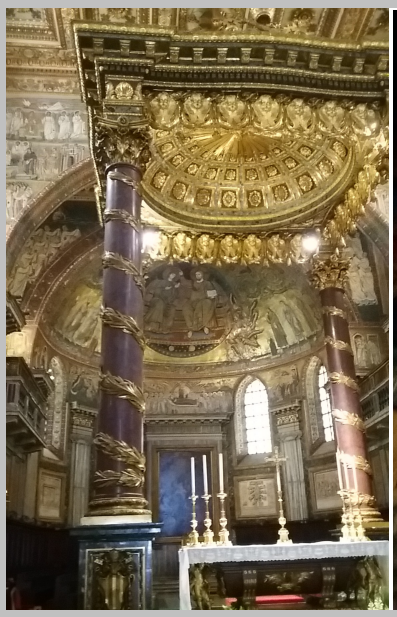
Enclosure 7

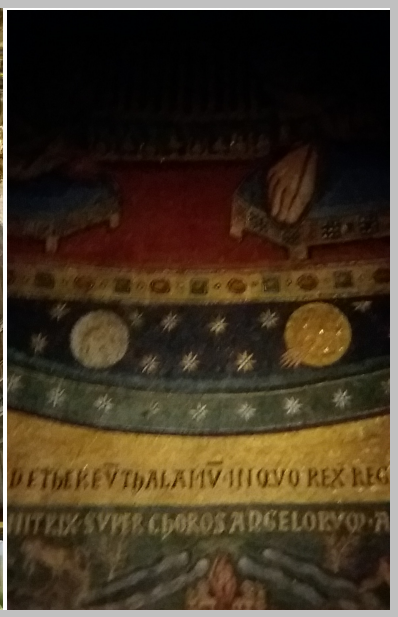
International Meetings

Gerbertus' Meeting in tour

Rome, 12 May 2022 - 11-14 h

The meeting started at 11 AM on Thursday May 12, 2022 from the papal Basilica of Santa Maria Maggiore in Rome

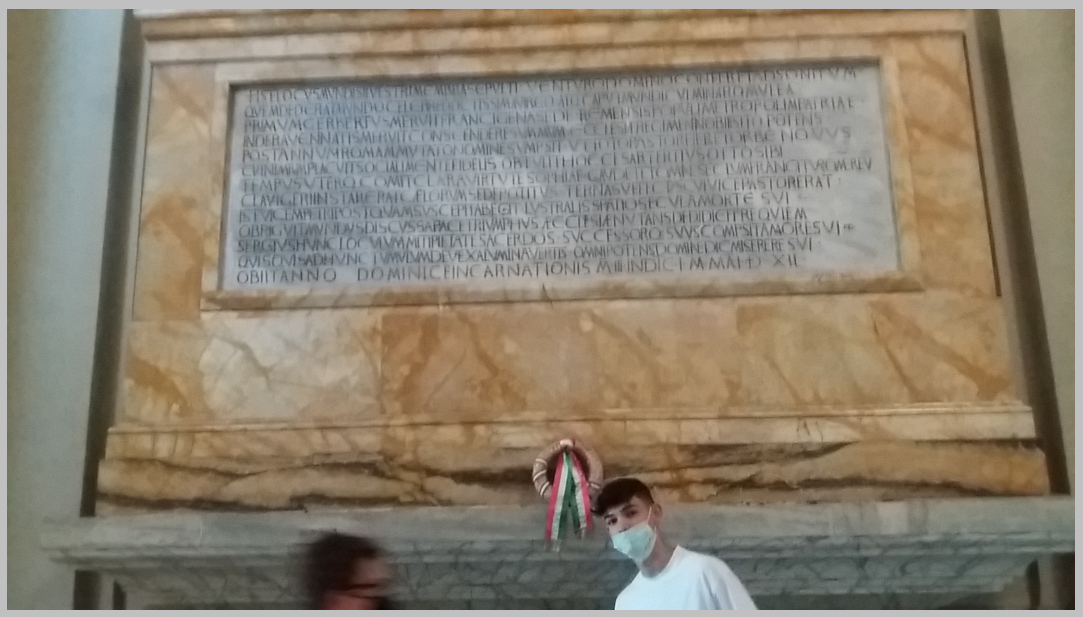




The Sun and the Moon in the apse of this Basilica have been made by Jacopo Torriti in the 13th century. The Latin inscription below Jesus and Mary says "Maria Virgo Assumpta Est ad Aethereum Thalamum in quo Rex Regum Stellato Sedet Solio". The Virgin Mary has been assumpted at the heavenly thalamus, where the King of kings sits on the starry throne where Gerbert-Sylvester II guided a famous procession in the night of August 15, 1000 to the Lateran.
After this visit, the meeting moved to the Basilica of Santa Croce in Gerusalemme, where Gerbert celebrated mass on May 3, 1003 and started to be ill. A legend appeared in 1080 AD (William of Malmesbury) attributed to Gerbert the invention of an automat. It predicted that Gerbert will not die if not going to Jerusalem, and the mass in Santa Croce "in Jerusalem" represented the violation to the "immortality condition" obtained by the magic automat.
The meeting moved then to the Basilica of San Giovanni in Laterano, where the epitaph of Gerbertus' tomb is still there, included by Francesco Borromini in the renovation of the Basilica in 1648, upon the will of Pope Benedict XIV (founder of the Pontifical Academy of Sciences). Beyond the legend of his tomb, which would emit humidity for the death of a Pope or a Cardinal, and beyond another one

about his body cut in pieces (false, upon verification in 1648), Gerbert of Aurillac (ca 938-12 May 1003) was renowned as the greatest scholar of his time. Bishop of Reims, Ravenna and Rome he "jumped from R to R in R" in his three archbishoprics, in a period of time characterized by the rule that a Bishop could not change site.
Gerbert of Aurillac introduced in Europe the Astrolabe and the Abacus from the Arabs, even inventing new algorithms for speeding their calculations. He was also a music theorist and organ builder, as well as a philosopher who anticipated Scholastic school. His epistolary is the vaster of his time, showing a fine politician, geographer, scientist, teacher and pastor.

A special guest of this event was Prof. Luca Montecchio (UniEcampus), historian and author of "Gerberto d'Aurillac. Silvestro II" with graphe.it (2011).



The tomb of Gerbert visited on May 12, 2022: the cockade placed by the Hungarian Government, each year, is a symbol for remembering the role of Pope Sylvester II in creating that country, by the consecration in 1000 AD of the crown to its King St. Steven.

References C. Sigismondi, Gerbertian Paths for the Jubilee, Gerb 8, 83 (2015) https://ui.adsabs.harvard.edu/abs/2015Gerb....8...83S

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Prof. Remo Ruffini Festschrift. A conference in celebration of Prof. Remo Ruffini 80° birthday

May 16 – 18, 2022
Europe/Paris timezone

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ICRANet secretariat
secretariat@icranet.org
+39 085 230 54 200

Prof. Remo Ruffini Festschrift. A conference in celebration of Prof. Remo Ruffini 80° birthday

Director of ICRANet and President of ICRA, coauthor of more than 650 scientific publications and 13 books, Remo Ruffini received his doctorate at Sapienza (1967). He taught in Hamburg, Princeton University and the Institute for Advanced Study, in Japan, in China (at USTC), in Australia and CBPF (Brazil). Some of his major results: boson stars, "Introducing the Black Hole" with J.A. Wheeler, the limiting critical mass of NS. He identified the first BH in our Galaxy (Cignus X-1) using UHURU satellite data with Riccardo Giacconi and received the Cressy Morrison Award (1973). Returning to Sapienza (1978), he promoted Rome-Stanford collaboration on gravitational wave detectors. With European, US and Chinese institutions he established ICRA and later ICRANet in Italy, Armenia, France and Brazil (2005). He developed the understanding of GRBs, confirmed by the largest telescopes on Earth and from space: from their discovery (1973) to their cosmological origin (1997) to the determination of seven different GRBs families and their conceptual understanding (2018).
He has given evidence for 7 episodes characterizing the most general GRB and identified, in the Christodoulou - Ruffini - Hawking Mass formula, the energy source of the most energetic GRBs, the BDHN I, based on the Wald - Papapetrou solution (2022). He is currently also active with his collaborators in identifying the nature of our galactic core in terms of Dark matter.

Chairs of the Scientific Organizing Committee (SOC): Pascal Chardonnet, Liang Li, Rahim Moradi, Jorge A. Rueda, Narek Sahakyan, Gregory Vereshchagin,Yu Wang, Shesheng Xue.

Scientific Organizing Committee (SOC): Yerlan Aimuratov, Lorenzo Amati, Stefano Ansoldi, Carlos Raul Arguelles, David Arnett, Xinhe Bao, Jim Bardeen, Eduar Antonio Becerra Vergara, Laura Becerra Bayona, Zurab Berezhiani, Carlo Luciano Bianco, Jiri Bicack, Donato Bini, Paul Boynton, Yifu Cai, Daniela Calzetti, Stefano Campion, Pascal Chardonnet (**co-chair**), Pisin Chen, Yen-Chen Chen, Christian Cherubini, Demetrios Christodolou, Atish Dabholkar, Zigao Dai, Thibault Damour, Paolo De Bernardis, Massimo Della Valle, Nathalie Deruelle, Hansjoerg Dittus, Behzad Eslampanah, Sareh Eslamzadeh Askestani, Christian Estrosi, Francis Everitt, Simonetta Filippi, Christopher Fryer, Marco Fuchs, Mauro Giavalisco, Paolo Giommi, Gabriele Gionti, Daniele Gregoris, Vincenzo Guidi, Francesco Haardt, Mimoza Hafizi, Wenbiao Han, Luca Izzo, Robert Jantzen, Luke Shim Jong-Hyeok, Mile Karlica, Roy Patrick Kerr, Margaret Kerr, Sang Pyo Kim, Serguei Komissarov, Michael Kramer, Claus Laemmerzahl, Giovanni Lamanna, Di Li, Liang Li (**co-chair**), Manuel Malheiro, Silvia Masi, Grant Mathews, Marco Merafina, John Mester, Felix Mirabel, Razmik Mirzoyan, Rahim Moradi (**co-chair**), Romain Murenzi, Ehud Nakar, Hans Ohanian, Roberto Peron, Vahe Petrosian, Francesco Piacentini, Tsvi Piran, Peter Predehl, Brian Punsly, Sang Pyo Kim, Asghar Qadir, Hernando Quevedo, Johann Rafelski, Fatemeh Rastegar Nia, José Fernando Rodriguez Ruiz, Piero Rosati, Jorge Armando Rueda Hernandez (**co-chair**), Narek Sahakyan (**co-chair**), Humitaka Sato, Stefano Scopel, Soroush Shakeri, Costantino Sigismondi, Yousef Sobouti, Luigi Stella, Rashid Sunyaev, Marco Tavani, Gerard 't Hooft, Aldo

Treves, Gregory Vereshchagin (**co-chair**), Nicola Vittorio, Anzhong Wang, Yu Wang (**co-chair**), Janie Wardle, Bob Williams, David Wilthshire, Hyung Won Lee, Shesheng Xue (**co-chair**), Yefei Yuan, Alexander Zakharov, Cesar Zen Vasconcellos, Bing Zhang, Yunlong Zheng.

Invited speakers (TBC)

Registration fee: 50 Euros

Coronavirus Covid-19 safety regulations:
In the building, the regulations on minimum distance, hygiene and the wearing of a medical mask (FFP2 or OP) are mandatory.

Starts May 16, 2022, 7:50 AM
Ends May 18, 2022, 8:50 PM
Europe/Paris

ICRANet Seat at Villa Ratti
Nice (France) and online
1, Avenue Ratti, 06000 - Nice

Gregory Vereshchagin
Jorge Armando Rueda Hernandez
Narek Sahakyan

FINAL program.pdf
Preliminary program.pdf

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Prof. Remo Ruffini Festschrift. A conference in celebration of Prof. Remo Ruffini 80th birthday (May 16 - 18, 2022)

	Monday, May 16		Tuesday, May 17		Wednesday, May 18
	Chair: Yunlong ZHENG		***Chair: Hyung Won LEE***		***Chair: Jiangong GAO***
8:00 – 9:00	Connections with China (Xinhe BAO, President of USTC, Yifu CAI, Yefei YUAN, Zigao DAI, Zhiqiang Shen, Director General SHAO) *(online)*	**8:00 – 9:00**	Connections with Korea (Jong-Hyeok SHIM, President of Sogang University, Hyung Won LEE, Sang Pyo KIM, Stefano SCOPEL) - *(online)*	**8:00 – 9:00**	Connections with Asia (Yousef SOBOUTI, founder of IASBS, Daniele GREGORIS, Wenbiao HAN, Soroush SHAKERI) - *(online)*
	Chair: Pascal CHARDONNET		***Chair: Nathalie DERUELLE***		***Chair: Tsvi PIRAN***
9:00 – 9:15	Aldo TREVES *(online)*	**9:00 – 9:30**	Thibault DAMOUR *(online)*	**9:00 – 9:40**	Bing ZHANG *(online)*
9:15 – 9:30	Asghar QADIR *(online)*	**9:30 – 10:00**	Demetrios CHRISTODOULOU, Robert JANTZEN *(online)*		
9:30 – 10:10	Tsvi PIRAN *(in person)*	**10:00 – 10:30**	Roy KERR *(online)*	**9:40 – 10:20**	Lorenzo AMATI *(online)*
		10:30 – 11:00	Rashid SUNYAEV *(in person)*		
10:10 – 10:50	Jorge RUEDA *(in person)*	**11:00 – 11:15**	**Coffee break**	**10:20 – 10:50**	Jorge RUEDA *(in person)*
10:50 – 11:05	**Coffee break**	**11:15 – 11:30**	Vladimir KARAS *(online)*	**10:50 – 11:05**	**Coffee break**
11:05 – 11:45	Narek SAHAKYAN *(in person)*	**11:30 – 12:00**	Pascal CHARDONNET *(in person)*	**11:05 – 11:40**	Ehud NAKAR *(online)*
11:45 – 12:25	Rahim MORADI *(online)*	**12:00 – 12:30**	MG16 Awards CHRISTODOULOU, PIRAN, PREDEHL, SUNYAEV *(in person)*	**11:40 - 12:25**	Yu WANG and Liang LI *(online)*
12:25 – 13:00	Pisin CHEN *(online)*	**12:30 – 13:00**	Agnès RAMPAL, Adjointe to the Mayor of Nice Xavier LATOUR, Vice-président de la Métropole Nice Côte d'Azur *(in person)*	**12:25 – 13:00**	Gregory VERESHCHAGIN *(online)*
13:00 – 15:00 Lunch break	**Chair: Costantino SIGISMONDI** Alexander ZAKHAROV, Johann RAFELSKI, Grant MATHEWS	**13:00 – 15:00 Lunch break**	**Chair: Yu WANG** Carlo BIANCO, Simonetta FILIPPI, Kourosh NOZARI, Sara SAGHAFI, Saken TOKTARBAY	**13:00 – 15:00 Lunch break**	**Chair: Yu WANG** Massimo DELLA VALLE, Stefano ANSOLDI
	Chair: Hansjoerg DITTUS		***Chair: Claus LAEMMERZAHL***		***Chair: Mimoza HAFIZI***
15:00 – 15:35	Claus LAEMMERZAHL *(in person)*	**15:00 – 15:30**	Felix MIRABEL *(online)*	**15:00 – 15:15**	Shesheng XUE *(online)*
15:35 – 16:10	Peter PREDEHL *(in person)*	**15:30 – 16:00**	Giovanni LAMANNA *(in person)*	**15:15 – 15:30**	Christian CHERUBINI *(online)*
		16:00 – 16:30	Hansjoerg DITTUS *(in person)*	**15:30 – 15:45**	Donato BINI *(online)*
16:10 – 16:20	**Coffee break**	**16:30 – 16:50**	Carlos ARGUELLES *(online)*	**15:45 – 16:00**	Manuel MALHEIRO *(online)*
				16:00 – 16:15	Cesar ZEN VASCONCELLOS *(online)*
16:20 – 16:55	Rashid SUNYAEV *(in person)*	**16:50 – 17:00**	**Coffee break**	**16:15 – 16:25**	**Coffee break**
16:55 – 17:30	Laura BECERRA *(online)*	**17:00 – 17:10**	Carlo MASCI, Major of Pescara *Ceremony Mersenne Prize 2022 from ICRANet Hq in Pescara* coordinated by Costantino SIGISMONDI *(online)*	**16:25 – 16:45**	José RODRIGUEZ *(online)*
				16:45 – 17:05	Yerlan AIMURATOV *(online)*
				17:05 – 17:35	Hernando QUEVEDO *(online)*
				17:35 – 17:45	Marco TAVANI *(online)*
17:30 - 18:05	Christopher FRYER *(online)*	**17:10 - 18:00**	Brian PUNSLY *(online)*	**17:45 – 18:00**	Luca IZZO *(online)*
				18:00 – 18:15	Remo RUFFINI Concluding remarks

LUNAR ECLIPSE AND MERSENNE PRIZE CEREMONY

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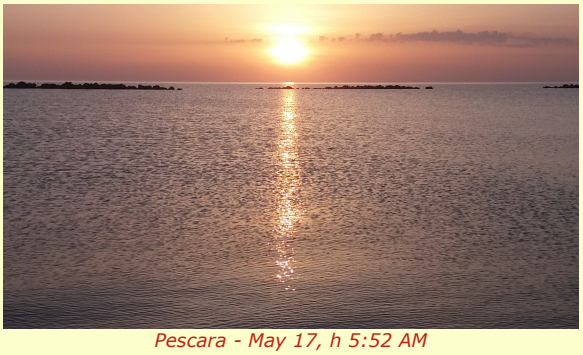
Visitors: 164714898
We have 3 guests online

On the occasion of the 80th birthday of Prof. Remo Ruffini, Director of ICRANet and President of ICRA, as well as the total eclipse of the Moon in 2022, there will be an official ceremony for the attribution of the Mersenne Prizes 2022 at the presence of H.E. Carlo Masci, Mayor of Pescara, Prof. Tiziana Pompa (Galileo Galilei Lyceum in Pescara) and Prof. Costantino Sigismondi (ICRA/Sapienza, Ateneo Regina Aspostolorum e ITIS G. Ferraris, Roma).



Pescara - May 17, h 5:52 AM

Monday, May 16, 2022

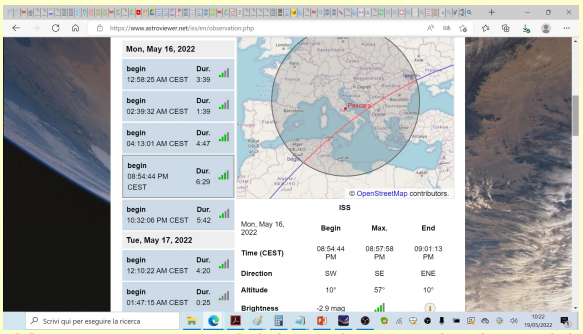
Lanciano
h 4:00-6:00 AM: Lunar eclipse observations and Sunrise at 256 m above sea level, horizon's depression and refraction
[online]

ICRANet, Piazza della Repubblica 10, Pescara
h 3:00-4:00 PM: welcome to the students of Galileo Galilei Lyceum (Pescara) and visit to the ICRANet center

h 4:00-5:00 PM: Differential measures of ΔUT1 at the meridian line of Santa Maria degli Angeli in Rome (Prof. Costantino Sigismondi)

h 5:00 PM: Preliminary analysis on the Lunar Total Eclipse of May 16,2022: is there still science with eclipses? (Prof. Costantino Sigismondi and Prof. J.M. Pasachoff)

h 8:00-10:00 PM
Observation of the sunset behind the hills and Moonrise from the canal harbor of Pescara, still in opposition to the Sun.
Observation of the transit of the international space station and of its instant immersion in the shadow of the Earth (as has been for the eclipse of Moon) at 21:01:24.



Ephemerides calculated for Pescara, May 16, slightly in advance to the observed data. In fact, the orbital elements of the ISS are manually changed with periodical lighting of rockets, in order to avoid that it falls in the atmosphere for the even minimum friction which experiments at 400 km of height.

Tuesday, May 17, 2022

Pescara, Piazza I Maggio
h 5:00-6:00 AM: Observation of Venus, Jupiter, Mars and Saturn and Sunrise at sea level

ICRANet, Piazza della Repubblica 10, Pescara
h 4:00-5:00 PM: Solar Forcing to Climate Change (Prof. Costantino Sigismondi)

h 5:00-5:30 PM: Ceremony Mersenne Prize 2022* at the presence of H.E. Carlo Masci, Mayor of Pescara, in honor of Prof. Remo Ruffini's 80th birthday
*promoted by the ICRANet School Department and IAU Commission on History of Astronomy, established in 2019.

Il Centro - May 18, 2022

Wednesday, May 18, 2022

Pescara, Lungomare Matteotti
h 5:00-6:00 AM: Sunrise observation and Jupiter-Venus angular distance measure

Levata del Sole a Pescara il 10 maggio 2022

Levata geometrica del Sole a Pescara l'11 maggio 2022

Levata geometrica del Sole il 12 maggio 2022 a Pescara

Levata geometrica del Sole a Pescara il 13 maggio 2022

Geometrical sunrise at Pescara beach of 18 may 2022

Geometrical sunrise at Pescara beach of 19 may 2022

For suggestions&comments write to the Webmaster

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The 6th Bego Rencontre Summer School

Jul 4 – 14, 2022
Europe/Paris timezone

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Overview
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Participant List

Contact
secretariat@icranet.org
+39 085 230 54 200

This meeting extends across two weeks from 4-14 July 2022. It aims to discuss recent developments in the theory and observations of gamma-ray bursts (GRBs), active galactic nuclei (AGNs), and dark matter (DM).

Some relevant topics to be discussed and devoted to GRBs and AGNs are:

- The energy extraction process from rotating black holes (BHs) in the inner engine of the high-energy (e.g. GeV) emission of long GRBs and AGNs. Special attention is given to inner engines comprising a Kerr BH immersed in a magnetic field and ionized plasma. Recent developments on the topic, especially the problem of field screening, electric discharge, radiation properties, black hole physics, magnetohydrodynamics, and the maximum electric charge allowed in the inner engines, will be discussed.
- Recent progress in GRB theory, for instance in the binary-driven hypernova (BdHN) model. This includes the physical explanation of the ultrarelativistic prompt emission (UPE) phase in the MeV regime, the afterglow emission in the X-rays, optical, and radio wavelengths, and the GeV emission.
- Supernova associated with GRBs. The role of the supernova explosion in the entire emission of a long GRB.
- GRBs at high-redshift and GRB-cosmology.
- The emission of GRB cocoons. Observations.
- The emission of M87*. Theory and observations.

Some relevant topics to be discussed and devoted to dark matter are:

- Fermionic and bosonic dark matter: microphysics.
- Fermionic and bosonic dark matter: macrophysics.
- Recent developments in the description of the Galactic center (Sgr A*) as a core of dark matter.
- Latest astrometric observations of stars orbiting Sgr A* and observational constraints on the nature of Sgr A*.
- Latest news on the baryonic content in galaxies.
- Strong gravitational lensing.
- Dark matter in early cosmology. Cosmological simulations. Dark matter halo formation.

The meeting will be held in the Villa Ratti, the seat of ICRANet in Nice, France, and will follow a mixed format, in presence and online.

Invited speakers (TBC)

- **Aimuratov Yerlan**
- **Amati Lorenzo**
- **Arguelles Carlos Raul**
- **Astesiano Davide**
- **Becerra Bayona Laura**
- **Bianco Carlo Luciano**
- **Bondani Stefano**
- **Boshkayev Kuantay**
- **Crespi Valentina**
- **Crosta Mariateresa**
- **Dainotti Maria Giovanna**
- **Della Valle Massimo**
- **Fryer Christopher**
- **Gregoris Daniele**
- **Izzo Luca**
- **Kotlarik Petr**
- **Li Liang**
- **Longo Francesco**
- **Luo Wentao**

- **Mavromatos Nick**
- **Meneghetti Massimo**
- **Mestre Martin**
- **Mirabel Felix**
- **Moradi Rahim**
- **Nakar Ehud**
- **Peissker Florian**
- **Petrosian Vahe**
- **Piran Tsvi**
- **Re Federico**
- **Re Fiorentin Paola**
- **Rodriguez Ruiz José Fernando**
- **Rosati Piero**
- **Rueda Hernandez Jorge Armando**
- **Ruffini Remo**
- **Sahakyan Narek**
- **Sigismondi Costantino**
- **Spagna Alessandro**
- **Troja Eleonora**
- **Vereshchagin Gregory**
- **Viel Matteo**
- **Wang Yu**
- **Waxman Eli**
- **Xue Shesheng**
- **Yunis Rafael**
- **Zhang Bing**

Registration fee:

- **Regular fee**: 150 Euros
- **Reduced fee**: 50 Euros (applied to students, retired scientists)

Starts Jul 4, 2022, 9:00 AM
Ends Jul 14, 2022, 6:15 PM
Europe/Paris

ICRANet Seat at Villa Ratti
Nice (France) and online

Remo Ruffini

Final program.pdf

The call for abstracts is open
You can submit an abstract for reviewing.
Submit new abstract

Registration
Registration for this event is currently open.
Register now

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The 6th Bego Rencontre Summer School – July 4 - 14, 2022 (ICRANet Seat at Villa Ratti in Nice, in Pescara and online)

	Monday July 4 (ICRA Sapienza and ONLINE)	Tuesday July 5 (NICE and ONLINE)	Wednesday July 6 (NICE and ONLINE)	Thursday July 7 (PESCARA and ONLINE)	Friday July 8 (PESCARA and ONLINE)	Saturday July 9	Sunday July 10	Monday July 11 (PESCARA and ONLINE)	Tuesday July 12 (PESCARA and ONLINE)	Wednesday July 13 (PESCARA and ONLINE)	Thursday July 14 (PESCARA and ONLINE)
Topics	**Dark Matter Galactic Center**	**Dark Matter Galactic Center**	**Dark Matter Galactic Center**	**AGNs**	**Fronteer**			**Cocoon and BdHN Model**	**Cocoon and BdHN Model**	**Supernova**	**GRB 171205A and GRB 220101**
Chair	***Carlo Luciano BIANCO***	***Aldo TREVES***	***Piero ROSATI***	***Gregory VERESHCHAGIN***	***Shesheng XUE***			***Yerlan AIMURATOV***	***Liang LI***	***Maria Giovanna DAINOTTI***	***Carlos ARGUELLES***
09:00-09:45	**Carlo Luciano BIANCO** *Report on the July 1, 2022 ANVUR evaluation of ICRA and ICRANet*	**Federico RE** *Detectability of primordial black holes as a dark matter candidate with gravitational waves from the Galactic center*	**Daniele GREGORIS** *Understanding Gravitational Entropy of Black Holes: A New Proposal via Curvature Invariants*	**Kuantay BOSHKAYEV**				**Maria Giovanna DAINOTTI** *3D fundamental plane relation from the high-energy (Fermi-LAT) to the optical wavelengths*	**Ehud NAKAR** *Jet propagation, shock breakout and Cocoon emission*	**Massimo DELLA VALLE**	**Jorge RUEDA** *Binary-Driven Hypernovae: building blocks and future developments*
09:45-10:30	**Paola Re FIORENTIN** and **Alessandro SPAGNA** *Local Cosmology in the Gaia era*	**Stefano BONDANI** *Detectability of primordial black holes as a dark matter candidate with gravitational waves from the Galactic center*	**Carlos Raul ARGUELLES** *RAR model: cosmological scales, galactic scales, and DM particle nature*	**Shesheng XUE** *W$ boson mass tension caused by its right-handed gauge coupling at high energies?*				**Lorenzo AMATI** *Cosmology with Gamma-Ray Bursts*	**Tsvi PIRAN**	**Rahim MORADI** *Nature of the ultrarelativistic prompt emission phase of GRB 190114C and 180720B*	**Liang LI** *BdHN at large distances (2) spectral analysis*
10:30-11:15	**Florian PEISSKER**	**Felix MIRABEL**	**Carlos Raul ARGUELLES**	**Narek SAHAKYAN**	**Wentao LUO**			**Ehud NAKAR** *Jet propagation, shock breakout and Cocoon emission*	**Mariateresa CROSTA** *Multiscale gravitational astronomy in the Gaia era: general relativistic observables, models and tests for the Galaxy and its constituents. The Milky Way as Einstein's paradigm.*	**Luca IZZO** *The search for jet cocoons in broad line supernovae*	**Wang YU** *GRB 190829A - A Showcase of Binary Late Evolution*
11:15-11:30	**Coffee break**							**Coffee break**			
11:30-12:15	**Matteo VIEL** *The Intergalactic Medium as a cosmological probe*	**Carlos ARGUELLES** *2022 ICTP-SAIFR Prize in Classical Gravity and Applications – Fermionic DM: galactic scales, cosmological scales and the nature of the dark matter particles*	**Piero ROSATI** *Cosmography and tests of the LCDM paradigm with high-precision strong lensing modelling of galaxy clusters*	**Razmik MIRZOYAN**				**Gregory VERESHCHAGIN** *Photospheric emission from relativistic cocoons*	**Petr KOTLAŘÍK** *Slowly rotating thin discs around a central black hole as possible relativistic model of galaxy*	**Eli WAXMAN** *ULTRASAT mission*	**General discussion**
12:15 – 13:00			**Martin MESTRE** *Constraining the core-halo structure of fermionic DM in the Galaxy with stellar streams*	**Costantino SIGISMONDI** (video message)	**Francesco LONGO** *Observations of GRB at HE and VHE energies: a long path to success*				**Davide ASTESIANO** *Relativistic models for galaxies*	**Yerlan AIMURATOV** *Gamma-Ray Bursts Associated with Supernovae. Case studies: 190114C, 190829A, 130427A.*	**General discussion**
13:00 – 15:00	**Lunch break**							**Lunch break**			
15:00-15:45			**Massimo MENEGHETTI** *Strong lensing constraints on the small scale structure of galaxy clusters*	**Jose RODRIGUEZ** *Ellipsoids evolution via GWs*				**Tsvi PIRAN**	**Eleonora TROJA**		
15:45-16:30			**Valentina CRESPI** *S2 star dynamics in high Dark Matter densities around SgrA**					**Nick MAVROMATOS** *Cosmologies with Gravitational Anomalies and Axions: modified profiles of Gravitational Waves and warm dark matter properties*		**Laura BECERRA** *SPH simulations of the Induced Gravitational Collapse*	**Christopher FRYER**
16:30 – 17:00	**Coffee break**							**Coffe break**			
17:00 – 17:45		**Rafael YUNIS** *Small-scale structure, self-interacting fermions, and cosmology*						**Vahe PETROSIAN**	**Bing ZHANG** *The physics of fast radio bursts*	**General discussion**	**Remo RUFFINI Jorge RUEDA**

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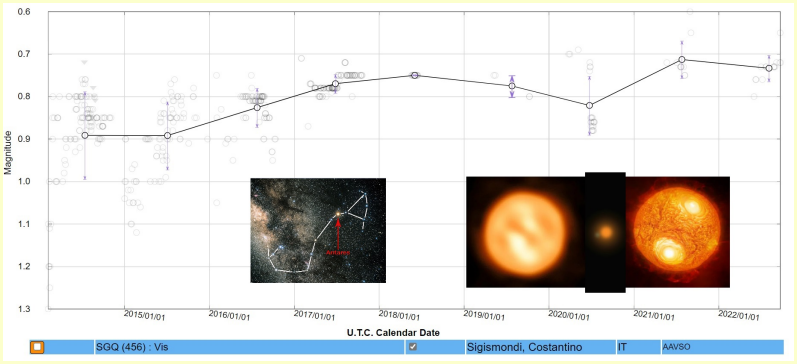
La Notte Europea dei Ricercatori 2022

30 Settembre 2022 - Online



Supernovae e stelle binarie

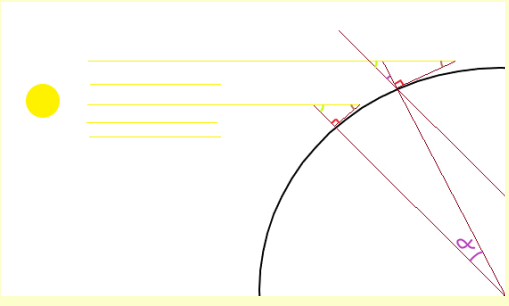
La maggior parte delle stelle si trovano in sistemi multipli e l'interazione tra le componenti può determinare l'innesco dell'esplosione di una Supernova, il fenomeno più luminoso dell'Universo. Sistemi di stelle binarie e progenitori di Supernovae sono da tempo oggetto di studi teorici in Astrofisica Relativistica, che verranno presentati dai ricercatori di ICRANet diretti dal prof. Remo Ruffini. Sofisticati modelli numerici basati sulle equazioni della Relatività Generale, necessarie quando masse e dimensioni dell'oggetto stellare portano la materia a superare la densità del nucleo atomico, sono oggi in grado di rappresentare i dati osservativi con grande accuratezza. Al contempo i dati osservativi si arricchiscono di informazioni multi-spettrali da un numero sempre crescente di strumenti dedicati al monitoraggio del cielo nelle varie lunghezze d'onda, sia da Terra che dallo spazio. I lavori dei giovani ricercatori cinesi Wang e Li sono su questa linea di ricerca.
L'osservazione della variabilità stellare della supergigante rossa e binaria Antares, registrata negli ultimi 8 anni verrà presentata e commentata da Sigismondi: escursioni di pochi centesimi di magnitudine sono accessibili anche all'occhio nudo a patto di correggere per l'estinzione atmosferica il confronto con stelle di simile luminosità, che distano da Antares varie decine di gradi. Osservazioni fatte dal satellite SOHO completano il quadro. Il concetto di magnitudine e la scala logaritmica delle luminosità, alla base di una corretta interpretazione dei fenomeni astrofisici, verranno resi in termini adatti ad un pubblico di liceo.

Programma
h 16.30: Prof. Remo Ruffini
Accoglienza degli Studenti e saluti d'introduzione
Le Supernovae e gli sviluppi dell'astrofisica contemporanea

h 16.45: Prof. Wang Yu
Progenitori di Supernovae

h 17.00: Prof. Li Liang
Modelli numerici

h 17.15: Prof. Costantino Sigismondi
Antares e la variabilità stellare; ICRANet e la scuola [PDF]
Misura del raggio della Terra



Schema geometrico del metodo di Eratostene per la misura del raggio terrestre
Federico Battistol, Liceo Scarpa di Motta di Livenza (TV)

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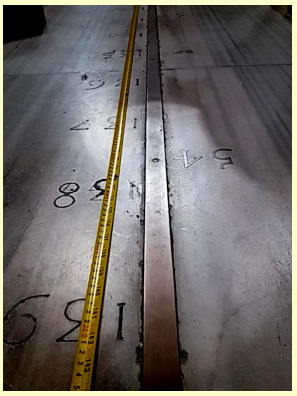
Eclissi solare parziale e misura del diametro solare

25 Ottobre 2022

L'eclissi di Luna agli antipodi, che si vede con i calcoli: 8 novembre 2022 h 12

Scientific rationale



Transito meridiano del 18 ottobre 2022 a Santa Maria degli Angeli

Turbolenza atmosferica e contatti tra disco lunare e solare

Controllo del foro stenopeico di Santa Maria degli Angeli a 100x

Simulazione dei contatti dell'eclissi parziale del 25 X 22 a Pescara

Transito meridiano del 19 ottobre 2022 a Santa Maria degli Angeli

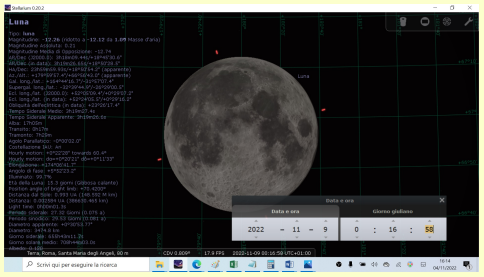
Transito meridiano del 20 ottobre 2022 a Santa Maria degli Angeli

Effemeridi per l'eclissi di Sole del 25 ottobre 2022 a Roma

Effemeridi per l'eclissi di Sole del 25 ottobre 2022 a Motta di Livenza

➤ **Eclissi di Sole 25 ottobre 2022 (Playlist YouTube)**

L'eclissi di Luna agli antipodi, che si vede con i calcoli: 8 novembre 2022 h 12



Infatti in ogni stagione delle eclissi, ogni sei mesi "draconitici" le eclissi vengono sempre a coppie, se non addirittura in tre.

Tutte queste statistiche sono retaggio della Meccanica Celeste classica, e noi cercheremo di ripercorrerne le tappe attraverso due eventi:

il **5 novembre** in Basilica a S. Maria degli Angeli, sulla Linea Clementina simuliamo i passaggi meridiani della Luna del 7 e del 9 novembre 2022, e svolgendo i calcoli di interpolazione per l'8 novembre, imponendo la condizione di allineamento tra i centri di Luna, Terra e Sole e trovando che la Luna sarà quasi a 180° dal Sole l'8 novembre alle 12.

l'**8 novembre** tramite un collegamento al sito Timeanddate dove le immagini dell'eclissi verranno trasmesse
https://www.timeanddate.com/eclipse/lunar/2022-november-8
mentre noi provvederemo ai commenti storico-scientifici in Italiano

Le eclissi di Luna furono utilizzate per misurare la longitudine del punto di osservazione, avendo a disposizione una meridiana. Costituiscono il metodo più accurato per questo scopo fino a tutto il XVIII secolo. Anche Cristoforo Colombo valutò la longitudine di Hispaniola con l'eclissi di Luna del 29 febbraio 1504.

Osservare un'eclissi di Luna è entrare in contatto col patrimonio storico scientifico e anche artistico emozionale dell'umanità, anche se ciò avviene tramite uno schermo.

Personalmente ho osservato tante eclissi di Luna dal 9 gennaio 1982 a Lanciano, ripetuta dopo un ciclo di Saros il 21 gennaio 2000, mentre ero a Padova, e poi ancora dopo un ciclo di Metone il 21 gennaio 2019 a Pescara (sotto la pioggia). L'ultima è stata il 16 maggio 2022 a Lanciano. Ricordo bene anche quella del 16 luglio 2019 da Padova e quella del 7 agosto 2017 dal ponte s. Angelo a Roma: in quella occasione stavo giocando a scacchi quando un turista ci avvisò "excuse me there is an eclipse!" quasi mi conoscesse... quel giorno ignoravo che ci sarebbe stata un'eclissi parziale di Luna... è proprio vero quel proverbio zen che afferma che quando l'allievo è pronto, il maestro appare! Ne ho viste anche di penombra, anche sullo stimolo dei miei studenti. Oltre che dalle finestre e i balconi di casa mia, anche da Villa Pamphili, al sorgere della Luna; questa era ancora in penombra. Eclipse party...con il fenomeno in corso durante una cena. era il 27 luglio 2018... Oltre quarant'anni di osservazioni e di esperienza della Luna Rossa sospesa nel cielo notturno, sono confluiti, fino ad ora, in 15 pubblicazioni.

Transito meridiano del 5 novembre 2022 a s. Maria degli Angeli

Declinazione di Sole e Luna durante l'eclissi lunare dell'8 novembre 2022 simulate sulla Meridiana

Levata del Sole da Roma il 9 novembre 2022 e azimut della Luna

Tramonto del Sole e levata della Luna a Ostia prima dell'eclissi di Luna, 7 Novembre 2022

Referenze

Di seguito una lista di lavori riguardanti le eclissi di Luna: un fenomeno che ha ancora molto da insegnarci.

https://ui.adsabs.harvard.edu/abs/2012arXiv1211.3687Z/abstract
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