, theatre, readings and paintings. Free time: travels, museums. Piano and guitar classes. Artistic Gym and Jazz Dance; I am still studying in a Jazz Dance School.
DRIVING LICENCE	Driving licence cat. B

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, 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
Date	09/1996 – 07/2001
• Institution	Secondary School focusing on sciences- Liceo Ginnasio Statale "Publio Virgilio Marone" Vico del Gargano (FG)
• Main Subjects	Mathematics analysis, Italian language and literature, Latin language and literature, Chemistry, Physics
• Achieved Qualification	Scientific school-leaving certificate
• Mark	100/100

FOREIGN LANGUAGES

MOTHER-TONGUE	**ITALIAN**
OTHER LANGUAGES	**ENGLISH** (GOOD) **– FRENCH** (ELEMENTARY)

RELATIONAL ABILITIES

Good relational abilities thanks to the past work experience at DelVerde and to the present experience at ICRANet.
Self-reliant.
Good listener.

ORGANIZING COMPETENCES

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.

TECHNICAL SKILLS

Computers competences: Windows. Softwares: Word, Excel, Power Point.
Very good use of Internet and e-mail accounts.
Good use of cost-accounting system HELPAZI and bank system BNL Businessway.
Elementary knowledge of HTML e CSS programs for websites.
Knowledge of "TOP VALUE" program for financial diagnosis and corporate planning.

ARTISTIC SKILLS

Piano classes attended for 8 years. sol-fa Diploma.

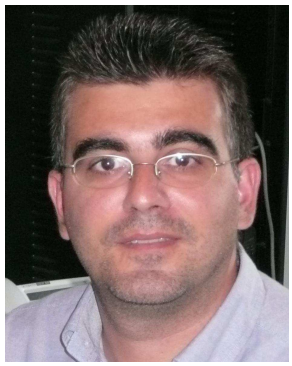
DRIVING LICENCE

Driving licence cat. B

FURTHER INFORMATIONS

I like reading, writing, travelling, going to the cinema, listening music, playing the piano. I have a determined, dynamic and flexible personality. I like staying and working with people.

Regi Massimo



Personal Data

Name and surname	Massimo Regi
Place, date of birth	Pineto (Te) – October 23, 1974
Address	via Antonio Gramsci 15 - 64025 Pineto (Te), Italy
Militaty service	comunity service at the *Piccola Opera Caritas* of Giulianova (TE) done in 2001/2002

Education

2004-2005	"*Network Software Specialist"* professional qualifications obtained at the S.M.I.L.E. institution on the 26-th of July 2005 in Pescara
1993-2003	University Degree in *Information Tecnology and Automation Engineering* Thesis: "*An Application for an UMTS Service*"
2003	University Degree apprenticeship effected at the *Sisteda* S.p.a. of Aspio di Osimo (AN) in the period of January-April in 2003 and concerning the database design for the web based applications
1988-1993	Scientific School leaving certificate at the *Liceo Scientifico Statale* of Giulianova (Te) with final marks 56/60

Software principal realizations

Fater s.p.a.

Dust Control: application program for the management of the dust measurement in the production factory with graphs of the trend analysis

Morning Area Meeting: application program for daily report of the production Statistics

AMDB: application program for the management of the activities of the production lines maintenance

GLED System web: application program for the automatic forwarding of the production data towards the P&G server in Germany

CMP (Change Management Process): application program for the lines modifying management with an approval workflow

Defects Management in spare parts warehouse Visual Basic application for the *CU-Report*

Application for the import of the master lines from Excel file (*Midrange Module*)

Sixty s.p.a *Company Intranet*: importation and update of the domain users from ldap server to sql server, on the fly pdf generation, routine for the newsletters sending
Municipality of Pescara collaboration for the management of the computerized auction of the wholesalecfish market (Linux/Java/MySQL platform)

Informatic knowledge

Operating Systems Windows 98/98SE/ME/2000/XP/2003 and Linux (various distributions)

Networks local area network LAN, TCP/IP protocol, VPN, Active Directory

Programming languages
PHP, Javascript, Visual Basic 6.0, Java, C, Assembler x86, ASP

Databases MS SQL Server, MySQL, PostgreSQL

Working experience

April 2008 - *IcraNet* (International center for relativistic Astrophysics Network) as System Manager

June2005-March 2008 Infoteam Solution s.r.l. as System Engeneer / Web developer