Faculty, Adjunct professors, Research scientists,

Visiting scientists, Lecturers, PhD students, Post-doc

and Staff

at the Pescara Center

December 2024

Contents

ICRANet Faculty Staff

Belinski, Vladimir	ICRANet
Bianco, Carlo Luciano	ICRANet and Università di Roma "Sapienza"
Cherubini, Christian	ICRANet and University Campus Bio-medico, Italy
Damour, Thibault	IHES, France
Della Valle, Massimo	INAF-Napoli - Osservatorio Astronomico di Capodimonte, Italy
Filippi, Simonetta	ICRANet and University Campus Bio-medico, Italy
Giommi, Paolo	ASI Science Data Centre, Italy
Jantzen, Robert	AbrahamTaub-ICRANet Chair and Villanova University, USA
Kerr, Roy P.	Yevgeny Mikhajlovic Lifshitz - ICRANet University of Canterbury, New Zeland
Li, Liang	ICRANet
Moradi, Rahim	ICRANet
Punsly, Brian Mathew	Mathew California University, Los Angeles USA
Rueda, Jorge A.	ICRANet and Università degli Studi di Ferrara
Ruffini, Remo	ICRANet and Università di Roma "Sapienza"
Sahakyan, Narek	ICRANet-Yerevan, Armenia
Vereshchagin, Gregory	ICRANet
Wang, Yu	ICRANet
Xue, She Sheng	ICRANet

Adjunct Professors of the Faculty

Aimuratov, Yerlan	Fesenkov Astrophysical Institute, Kazakhstan
Ansoldi, Stefano	University of Udine, Italy
Argüelles, Carlos Raúl	CONICET, Argentina
Barres de Almeida, Ulisses	CBPF, Rio de Janeiro, Brazil
Becerra Bayona, Laura Marcela	Universidad Católica de Chile, Chile
Bini, Donato	CNR, Italy
Bisnovatyi-Kogan, Gennady	Space research institute RAS, Moscow
Buchert, Thomas	Centre de Recherche Astrophysique de Lyon, UCBL1, ENS-L, CNRS, France
Camargo Rodrigues de Lima, Rafael	Universidade do Estado de Santa Catarina, Brazil
Chakrabarti, Sandip Kumar	Indian Centre for Space Physics, Kolkata, India
Cherubini, Christian	ICRANet and Campus Biomedico, Italy
Della Valle, Massimo	Osservatorio di CapodiMonte, Italy
Filippi, Simonetta	ICRANet and Campus Biomedico, Italy
Fisher, Robert	University of Massachusetts Dartmouth
Frontera, Filippo	University of Ferrara, Italy
Fryer, Chris L.	University of Arizona, Tucson, Arizona, USA
Giommi, Paolo	ASI, Italian Space Agency
Karlica, Mile	University of Nova Gorica, Slovenia
Kleinert, Hagen	Richard Feynmann - ICRANet Chair, Freie Universitat Berlin
Kerr, Roy	Yevgeny Mikhajlovic Lifshitz - ICRANet Chair and University of Canterbury, New Zealand
Lee, Hyung Won	Inje University, South Korea
Lin, Wenbin	University of South China, China
Mansouri, Reza	Sharif University of Technology
Mathews, Grant	University of Notre Dame

Merafina, Marco	University of Rome La Sapienza, Italy
Mirabel, Felix	CEA
Mirtorabi, Seyed Mohammad Taghi	Alzahra University, Iran
Muccino, Marco	INFN
Pace, Carlo Maria	
Pak-Hin, Tam	Sun Yat-Sen University, Guangzhou, China
Petrosian, Vahe	Stanford University, California, USA
Piran, Tsvi	Yuval Neeman-ICRANet Chair and the Hebrew University, Israel
Prakapenia, Mikalai	ICRANet-Minsk, Belarus
Punsly, Brian Mathew	Mathew California University, Los Angeles USA
Quevedo, Hernando	Institute of Nuclear Science, UNAM
Rodriguez Ruiz, José Fernando	Universidad Industrial de Santander
Romano, Antonio Enea	Universidad de Antioquia Medellín, Antioquia, Colombia
Shakeri, Soroush	Isfahan University of Technology, Iran
Sigismondi, Costantino	ICRA, Italy
Sobouti, Yousef	Institute for Advanced Studies in Basic Sciences, IASBS, Iran
Sonnino, Giorgio	Université Libre de Bruxelles, ULB
Torres, Sergio	Centro Internacional de Fisica, Bogotà, Colombia
Zen Vasconcellos, Cesar Augusto	UFRGS, Porto Alegre, RS, Brazil

Lecturers

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

Research Scientists

Benetti, Micol	ICRANet
Bernardini, Maria Grazia	ICRANet and Università di Roma "Sapienza", Italy
Lattanzi, Massimiliano	University of Oxford and ICRANet
Patricelli, Barbara	ICRANet and Università di Roma "Sapienza", Italy
Rotondo, Michael	ICRANet and Università di Roma "Sapienza", Italy

Visiting Scientists

Abishev, Medeu	Al-Farabi Kazakh National University, Kazakhstan
Ahmedov, Bobomurat	Uzbekistan Academy of Sciences
Alfonso Pardo, Wilmer Daniel	Universidad de Antioquia Medellín, Antioquia, Colombia
Ansoldi, Stefano	University of Udine, Italy
Arkhangelskaya, Irene	Moscow Engineering Physics Institute, Russia
Bakytzhan, Zhami	Al-Farabi Kazakh National University, Kazakhstan
Batebi, Saghar	Isfahan University of Technology, Iran
Bavarsad, Ehsan	Isfahan University of Technology, Iran
Belczynski, Chris	Nicolaus Copernicus Astronomical Center, Poland
Berezhiani, Zurab	University of L'Aquila
Bernal, Cristian Giovanny	Universidad Nacional Autónoma de México (UNAM), Mexico
Bisnovatyi-Kogan, Gennady	Space Research Institute of the Russian Academy of Sciences - SRI RAS
Blinne, Alexander	University Jenna, Germany
Boçi, Sonila	University of Tirana, Albania
Boshkayev, Kuantay	Al-Farabi Kazah National University, Kazakhstan
Cadez, Andrej	University of Ljubljana, Slovenia
Cho, Yongmin	UNIST, Republic of Korea
Corvino, Giovanni	University of Rome La Sapienza, Italy
Da Cunha, Bruno Carneiro	UFPE, Brazil
Davis, Stanley	Université Bordeaux, France
De Lorenci, Vitorio	Federal University Of Itajuba - Brazil
Eslampanah, Behzad	University of Mazandaran, Iran
Eslamzadeh Askestani, Sareh	University of Mazandaran, Iran

Ewald, Denise Grüne	Universidade Federal do Rio Grande do Sul, Brazil
Felix, Mirabel	Universidade Federal do Rio Grande do Sul, Brazil
Fimin, Nicolaj	Keldish Institute for Applied Mathematics, Russia
Gadri, Mohamed	University of Tripoli, Libya
Gallego Cadavid, Alexander	Universidad de Antioquia Medellín, Antioquia, Colombia
Goulart, Erico	Centro Brasileiro de Pesquisas Físicas, Brazil
Guidi, Vincenzo	University of Ferrara, Italy
Guzzo, Marcelo Moraes	Universidade Estadual de Campinas, Brazil
Gabriele, Grittani	ELI-Beamlines, Czech Republic
Haghighat, Mansour	Isfahan University of Technology, Iran
Hoang, Ngoc-Long	IPE, Hanoi, Vietnam
Hütsi, Gert	Tartu Observatory, Estonia
Kenesbek, Zhadyra	Al-Farabi Kazakh National University, Kazakhstan
Kilin, Sergei	National Academy of Sciences of Belarus
Kim, Hongsu	KASI
Kim, Hyeong-Chan	Chungju National University
Kim, Hyuong Yee	INJE, South Korea
Kim, Jin Young	Kunsan National University
Kim, Sang Pyo	Kunsan National University, Republic of Korea
Komarov, Stanislav	BSU and NASB - Belarus
Kurmangaliyeva, Venera	al-Farabi Kazakh National University, Kazakhstan
Lecian, Orchidea Maria	Sapienza University of Rome, Italy
Lee, Chang-Hwan	Pusan National University
Lee, Hyung Won	Inje University
Lee, Wonwoo	Cquest, Sogang University
Lin, Wenbin	Southwest Jiaotong University, Chengdu, China

Mahmoudikooshkeqazi, Somayyeh	Shiraz University, Iran
Malheiro, Manuel	ITA, Brazil
Mansouri, Reza	Sharif University of Technology, Iran
Mathews, Grant	University of Notre Dame, USA
Merafina, Marco	University of Rome La Sapienza
Mirtorabi, Seyed Mohammad Taghi	Alzahra University, Iran
Modaresvamegh, Saeidehalsadat	Shiraz University, Iran
Mohammadi, Rohollah	Isfahan University of Tecnology, Iran
Moliné, Maria de los Angeles	Instituto de Astrofísica e Ciências do Espaço, Lisboa
Mosquera Cuesta, Herman	Instituto Federal de Educação, Ciência e Tecnologia do Ceará, Brazil
Motie, Iman	Isfahan University of Technology, Iran
Muhsin Burhan Mohammed Rashid Al-Jaf	University of Science and Technology of China - Hefei
Nagataki, Shigehiro	Yukawa Institute for Theoretical Physics, Kyoto University
Natoli, Paolo	University of Ferrara, Italy
Nessipbay, Aizhan	Al-Farabi Kazakh National University, Kazakhstan
Pak-Hin, Tam	Sun Yar-Sen University, China
Pakhshan, Espoukeh	Islamic Azad University, Iran
Park, Ilhung	Ieu, Ewha Womans University, Republic of Korea
Park, Myeong-Gu	Kyungpook National University, Republic of Korea
Passiltay, Ainur	Al-Farabi Kazakh National University, Kazakhstan
Paudel, Rishiram	Tribhuvan University, Nepal
Peqini, Klaudio	University of Tirana, Albania
Peres Menezes, Débora	Universidade Federal de Santa Catarina, Brazil

Peresano, Michele	University of Udine, Italy
Perez Bergliaffa, Santiago	Universidade do Estado do Rio de Janeiro, Brazil
Perez Martinez, Aurora	Instituto de Cibernetica Matematica Y Fisica, Cuba
Picanço Negreiros, Rodrigo	Universidade Federal Fluminense, Brazil
Piechocki, Wlodzimierz	Institute for Nuclear Studies - Poland
Pinto Neto, Nelson	Centro Brasileiro de Pesquisas Físicas, Brazil
Prakapenia, Mikalai	B.I. Stepanov Institute of Physics, NASB, ICRANet-Minsk
Qadir, Ashgar	National University of Sciences and Technology - Pakistan
Quevedo, Hernando	Universidad Nacional Autonoma de Mexico UNAM, Mexico
Rafelski, Johann	University of Arizona
Raffaelli, Bernard	Université de Corse, France
Rastegar Nia, Fatemeh	Alzahra University, Iran
Riahi, Rashid	Isfahan University of Technology, Iran
Romano, Antonio Enea	Universidad de Antioquia Medellín, Antioquia, Colombia
Romero, Gustavo E.	Instituto Argentino de Radioastronomia IAR-CONICET, Argentina
Rybak, Ivan	Centro de Astrofísica da Universidade do Porto, Portugal
Sasaki, Misao	Kyoto University, Japan
Scopel, Stefano	Sogang University, South Korea
Sergey, Bulanov	ELI-Beamlines, Czech Republic
Shakeri, Soroush	Isfahan University of Technology, Iran
Soares Maia, Clovis Achy	Universidade de Brasília, DF, Brazil
S. O. Kepler	Universidade Federal do Rio Grande do Sul, Brazil
Sonnino, Giorgio	Université Libre de Bruxelles ULB, Belgium

Takibayev, Muruert	Rutgers, the State University of New Jersey, USA
Tahvildarzadeh, Shadi Abdolreza	Rutgers, the State Univeristy of New Jersey, USA
Tarasenko, Aleksander	Belarusian State University, Belarus
Teixeira Coelho, Hélio	Universidade Federal de Pernambuco, Brazil
Tkachenko, Alessya	Al-Farabi Kazakh National University, Kazakhstan
Torres, Sergio	Centro Internacional de Fisica, Bogotà, Colombia
Torrieri, Donato Giorgio	Universidade Estadual de Campinas, Brazil
Tizchang, Seddigheh	Isfahan University of Technology, Iran
Uka, Arban	Epoka University, Albania
Vallejo Peña, Sergio Andrés	Universidad de Antioquia Medellín, Antioquia, Colombia
Van Putten, Maurice	Korean Institute for Advanced Study, South Korea
Vyblyi, Yuri	B.I. Stepanov Institute of Physics, Republic of Belarus
Yang, Jongmann	Ieu, Ewha Womans University, Republic of Korea
Yernazarov, Tursynbek	Al-Farabi Kazakh National University
Yeom, Dong-Han	Cquest, Sogang University, Republic of Korea
Zhang, Shurui	University of Science and Technology of China USTC, China
Zheng, Yunlong	University of Science and Technology of China USTC, China
Zhumabayeva, Symbat	Al-Farabi Kazakh National University, Kazakhstan

International Relativistic Astrophysics Ph. D

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

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

Ninth Cycle	*2010-2013*
Arguelles, Carlos	Argentina
Benetti, Micol	Italy
Muccino, Marco	Italy

Tenth Cycle	*2011-2014*
Cáceres Uribe, Diego Leonardo	Colombia
Wang, Yu	China

Eleventh Cycle	*2012-2015*
Barbarino, Cristina	Italy
Cipolletta, Federico	Italy
Dichiara, Simone	Italy

Twelfth Cycle	*2013-2016*
Becerra, Laura	Colombia
Harutyunyan, Vahagn	Armenia

Thirteenth Cycle	*2014-2017*
Moradi, Rahim	Iran
Rodriguez Ruiz, Jose Fernando	Colombia

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

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

Sixteenth Cycle	*2017-2020*
Becerra Vergara, Eduar Antonio	Colombia
Carinci, Massimo Luca Emiliano	Italy
Prakapenia, Mikalai	Belarus
Yunis, Rafael Ignacio	Argentina

IRAP Ph. D. Erasmus Mundus Students

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

Delgado, Camilo	Colombia
Efremov, Pavel	Russia
Karilca, Mile	Croatia
Krut, Andreas	Germany
Martinez Aviles, Gerardo	Mexico

CAPES Students

First Cycle	*2013-2016*
Brandt Carlos Henrique	Brazil
Guimarães Carvalho Gabriel	Brazil
Pereira Lobo Iarley	Brazil

Administrative and Secretarial Staff

ICRANet - Pescara

Adamo, Cristina	Administrative Office
Di Niccolo, Cinzia	Secretariat
Fabbiani Monica	Secretariat
Duarte Sabrina	Secretariat
Latorre, Silvia	Administrative Office
Natale, Elisabetta	Secretariat
Panara, Serena	Secretariat
Scanzano, Luciano	System Manager

ICRANet Faculty Staff

Bianco Carlo Luciano

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

Period covered: 2005 – 2024

I Scientific Work

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

II Conferences and educational activities
II a Conferences and Other External Scientific Work

Gave the following invited lectures:

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

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

- A.G. Aksenov, M.G. Bernardini, C.L. Bianco, L. Caito, C. Cherubini, G. De Barros, A. Geralico, L. Izzo, F.A. Massucci, B. Patricelli, M. Rotondo, J.A. Rueda Hernandez, R. Ruffini, G. Vereshchagin, S.-S. Xue; New developments of the Fireshell scenario; *The Shocking Universe Meeting*, San Servolo, Venice (Italy), September 2009.

- C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, B. Patricelli, R. Ruffini; The fireshell equations of motion and the P-GRB observational properties; *2nd Galileo – Xu GuangQi meeting*, Ventimiglia (Italy), July 2010.

- C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, B. Patricelli, R. Ruffini; The fireshell model for GRBs: toward a canonical GRB scenario; *3rd Galileo – Xu GuangQi meeting*, Beijing (China), October 2011.

II b Work With Students

- Students of the IRAP-PhD program at University "La Sapienza", Rome, Italy: Yerlan Aimuratov, Maria Grazia Bernardini, Letizia Caito, Maria Giovanna Dainotti, Gustavo De Barros, Maxime Enderli, Roberto Guida, Luca Izzo, Mile Karlika, Milos Kovacevic, J. David Melon Fuksman, Marco Muccino, Barbara Patricelli, Ana Virginia Penacchioni, Giovanni Battista Pisani, Daria Primorac, Luis Juracy Rangel Lemos, Yu Wang.

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

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

II c Diploma thesis supervision

- 2005. External supervisor of the First three years degree thesis ("Tesi di laurea triennale") in Physics by Francesco Alessandro Massucci at University "La Sapienza", Rome, Italy.

- 2006. External supervisor of the Degree thesis in Physics by Letizia Caito at University "La Sapienza", Rome, Italy.

- 2007. Thesis advisor of the IRAP-PhD Degree Thesis by Maria Grazia Bernardini at University "La Sapienza", Rome, Italy.

- 2008. External supervisor of the First three years degree thesis ("Tesi di laurea triennale") in Physics by Eliana La Francesca at University "La Sapienza", Rome, Italy.

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

II d Other Teaching Duties

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

III. Service activities

III a. Within ICRANet

- Administrator of theserver used for numerical computations.
- Secretariat of the IRAP PhD.
- Member of the ICRANet Scientific Committee.
- Member of the IRAP PhD Faculty

III b. Outside ICRANet

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

IV. Other

2024 List of Publication

C. L. Bianco, M. T. Mirtorabi, R. Moradi, F. Rastegarnia, J. A. Rueda, R. Ruffini, Y. Wang, M. Della Valle, L. Li, S. R. Zhang; "Probing Electromagnetic Gravitational-wave Emission Coincidence in a Type I Binary-driven Hypernova Family of Long Gamma-Ray Bursts at Very High Redshift"; *The Astrophysical Journal*, **966**, 219 (2024)

R. Ruffini, C. L. Bianco, L. Li, M. T. Mirtorabi, R. Moradi, F. Rastegar Nia, J. A. Rueda, S. R. Zhang, Y. Wang; "Ten Supernova-rise in Binary Driven Gamma-ray Bursts"; eprint arXiv:2405.08231(2024)

R. Ruffini, C. L. Bianco, M. Prakapenia, H. Quevedo, J. A. Rueda, S. R. Zhang; "The role of the irreducible mass in repetitive Penrose energy extraction processes in a Kerr black hole", submitted to Phys.Rev.Res.; eprint arXiv:2405.10459 (2024)

R. Ruffini, C.L. Bianco, M. Della Valle, Liang Li, M.T. Mirtorabi, R. Moradi, F. Rastegar Nia, J.A. Rueda, Y. Wang, on behalf of the ICRANet team; "GRB 240825A: The nature of the afterglow motivates the search of the associated supernova"; GRB Coordinates Network, Circular Service, No. 37536 (2024)

R. Ruffini, L. Becerra, C.L. Bianco, M. Della Valle, Liang Li, G.J. Mathews, M.T. Mirtorabi, R. Moradi, F. Rastegar Nia, J.A. Rueda, Y. Wang; "GRB 241025A: The discovery of a BdHN I from data of Swift, Fermi, SVOM and Einstein Probe telescopes"; GRB Coordinates Network, Circular Service, No. 37964 (2024)

J. A. Rueda, L. Becerra, C. L. Bianco, M. Della Valle, C. L. Fryer, C. Guidorzi, R. Ruffini; "Long and short GRB connection"; *Phys. Rev. D*,**111**, 023010 (2025)

Cherubini Christian

Position: Full Professor in Mathematical Physics (MATH-04/A).
Department of Science and Technology for Sustainable Development and One Health and Unit of Nonlinear Physics and Mathematical Modeling
Università Campus Bio-Medico di Roma,
Via A. del Portillo 21, I-00128 Rome, Italy.
and Adjunct Professor in ICRANet Faculty.

Period covered: the position started on September 2017, ended on September 2023 and it will restart on January 2025 (ICRANet).

I Scientific Work

- Electrodynamics and magnetohydrodynamics around black holes;
- Selfgravitating systems;
- Mathematical Biology.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

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

III a. Within ICRANet

III b. Outside ICRANet

- Lecturer for the Course of "Physics (Department of Science and Technology for Sustainable Development and One Health, Università Campus Bio-Medico di Roma), a.y. 2024-2025.

- Lecturer of "Mathematics" for the integrated Course of Mathematics and Computer Science (Department of Science and Technology for Sustainable Development and One Health, Università Campus Bio-Medico di Roma), a.y. 2024-2025.
- Faculty of the PhD in Sustainable development: Environment, Health and Food, Università Campus Bio-Medico di Roma.

IV. Other

Prof. Cherubini has a longstanding collaboration with other ICRANET scientists. In particular, in collaboration with Dr D. Bini, Prof. R. T Jantzen, Prof. R. Ruffini and Dr. J.A. Rueda, he has written several articles on various aspects of classical General Relativity. With Prof. S. Filippi he is involved in research activities in the fields of Stellar and Galactic self-gravitating Structures, Black Holes, Analogue models of Gravitation and Complex Systems in biophysics.

2024 List of Publications

- Crispino A., Nicoletti M., Loppini A., Gizzi A., Chiodo L., Cherubini C. and Filippi S., "Magnetic signature of thermoelectric cardiac dynamics", Phys. Rev. E - Accepted 26 november, 2024

CV Massimo Della Valle

Summary (Brief CV)

He graduated in Astronomy from the University of Padua, under the supervision of Leonida Rosino. He then began his PhD in the USSR at the Byurakan Observatory in Armenia, which he completed in 1988. He worked at SISSA in Trieste (1989), the European Southern Observatory (ESO) in Chile (1990-1994), and in Munich (2007-2008). He was “visiting scientist” at the Hubble Space Telescope Institute in Baltimore (1995-2000) and at the KAVLI Institute in Santa Barbara (2005-2006). In Italy, he became a researcher at the Department of Astronomy at the University of Padua, and later an Associate Astronomer at the Arcetri Astrophysical Observatory. Since 2008, he has been a Senior Researcher at the National Institute for Astrophysics (INAF). In 2010, he was appointed director of the Capodimonte Astronomical Observatory, INAF-Naples (2010-2017).In 2022 was nominated as a member of the Accademia deiLincei, and in 2024 as a member of the Board of directors of INAF.

Detailed Description

Current position: *Dirigente di Ricerca* at the Capodimonte Astronomical Observatory, INAF-Naples.

1957. Born in Bari

1976. Scientific Liceum, Brescia

1983. Laurea in Astronomia, Università 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 Università di Padova. Supervisor:
Prof. L. Rosino.

1989. Post-Doc at SISSA, Trieste

1990-1993. Fellow at the European Southern Observatory, La Silla, Cile.

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

1995-2000. Assistant Professor (Ricercatore) at the Astronomy Dept., Universita' di Padova.

2001-2007. *AstronomoAssociato* at the Arcetri Astrophysical Observatory

2008. *Dirigente di Ricerca* at the Capodimonte Astronomical Observatory, INAF-Naples.

2008-2009 Associated Astronomer to the ESO Telescope Division – Munchen, Germany
April 2010 – January 2018 Director of the Capodimonte Astronomical Observatory, INAF-Naples

2017→ Adjunct professor at the International Center for Relativistic Astrophysics

2020→ Chair of the Scientific Committee of ICRANet

2020-23 Professor of Astrophysics, Cattolica University, Brescia

2020-22 Professor of Astrophysics, Scuola Superiore Meridionale, Federico II, Napoli

2022 Socio Corrispondente dell' *Accademia dei Lincei*, Classe di Scienze Fisiche, Matematiche e Naturali (Cat. II Astronomia, Geodesia, Geofisica)

2024 Member of the Board of Directors of INAF (Decreto del Ministro dell'Università e della Ricerca n. 636 del 30 aprile 2024)

Scientific Work

The research activity covers several fields in the observational Astronomy: a) Local and high-redshfctSupernovae; b) measurement of the cosmological parameters; c) Galactic and Extragalactic Novae and their contribution to che chemical evolution of the Milky Way; d) Distance Scale; e) Gamma-ray bursts and their afterglows; f) Supernova/GRB connection; g) Kilonovae

He has authored about 700 publications, including about 50 invited and invited review papers and 290 papers that have appeared in major international referred scientific journals. The set of publications has collected ~ 37,000 citations with h index 87 (source google scholar 2024).

Coordinator of research projects and scientific-technological programs and participation in scientific and technological programs of great national and international importance

He has coordinated 39 and participated in 185 scientific proposals that were then carried out with the major ground-based telescopes (e.g. ESO-VLT and ESO-NTT, Gemini, LBT) and from Space (Swift, HST, XMM-Newton, Chandra and JWST). He is currently involved in the Euclid, Athena, THESEUS and Hermes space missions as member of scientific working groups.

He is also involved in different experiments:

i)the Lunar Gravitational-wave Antenna project aimed at studying the feasibility of installing a Gravitational wave on the Moon https://iopscience.iop.org/article/10.3847/1538-4357/abe5a7/pdf;
ii) Global Argon Dark Matter Collaboration (GADMC) for the search of Dark Matter;
iii) Euclid: Superluminous supernovae in the deep survey https://www.aanda.org/articles/aa/pdf/2018/01/aa31758-17.pdf ;
iv) The time domain astronomy with THESEUS satellite; https://arxiv.org/abs/2104.09533;
v) Exploration of the high-z universe enabled by THESEUS; https://arxiv.org/abs/2104.09532;
vi) GrailQuest and Hermes: hunting for GWs electromagnetic counterparts and probing spacetime quantum foam; https://arxiv.org/pdf/2101.07119.pdf;
vii) The SOXS instrument and its significance in the future of La Silla https://zenodo.org/record/3245282#.YLOxueuxXUY
viii) Member of the international collaborationePESSTO (extended Public ESO Spectroscopic Survey for Transient Objects) for the study of explosive "transient" phenomena;
ix) Member of the international collaborationENGRAVE (Electromagnetic counterparts of gravitational wave sources at the Very Large Telescope);
x) Member of GRAWITA Italian team (GRAvitational Wave InafTeAm). GRAWITA played a pivotal role in the identification and study of the first electromagnetic counterpart of a gravitational wave source, GW 170817.
xi) Member of the Einstein Telescope Collaboration (div. 4 Multi-messenger and div. 7 Core-Collapse).

Science leaves (1-4 months)

1994(3), 1996(1), 1997(1), 1999(2), 2003(2), 2005(2), 2019(2). Visiting Scientist, European Southern Observatory, Garching, Munchen.

1995(1), 1997(2), 2000(2), 2002(1), 2004(2). Visiting Scientist, Space Telescope, Science Institute, Baltimore.

1998(2), 2001(2), 2003(2). Visiting Scientist, European Southern Observatory, Santiago and Paranal.

2006(1). Visiting Scientist, Department of Astronomy, Graduate School of Science, University of Tokyo, Japan

2006(2), 2007(2). Visiting Scientist, KAVLI Institute, Santa Barbara, California University

2007(1). Visiting Scientist, Aspen Center for Physics

2007(1). Visiting Scientist, Dark Cosmology Center, Niels Bohr Institute, Copenhagen

2007(1). Visiting Scientist, Queen's University, Belfast, UK

2018(3). Visiting Scientist, at the IAA (Instituto de Astrofisica de Andalucia)

2018(1). Université de Savoie. Laboratoire d'Annecy-le-Vieux.

2022(2) Visiting Scientist, Ariel University, Israel

Seminars at prominent research centers abroad

Astronomy Department Tokyo University; KAVLI Institute Santa Barbara, California University; Beijing KAVLI Institute; Hubble Space Telescope Institute, Baltimore; Munich Join Colloquium ESO Garching; Aspen Center for Physics; Niels Bohr Institute, Copenhagen; Institute for Advanced Study of Princeton; Queen's University in Belfast; University Sophia Antipolis, Nizza; CBPF Rio de Janeiro; University of Massachusetts Amherst; Instituto de Astrofisica de Andalucia; Annecy-le-Vieux, Université de Savoie.

Lingue: Italian, EnglishandSpanish (fluent). French andGerman (basic knowledge)

Honors and Affiliations

- Member of the International Astronomical Union (IAU)
- Member of Società Astronomica Italiana
- Member of "Ateneo di Brescia - Accademia di Scienze Lettere ed Arti"
- *Brescia per la Ricerca Scientifica Award*, 2018, Brescia University
- Cavaliere "Al merito della Repubblica Italiana", 2013
- IAU named Asteroid nr. 325455 (Della Valle) after him
- Socio Corrispondente Accademia dei Lincei (2022)

Outreach:

- Author of dozens of papers published on Astronomy, Coelum, Le Stelle and national newspapers. Regular participations in local and national radio or television broadcasts.

- On the occasion of the celebrations for the bicentennial of the foundation of the Capodimonte Observatory (1812-2012), he has promoted (taking advantage of a generous budget provided by Campania region) the realization of the "Museum of Astronomical Instruments" (about 110 pieces distributed over an exhibition area of about 500m2) which is inaugurated on November 4, 2012 in the Capodimonte Observatory.
- He has promoted as chair or member of the scientific committee numerous exhibitions, such as:
i) *The Temple of Urania* realized at the State Archives of Naples, 24 May-29 September 2012;

ii) *The Factories of Heaven* in the framework of "FuturoRemoto" initiative: one of the most important and consolidated European scientific and technological dissemination events held in Naples since 1987.

iii) *Paleocontemporanea*: Fragments of transcendence in artistic representation from pre-Christian civilizations to contemporary, first edition of the art exhibition developed in the historical and cultural sites of the Collina di Capodimonte: National Archaeological Museum of Naples, Catacombs of Naples, Capodimonte National Museum and INAF-Capodimonte Astronomical Observatory, 2013.

iv) *Viaggiatori del Cosmo* from Giordano Bruno to the first trip to the Moon by Ernesto Capocci, Astronomical Observatory of Capodimonte, 13 March-30 April 2015, extended to 31 May 2015 (with patronage of Accademia deiLincei). The exhibition was enriched by the anastatic

reprint of selected works by Ernesto Capocci: *Report of the First Journey to the Moon made by a woman in the year of grace 2057* (typography Cottrau, Naples 1857) eight years ahead of Jules Verne's most famous novel *De la Terre à la Lune*; *Framework of the Solar Planetary System*(Printing House of Iride 1853); *Dialogues on Comets* (typography of Giornale del Regno delle due Sicilie, 1825).

- He has published several books:

*"Che il Diavolo benedicaiPulcinella"*Scientific Chronicles "and non" of Naples in the years immediately after the kingdom of Gioachino Murat. In collaboration with Mauro Gargano and Emilia Olostro-Cirella.Tullio Pironti publisher, Naples 2015.

- *"Supernova"* in the Piero Angelaseries Viaggio nell' Universo, Agosto, 2019

- *"Il Tempo della Luce"*, Morellini Editore, Novembre 2022.

Filippi Simonetta

Position: Full Professor in Theoretical Physics (PHYS-02/A)
Department of Engineering,
Pro-rector for Integrated Academic Development
Head, Laboratory of Nonlinear Physics and Mathematical Modeling
Università Campus Bio-Medico di Roma,
Via A. del Portillo 21, I-001285 Rome, Italy,
Tel. +39-06-225419611
and Adjunct Professor in ICRANet Faculty.

Period covered: the position started on September 2017 (ICRANet)

I Scientific Work

- Electrodynamics around black holes and self-gravitating systems.
- Theoretical biophysics.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

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

III a. Within ICRANet

III b. Outside ICRANet

- Lecturer "Dynamics of Complex Systems" (Engineering Department, Università Campus Bio-Medico di Roma).
- Lecturer "Rational Mechanics Laboratory" (Engineering Departmental Faculty, Università Campus Bio-Medico di Roma).
- Faculty of the "Bioengineering, Applied Sciences and Intelligent Systems PhD" at Università Campus Bio-Medico di Roma.

- **IV. Other**

Prof. Filippi has a longstanding collaboration with ICRANet scientists. In collaboration with Prof. Remo Ruffini, she has written several articles on various aspects of Gravitational Physics with a specific focus on classical figures of equilibrium. With Prof. Christian Cherubini, Dr Jorge Rueda, Dr Andrea Geralico and Dr Donato Bini, she has been involved in research activities in the fields of Stellar and Galactic

Structures, Black Holes, and Analogue gravity models. With Prof. Christian Cherubini, the further research topic is “Complex Systems and Biological Systems”.

2024 List of Publications

- Luchetti, N., Smith, K.M., Matarrese, M.A.G., Loppini A., Filippi S., Chiodo L. "A statistical mechanics investigation of unfolded protein response across organisms", Scientific Reports Volume 14, Issue 1, December 2024 Article number 27658
- Crispino A., Loppini A., Uzelac I., Iravanian S., Bhatia N.K., Burke M., Filippi S., Fenton F.H., Gizzi A., "A cross species thermoelectric and spatiotemporal analysis of alternans in live explanted hearts using dual voltage-calcium fluorescence optical mapping", Physiological Measurement, Volume 45, Issue 61, June 2024 Article number 065001
- Nicoletti, M., Chiodo L., Loppini A., Liu Q., Folli V., Ruocco G., Filippi S., Biophysical modeling of the whole-cell dynamics of C. elegans motor and interneurons families, PLoS ONE Volume 19, Issue 3 March 2024 Article number e0298105
- Crispino A., Nicoletti M., Loppini A., Gizzi A., Chiodo L., Cherubini C. and Filippi S., "Magnetic signature of thermoelectric cardiac dynamics", Phys. Rev. E - Accepted 26 November, 2024

Brian Punsly

Position: Research Scientist
Period covered: 12/2023 – 12/2024

I Scientific Work

Black Holes and Quasars

1. Introduction

This report describes the research performed by Brian Punsly and collaborators in cooperation with ICRANet in 2024. The research was directed at finding observational evidence needed to define the location and kinematics of the jet launching region of M 87.

2. **First image of a jet launching from a black hole accretion system: Kinematics**

Abstract:

Jets are endemic to both Galactic solar mass and extragalactic supermassive black holes. A recent 86 GHz image of M\,87 shows a jet emerging from the accretion ring around a black hole, providing the first direct observational constraint on the kinematics of the jet-launching region in any black hole jetted system. The very wide ($\sim280\mu\rm{as}$), highly collimated, limb-brightened cylindrical jet base is not predicted in current numerical simulations. The emission was shown to be consistent with that of a thick-walled cylindrical source that apparently feeds the flow that produces the bright limbs of the outer jet at an axial distance downstream of $0.4 \,\rm{mas}<z<0.65\, \rm{mas}$. The analysis here applies the conservation laws of energy, angular momentum, and magnetic flux to the combined system of the outer jet, the cylindrical jet, and the launch region. It also uses the brightness asymmetries of the jet and counterjet to constrain the Doppler factor. The only global solutions have a source that is located $<34 \mu\rm{as}$ from the event horizon. This includes the Event Horizon Telescope annulus of emission and the regions interior to this annulus. The axial jet begins as a magnetically dominated flow that spreads laterally from the launch radius ($<34 \mu\rm{as}$). It becomes super-magnetosonic before it reaches the base of the cylindrical jet. The flow is ostensibly redirected and collimated by a cylindrical nozzle formed in a thick accretion disk. The flow emerges from the nozzle as a mildly relativistic ($0.3c<v<0.4c$) jet with a significant protonic kinetic energy flux.

II Conferences and educational activities
N/A

III. Service activities*N/A*

IV. Other

2024 List of Publication

Punsly, Brian “First image of a jet launching from a black hole accretion system: Kinematics”,2024 A&A 685, L3

Surname Name **Photo**

Vereshchagin Gregory

Position: professor
Period covered: 2024

I Scientific Work

This year scientific work was focused on the following projects:

- Pair production in hot electrospheres of compact astrophysical objects (with M.A. Prakapenia)

The mechanism of pair creation in electrosphere of compact astrophysical objects such as quark stars or neutron stars is revisited, paying attention to evaporation of electrons and acceleration of electrons and positrons, previously not addressed in the literature. We perform a series of numerical simulations using the Vlasov-Maxwell equations. The rate of pair creation strongly depends on electric field strength in the electrosphere. Despite Pauli blocking is explicitly taken into account, we find no exponential suppression of the pair creation rate at low temperatures. The luminosity in pairs increases with temperature and it may reach up to $L=10^{52}$ erg/s, much larger than previously assumed.

- Pair creation from radial electromagnetic perturbation of a compact astrophysical object (with M.A. Prakapenia)

Recently Usov's mechanism of pair creation on the surface of compact astrophysical objects has been revisited [1] with a conclusion that the pair creation rate was previously underestimated in the literature by nearly two orders of magnitude. Here we consider an alternative hypothesis of pair creation due to a perturbation of the surface of a compact object. Radial perturbation is induced in hydrodynamic velocity resulting in a microscopic displacement of the negatively charged component with respect to the positively charged one. The result depends on the ratio between the spatial scale of the perturbation λ and the mean free path l. When $\lambda \sim l$ the perturbation energy is converted into a burst of electron-positron pairs which are created in collisionless plasma oscillations at the surface; after energy excess is dissipated electrosphere returns to its electrostatic configuration. When instead $\lambda \gg l$, the perturbation is thermalized, its energy is transformed into

heat, and pairs are created continuously by the heated electrosphere. We discuss the relevant astrophysical scenarios.

- Electromagnetic field and radiation of charged particles in the vicinity of Schwarzschild black hole (with S. O. Komarov)

We provide a concise review of the problem of calculation of electromagnetic field and radiation of a charged particle in the vicinity of a black hole. The interest to this problem is revived due to recent progress in multimessenger observations. Many astrophysical models of energy extraction from a black hole involve consideration of such motion and radiation. Our main goal is to highlight basic assumptions and limitations of various techniques and point out main conclusions of these studies.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- invited talk “On pair creation in electrosphere of compact astrophysical objects”, Looking AHEAD to soft gamma-ray Astrophysics: prospects and challenges, February 14 – 16, 2024, Ferrara, Italy
- talk “Schwinger process in hot electrospheres of strange stars”, The 17th Marcel Grossmann Meeting, July 9, 2024, Pescara, Italy.
- talk “Magnetically dominated outflow in GRB 080916C?”, The 17th Marcel Grossmann Meeting, July 9, 2024, Pescara, Italy.
- talk “Electron-positron pair creation in electrosphere of compact astrophysical objects”, High Energy Astrophysics and Cosmology in the era of all-sky surveys, Yerevan, Armenia, October 7 – 11, 2024.
- Seminar “Electron-positron pair creation in electrosphere of compact astrophysical objects” at the Astronomical Observatory of Belgrade, December 11, 2024, Belgrade, Serbia.

II b Work With Students

II c Diploma thesis supervision

- Supervision of the Ph.D. student Beisenbekova Zhuldyz (Al-Farabi Kazakh National University, Almaty, Kazakhstan) on a project titled "Investigation of Shadows and Gravitational Lensing of Compact Objects."

II d Other Teaching Duties

II e. Work With Postdocs

- Mikalai Prakapenia: kinetic processes and radiation transfer in relativistic plasma in external electric and magnetic fields

- Stanislav Komarov: electromagnetic field of a system of charges moving near spherically symmetric and magnetized black holes

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

III a. Within ICRANet

- member of ICRANet faculty
- coordination of cooperation with the National Academy of Sciences of Belarus
- coordination of activities in ICRANet-Minsk center
- organizer of the 17th Marcel Grossman Meeting (MG17), co-chair of ICC and LOC https://indico.icranet.org/event/8/
- editor of the proceedings of the 17th Marcel Grossman Meeting
- editorial work on the contribution of Remo Ruffini to the proceedings of the 17th Italo-Korean symposium, published in AIP Conf. Proc. 2874, 020014 (2024), https://doi.org/10.1063/5.0216360
- supervision of the ICRANet newsletter

III b. Outside ICRANet

- PI in the Joint BRFFR – ICRANet – 2023 project, with the title: "Kinetic processes and radiation transfer in relativistic plasma in external electric and magnetic fields"
- PI in the Joint BRFFR – ICRANet – 2023 project, with the title: "Electromagnetic field of a system of charges moving near spherically symmetric and magnetized black holes"
- PI in the Joint BRFFR – ICRANet – 2023 project, with the title: "New effects in interaction of electromagnetic radiation with astrophysical plasma resulting from lower permittivity and density of states as compared to vacuum"
- organizer of a special issue of "Science and Innovations" journal published by the National Academy of Sciences of Belarus from April 2024 (number 4(253) 2024) http://innosfera.by/taxonomy/term/2429 (in Russian)
- editorial board member of the journal Universe https://www.mdpi.com/journal/universe

IV. Other

2024 List of Publication

1. Mikalai Prakapenia and Gregory Vereshchagin, "Pair creation in hot electrosphere of compact astrophysical objects", ApJ 963 (2024) 149.
2. Stanislav Komarov and Gregory Vereshchagin, "Electromagnetic Field and Radiation of Charged Particles in the Vicinity of Schwarzschild Black Hole", *Particles* **2025**, *8*, 1.
3. Mikalai Prakapenia and Gregory Vereshchagin, "Pair creation from radial electromagnetic perturbation of a compact astrophysical object", submitted to Phys. Rev. D, 2024.
4. G.V. Vereshchagin, "Astronomy: history and perspectives", Science and innovations, 4 (254) 2024, p. 10.

Surname Name **Xue She-Sheng** **Photo**

Position: ICRANet Faculty

Period covered: 2023 -- 2024

I Scientific Work

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

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

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

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

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

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

See the following list of publications.

II Conferences and educational activities

(II a) Conferences and Other External Scientific Work

Participating the preparation of ICRANet agreements with Institutions of China (2018-2024). Participation and organization regular meeting between ICRANet and Chinese Institutions.

The Seventeenth Marcel Grossmann Meetings Jul 7 – 12, 2024
Aurum, the 'Gabriele d'Annunzio' University and ICRANet, Pescara, Italy.

The 2024 Annual Meeting of the Division of Gravitation and Relativistic Astrophysics of the Chinese Physical Society / The Sixth Galileo-Xu Guangqi Meeting 6th Galileo - Xu Guangqi Meeting, April 19 -24, 2024 Hengyang, China

The European Researchers' Night, September 30, 2024.

(II b) Work With Students and young researchers

Stefanon, Campion, Iman Motie, Mahdi Sadegh, Jafar Khodagholizadeh, Wang Yu, Rahim Moradi, Li Liang and Luis Gabriel Gómez Díaz, David Melon Fuksman, Yu Ling Chang, Maryam Amiri, B. Elsan, Panah and Rashid Riahi, Seddigheh Tizchang, Somayye Mahmoudi, Takahiro Hayashinaka, Sehar Ajmal, Li-Yang Gao, Ze-Wei Zhao, Yun Long Zheng, Sareh Eslamzadeh Askestani, Shurui Zhang (supported by their nations).

(II c) Diploma thesis supervision (2012-2024)

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

(II d) Other Teaching Duties (2012-2024)

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

(II e) Work With Professors and Postdocs inside and outside ICRANet (2012-2024)

R. Ruffini, H. Kleinert, G. Vereshchagin, J. Rueda, C. Bianco, W.B. Han, I. Siutsou, C. Argulles, C. Gruber, M. Zarei, M. Abdi, R. Mohammadi, D. Bégué, E. Bavarsad and Sang Pyo Kim, S. Shakeri, F. Hajkarim, F. Romeo, O. Panella, R. Leonardi, S. Hao. A. Gurrola, M. Haghighat, David J. E. Marsh, C.-J. Xia, R.-X. Xu, S.-G. Zhou,T. Adormo, Daniele Gregoris, Xin Zhang

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

III a. Within ICRANet

Participating organization of ICRANet Seminars and ICRANet outreach activity.
Participating preparation of ICRANet Newsletter and activity report. Working with ICRANet secretary administration.

III b. Outside ICRANet

Official association to INFN Perugia, collaboration with INFN colleagues. Collaborations with Chinese and Iranian students and researchers, as well as other scientists worldwide. Visiting Chinese Institutions IHEP, ITP, and USTC CAS as well as Tsinghua University, Sun Yet-San University and Hang Zhou University of technology that are in cooperation with ICRANet .

IV. Other

The List of Publications (2023 -- 2024)

Liang Li, J. A. Rueda, R. Moradi, Y. Wang, R. Ruffini, and S. S. Xue, "Self-similarities and Power Laws in the Time-resolved Spectra of GRB 190114C, GRB130427A, GRB 160509A, and GRB 160625B, Astrophysical Journal 945 (1):10 (2023) https://arxiv.org/abs/1910.12615

She-Sheng Xue, "Higgs boson origin from a gauge symmetric theory of massive composite particles and massless $W\pm$ and $Z0$ bosons at the TeV scale ", Nuclear Physics B Volume 990, May 2023, 116168, https://arxiv.org/abs/2210.04825

S.-S. Xue, "Massive particle pair production and oscillation in Friedman Universe: its consequence on inflation", Eur. Phys. J. C (2023) 83:36 https://arxiv.org/abs/2112.09661

S.-S. Xue, "Massive particle pair production and oscillation in Friedman Universe: reheating energy and entropy, and cold dark matter", Eur. Phys. J. C (2023) 83:355 https://arxiv.org/abs/2006.15622

Luca Pacioselli, Orlando Panella, Matteo Presilla, She-Sheng Xue, "Constraints on NJL four-fermion effective interactions from neutrinoless double beta decay", J. High Energy Physics JHEP 2023, 54 (2023), https://arxiv.org/abs/2304.08042.

Roohollah Mohammadi, Jafar Khodagholizadeh, Mahdi Sadegh, Ali Vahedi, She-Sheng Xue, "Cross-correlation Power Spectra and Cosmic Birefringence of the CMB via Photon-neutrino Interaction", Journal of Cosmology and Astroparticle Physics , JCAP 06 (2023) 044, https://arxiv.org/abs/2109.00152

Li-Yang Gao, She-Sheng Xue, Xin Zhang, "Dark energy and matter interacting scenario relieves $H0$ and $S8$ tensions ", https://arxiv.org/abs/2212.13146, *Chinese Phys. C* **48** (2024) 051001.

She-Sheng Xue, "Holographic massive plasma state in Friedman Universe: cosmological fine-tuning and coincidence problems ", Journal of Cosmology and Astroparticle Physics , Journal of Cosmology and Astroparticle Physics, JCAP 05 (2024) 113 https://arxiv.org/abs/2309.15488

Somayyeh Mahmoudi, Mahdi Sadegh, Jafar Khodagholizadeh, Iman Motie, She-Sheng Xue, Alain Blanchard, “Generation of the CMB cosmic Birefringence through Axion-like particles, Sterile and Active neutrinos", Eur. Phys. J. C (2024) 84: 619, https://arxiv.org/abs/2409.18588

Sehar Ajmal, Jethro Gaglione, Alfredo Gurrola, Orlando Panella, Matteo Presilla, Francesco Romeo, Hao Sun, She-Sheng Xue, “Searching for exclusive leptoquarks with the Nambu-Jona-Lasinio composite model at the LHC and HL-LHC ", J. High Energy Physics , JHEP 08 (2024) 176, https://arxiv.org/abs/2311.18472

She-Sheng Xue, “Particle-antiparticle oscillation modes horizon crossing: baryogenesis and dark-matter waves”, to be with Nuclear Physics B, https://arxiv.org/abs/2007.03464

Adjunct Professors of the Faculty

Aimuratov Yerlan

Position current:
Researcher at Fesenkov Astrophysical Institute, Almaty, Kazakhstan
Senior Lecturer at al-Farabi Kazakh National University
Adjunct Professor at ICRANet, Pescara, Italy

Position former within ICRANet:
EMJD IRAP V cycle PhD student
University of Rome "La Sapienza" (defended 25.02.2020)

Period covered: January-December 2024

I Scientific Work

GRB, GRB-SN, HMXB: observation and analysis

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- "COSPAR 2024. The 45thScientific Assembly", 13–21July 2024, Busan, Korea (in-person)

II b Work With Students

- none

II c Diploma thesis supervision

- TursynbekYernazarov (4thyear Doctoral student, al-FarabiKazNU)
- Ruslan Spassyuk(2nd year Master student, al-FarabiKazNU)
- DauletAnarbekl (1st year Master student, al-FarabiKazNU, BSc defended: June 2024)
- Adel Umirbayeva (al-FarabiKazNU, MSc defended: June 2024)

II d Other Teaching Duties

- Academic Writing (Doctoral course, al-FarabiKazNU, Autumn 2024)

II e. Work With Postdocs

- Rahim Moradi (postdoc at IHEP)

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

III a. Within ICRANet

- none

III b. Outside ICRANet

- scientific seminar at Fesenkov Astrophysical Institute
- scientific seminar at al-FarabiKazNU
- poster talk "Redshift Estimates for Short Gamma-Ray Bursts Using Phenomenological Correlations", "COSPAR 2024. The 45th Scientific Assembly", 13–21July 2024, Busan, Korea (in-person)

IV. Other

- member of the National Science Council, Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan, January–December 2024, Kazakhstan

2024 List of Publication(https://orcid.org/0000-0001-5717-6523)

- Kim V., **Aimuratov Y.**On the origin of super-global spin-up trends of X-ray pulsars in HMXB systems. // *The Astrophysical Journal* - 2024. –UNDER REVIEW

ARGÜELLES CARLOS RAÚL

Position: ICRANet Adjunct professor of the Faculty; Independent Researcher (permanent position) at IALP, UNLP & CONICET – Argentina
Period covered: 2024

I Scientific Work

Theoretical and phenomenological aspects of particle Dark Matter, self-gravitating systems, Numerical methods, Galactic Dynamics, Supermassive Black Holes, Cosmology, Neutrino Physics beyond standard model.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- Invited (plenary) speaker at the “Seventeenth Marcel Grossmann Meeting”, Pescara, Italy, July, 7th - 12th , 2024

- Invited speaker of parallel sessions EG2 & HP2 at the “Seventeenth Marcel Grossmann Meeting”, Pescara, Italy, July, 7th - 12th , 2024

- Invited speaker at the “Ciclo de charlas de Cosmología- UBA”, Buenos Aires, Argentina, August 6th to 7nd August, 2024

- Invited speaker at the “Irrational squared PIPI meeting I”, La Plata, Argentina, October 30th – November 1st, 2024

- Invited (plenary) speaker at “Astro Fest 2024” Meeting, Bucaramanga, Colombia, November, 13th - 15th, 2024

II b Work With Students

II c Diploma thesis supervision

- Ph.D Thesis director of Mr. Santiago Collazo – Beca doctoral CONICET, Argentina. Period 2024

- Ph.D Thesis director of Ms. Valentina Crespi – Beca doctoral CONICET, Argentina. Period 2024

- Ph.D Thesis director of Mr. Mauricio Batista-Pérez – Beca doctoral CONICET, Argentina. Period 2024

- Ph.D Thesis co-director of Dr. Massimo Carinci – IRAP-Ph.D, La Sapienza. Period 2024

II d Other Teaching Duties

- Assistant Professor position in Theoretical Physics at La Plata National University (UNLP – Physics department)

II e. Work With Postdocs

- Collaboration in a research project in Relativistic Ray-tracing simulation with the Postdoc Joaquín Pelle (*Max Planck* Institute for Gravitational Physics - Albert Einstein Institute, Germany)

- Collaboration in an observational campaign within GEMINI Observatory (using GMOS-North instrument) with the Postdoc Bruno de Bórtoli (IALP-CONICET). Time request accepted for 2024 within the project titled: “Unveiling the nature of dark matter haloes in group galaxies” (P.I: Juan P. Caso, IALP-CONICET).

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

III a. Within ICRANet

Adjunct professor of the Faculty. Scientific collaborator with the Astroparticle Physics and Dark Matter group.

III b. Outside ICRANet

Researcher (permanent position) at CONICET – Argentina. Working place: IALP - UNLP, La Plata, Argentina. Paseo del Bosque, Casco Urbano, B1900FWA La Plata, Buenos Aires. Phone: +54 0221 4236593 Int. 1052. Teaching activities as Assistant Professor at UNLP. Master in Science Thesis advidor and Ph.D thesis advisor.

IV. Other

2024 List of Publication

1. Argüelles C. R.; Rueda, J. A.; Ruffini, R., “Baryon-induced Collapse of Dark Matter Cores into Supermassive Black Holes”, The Astrophysical Journal Letters (2024), Volume 961, L10, 6 pp.

2. Millauro, C.; Argüelles, C. R., Vieyro, F. L.; Crespi, V.; Mestre, M. F., “Accretion discs onto supermassive compact objects: A portal to dark matter physics in active galaxies”, A&A (2024), Volume 685, A24.

3. Mestre, M. F.; Argüelles, C. R.; Carpintero, D. D.; Crespi, V.; Krut, A.; “Modeling the track of the GD-1 stellar stream inside a host with a fermionic dark matter core-halo distribution”, A&A (2024), Volume 689, A194.

4. Pelle, J.; Argüelles, C. R.; Vieyro F. L.; et al., “Imaging fermionic dark matter cores at the centre of galaxies”, MNRAS (2024) Volume 534, pp. 1217-1226.

5. Collazo S.; Argüelles, C. R.; Mestre M. F.; “La corriente estelar de Sagitario inmersa en un halo de materia oscura fermiónica”, Boletín de la Asociación Argentina de Astronomía. Edited by R.D. Rohrmann, C.H. Mandrini, C.E. Boeris and M.A. Sgró. (2024) Vol. 65, p. 228-231.

Becerra, Laura M.

Position: Adjust Professor
Period covered: 2021- present

I. Scientific Work

I have worked on the Induced Gravitational Collapse (IGC) paradigm, which describes the explosion of a carbon-oxygen core as a Type Ib/c supernova in the presence of a close neutron star companion. The supernova triggers hypercritical accretion onto the neutron star, and depending on the initial binary parameters, the system can follow different evolutionary paths. In the first scenario, known as a binary-driven hypernova (BdHN), the binary system is tightly bound, allowing the accretion rate onto the neutron star to reach the critical mass required for its collapse into a black hole, accompanied by gamma-ray burst (GRB) emission. In the second scenario, for binary systems with larger separations, the hypercritical accretion onto the neutron star is insufficient to induce gravitational collapse. Instead of a GRB, this leads to the production of an X-ray flash (XRF). My work has focused on the hypercritical accretion process, tracking the evolution of the neutron star to characterize the observational signatures of each scenario.

II. Conferences and educational activities

II a Conferences and Other External Scientific Work

- Third Julio Garavito Meeting, Bucaramanga, Colombia, November 13-15, 2024

2024 List of Publication

- Neutron stars in the generalized SU (2) Proca theory, J. N. Martínez, J. F. Rodríguez, L. M. Becerra, Y. Rodríguez and G. Gómez, Physical Review D 110, 104070 (DOI: 10.1103/PhysRevD.110.104070)

- Occurrence of Gravitational Collapse in the Accreting Neutron Stars of Binary-driven Hypernovae, L. M. Becerra, F. Cipolletta, C. L. Fryer, D. P. Menezes, C. Providência, J. A. Rueda, and R. Ruffini, The Astrophysical Journal 976, 80 (DOI: 10.3847/1538-4357/ad82ea)

- The long-short GRB connection, J. A. Rueda, L. Becerra, C. L. Bianco, M. Della Valle, C. L. Fryer, C. Guidorzi and R. Ruffini (arXiv: 2412.12764, accepted in Physical Review D)

Bini Donato

Position: Current
Research Director (permanent position) at
Istituto per le Applicazioni del Calcolo "M. Picone," CNR
Via dei Taurini, 19 I-00185 Roma (IT).

I Scientific Work

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

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

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

II Conferences and educational activities

Conferences and Other External Scientific Work

In the period 1988-2022 I have participated in all the international meetings of the Marcel Grossmann series as well as all the conferences of the ICRA- ICRANet series.

From 2016 I'm attending the Capra Meetings of the gravitational self-force community and as well as all meeting involving Post-Newtonian approximation, Post-Minkowskian approximation, Effective Field Theory and Effective One-Body approach, e.g. meeting of the series "QCD meets Gravity".

Diploma thesis supervision
I have been supervisor of the Diploma thesis of several students at the University of Rome "La Sapienza", since 1995:
G. Spoliti, A. Merloni, C. Germani, C. Cherubini, G. Miniutti, G. Cruciani, A. Geralico, A. Lunari, M. De Mattia, D. Gregoris.

Ph.D thesis supervision
Dr. V. Montaquila, University of Naples "Federico II," year 2011.
Dr. M. Haney, IRAP Ph.D, University of Rome "Sapienza," year 2013.
Dr. Gabriel G. Carvalho (CAPES, Brazil and ICRANet), year 2016.

Teaching experiences
I have been Contract Professor of Physics in the period 2004-2024 at the faculty of Medicine of the University Campus Biomedico, in Rome. From 2007-2009 I have also been Contract Professor of Physics at the Nursery School of the same university. I've been teaching monographic courses at various Ph.D. schools in Italy.

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

III Service activities
Scientific collaboration with:
Prof. R.T. Jantzen (Villanova Univesity, USA and ICRANet);

Outside ICRANet
Scientific collaboration with:
Prof. T. Damour (IHES, Paris, France),
Prof. M. Bianchi (Univ. Rome II, Italy).

Other

For the years 2002-2004 I have been the leader of a collaboration project between the Italian Research Council (CNR) and the analogous institution in Venezuela. Title of the project: *Construction of 3d numerical models for the study of magnetohydrodynamics in gravitational physics and astrophysics*.
For the years 2007-2008 I have been the leader of young researchers projects of INDAM (Istituto Nazionale di Alta Matematica). Title of the project: *Light coordinates and spacetime topography*.
For the years 2008-2009 I have been the leader of young researchers projects of INDAM (Istituto Nazionale di Alta Matematica). Title of the project: *Sistemi di Posizionamento Globale relativistici*

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 2017, 2018 and 2019 I've been awarded as **Outstanding Referee** from the journal Classical and Quantum Gravity (IOP).
In the year 2021 I've been awarded as **Outstanding Referee** from the American Physical Society.

2024 List of publications

1) Astesiano D., Bini D., Geralico A., Ruggiero M.L.
Particle motion in a rotating dust spacetime: the Bonnor solution
Phys. Rev. D **109**, 124011 (2024)
doi:10.1103/PhysRevD.109.124011
[arXiv:2310.04157 [gr-qc]].

2) Bini D., Geralico A., R. T. Jantzen, R. Ruffini
On Fermi's resolution of the "4/3 problem" in the classical theory of the electron
Foundation of Physics, **54**, 35 (2024)
doi: 10.1007/s10701-024-00770-w

3) Bini D., Damour T., De Angelis S., Geralico A., Herderschee A., Roiban R., Teng F.
Gravitational Waveform: A Tale of Two Formalisms
Phys. Rev. D **109**, 125008 (2024)
doi:10.1103/PhysRevD.109.125008
[arXiv:2402.06604 [hep-th, gr-qc]]

4) Bini D., Damour T.
Fourth Post-Minkowskian Local-in-Time Conservative Dynamics of Binary Systems
Phys. Rev. D, **110** n. 6, 064005 (2024)
doi: 10.1103/PhysRevD.110.064005
[arXiv:2406.04878 [hep-th, gr-qc]]

5) Bini D., Geralico A., Kavanagh C., Pound A., Usseglio D.
Post-Minkowskian self-force in the low-velocity limit: scalar field scattering
Phys. Rev. D **110**, no.6, 6 (2024)
doi:10.1103/PhysRevD.110.064050
[arXiv:2406.15878 [gr-qc]]

6) Bini D., Damour T., Geralico A.
Gravitational Bremsstrahlung Waveform at the fourth Post-Minkowskian order and the second Post-Newtonian level
Phys. Rev. D, **110**, n.6, 064035 (2024)
doi: 10.1103/PhysRevD.110.064035
[arXiv:2407.02076 [hep-th, gr-qc]]

7) Bianchi M., Bini D., Di Russo G.
Scalar perturbations in a Top-Star spacetime
Phys. Rev. D **110**, no.8, 084077 (2024)
doi:10.1103/PhysRevD.110.084077
[arXiv:2407.10868 [hep-th, gr-qc]]

8) Bini D., Damour T., Geralico A.
Explicit solution of the gravitational two-body problem at the second post-Minkowskian order
Phys. Rev. D, **110**, n.10, 104051 (2024)
doi: 10.1103/PhysRevD.110.104051
[arXiv:2409.17193 [hep-th, gr-qc]]

Lavori sottomessi e in corso di referaggio

1) Bini D., Damour T.
Conservative binary dynamics beyond order \alpha^5 in electrodynamics
Phys. Rev. D, submitted 2024
[arXiv:2410.05257 [hep-th, gr-qc]]

2) Bianchi M., Bini D., Di Russo G.
Scalar waves in a Topological Star spacetime: self-force and radiative losses
Phys. Rev. D, submitted (2024)
[arXiv:2411.19612[hep-th, gr-qc]]

3) Bini D., Esposito G.,
Projective path to points at infinity in spherically symmetric spacetimes
EPJPP, submitted 2024
[arXiv:2403.02128 [gr-qc]]

Thomas Buchert

Position: Professor of Cosmology
Staff Member of CRAL, Head of Cosmology Group :
Université Lyon 1 and École Normale Supérieure Lyon
Adjunct Professor of the Faculty : ICRANet
Member of Euclid and 4MOST
PI: ERC advanced Grant ARThUs Reliquat
Key-I: MARSDEN, New Zealand

Period covered: January 2024 - December 2024

I Scientific Work

(i) Restricted motion in general relativity and warp drive spacetimes.
(ii) A direct correspondence between GR and Gravitoelectromagnetism.
(iii) CMB analyses with homology and persistence statistics to analyse global anisotropies.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Sigrav Colloqium, Collegio Borromeo, Pavia, Italy (LOC)
The time machine factory on time travel, Torino, Italy

II b Work With Students
II c Diploma thesis supervision:
1 Master student Master 1: Antony Frackowiak, UCBL
II d Other Teaching Duties:
Lecture : "Introduction to General Relativity", École Normale Supérieure, Lyon.
II e. Work With Postdocs :
Collaboration with Hamed Barzegar, financed by the ERC advanced Grant „ARTHUS RELIQUAT, PI: T. Buchert“ and FWF Austria. Collaboration with Pratyush Pranav (Dehli, India), Nezihe Uzun (Warsaw), Jan. J. Ostrowski (Warsaw).

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

III a. Within ICRANet : -

III b. Outside ICRANet : Management of ERC advanced grant „ARTHUS RELIQUAT, PI: T. Buchert".

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

Key-I in MARSDEN project, PI: D.L. Wiltshire, Christchurch, New Zealand.

Tullio Levi-Civita International Prize 2023

2023 List of Publications

Overall 3 publications within the ERC adG ARTHUS RELIQUAT Team in 2024.
4 Papers by TB submitted or in preparation.

Fisher Robert

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

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

Period covered: 2024

I Scientific Work

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

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

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

III a. Within ICRANet

III b. Outside ICRANet

- Research advisor to 1 postdoc, 2 PhD students, and 4 undergraduate students
- Graduate program director
- Instructor for classical physics, statistical mechanics, modern physics, and astrophysics courses

IV. Other

2024 List of Publications

V. Mehta, J. Sullivan, R. Fisher, Y. Ohshiro, H. Yamaguchi, K. Bhargava, and S. Neopane, "Hydrodynamical simulations favor a pure deflagration origin of the near-Chandrasekhar mass supernova remnant 3C 397," Monthly Notices of the Royal Astronomical Society, 532, 1, 1087–1098, 2024. arXiv DOI

G. Casabona and R. Fisher, "Turbulently-Driven Detonation Initiation in Electron-Degenerate Matter with Helium," The Astrophysical Journal Letters, 962, L31, 2024. arXiv DOI

Name Surname Filippo Frontera

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

Period covered: January - December 2024

I Scientific Work

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

a. Prosecution of the development of a focusing Laue lens of gamma-rays for space astrophysics;

b. Contribution to the new ESA M7 phase A study of the THESEUS mission concept. THESEUS is devoted to high z GRBs, multi-messenger astronomy and monitoring of the X-ray sky for the search of new transient phenomena.

c. Prosecution of the development of an advanced technology for building a pathfinder of the space mission concept ASTENA (Advanced Surveyor of Transient Events and Nuclear Astrophysics) based on a Narrow Field Telescope (NFT) with a 50-700 keV passband, unprecedented sensitivity and <1 arcmin angular resolution. The goal is to propose this pathfinder as a small satellite mission, devoted to face from long time unsolved questions, like the origin of positron annihilation line from the Galactic Center region and the physics of the supernova explosions.

d. Prosecution of the exploitation of the Chinese satellite mission Insight-HXMT to face key unsolved questions, like the search of the high energy counterparts of Fast Radio Bursts and to better understand the GRB phenomenon through unprecedented studies of GRB time variability.

II Conferences and educational activities

II a. Conferences and Other External Scientific Work:

1. *Attendance to the Chinese workshop "**Unveiling the Dynamic and Energetic Universe with Insight HXMT for Six Years and Beyond** ", January 22 - 27, 2024, Zhuhai, Guangdong Province, China.*
2. *Organization and attendance to the international workshop "**Looking AHEAD to soft gamma-ray Astrophysics: prospects and challenges**", Ferrara, February 14 -16, 2024.*
3. *Attendance, with invited talk, to the online meeting of the core team of the Insight-HXMT Chinese satellite in orbit (July 3, 2024)*
4. *PRISMA days 2024, workshop on **Meteor discoveries with the PRISMA telescope network**, Brembate di Sopra (Bergamo), October 4-5, 2024.*
5. *Attendance, with 2 invited talks, to the workshop honoring the contribution of Enrico Costa (80 yr old) to science "**How dreams come through**", Rome, December 10 -12, 2024.*

II b. Work With Students

yes, with

a) *1 PhD student in Physics of University of Ferrara: Lisa Ferro (PhD exam in May 29, 2024)*

II c. Other Teaching Duties

Course for the Master's Degree in Physics, University of Ferrara: "Measures and Observations of Celestial X- and gamma-rays".

II d. Work With Postdocs

Yes, with 1 PostDoc: Lisa Ferro (since June 2024), at the Physics and Earth Sciences Department, University of Ferrara.

III. Service activities

III a. Member of the Master Degree Faculty of the University of Ferrara

III b. Member of the IRAP-PhD Faculty

IV. Other

*IV a. **Insight HXMT International Collaboration Award**, in recognition of outstanding contributions to the Insight – HXMT Mission;*

*IV b. **The asteroid "2002 AP12" devoted to FF by the International Astronomical Union.** The new name of the asteroid is "(126177) Filippofrontera"*

2024 List of Publications

1. Lisa Ferro, Enrico Virgilli, Natalia Auricchio, Claudio Ferrari, Ezio Car- oli, Riccardo Lolli, Miguel F. Moita, Piero Rosati, **Filippo Frontera**, Mauro Pucci, John B. Stephen, Cristiano

Guidorzi, ***Recent developments in Laue lens manufacturing and their impact on imaging performance***, J. Astron. Telesc. Instrum. Syst. 10(1), 014002 (2024), doi: 10.1117/1.JATIS.10.1.014002.

2. Maccary, R. ; Guidorzi, C. ; Amati, L. ; Bazzanini, L. ; Bulla, M. ; Camisasca, A. E. ; Ferro, L. ; **Frontera, F.** ; Tsvetkova, A., ***Distributions of energy, luminosity, duration, and waiting times of gamma- ray burst pulses with known redshift detected by Fermi/GBM***, The Astrophysical Journal, Volume 965, Issue 1, id.72, 17 pp.; eprint arXiv:2401.14063 (2024).
3. Guidorzi, C. ; Sartori, M. ; Maccary, R. ; Tsvetkova, A. ; Amati, L. ; Bazzanini, L. ; Bulla, M. ; Camisasca, A. E. ; Ferro, L. ; **Frontera, F.** ; Li, C. K. ; Xiong, S. L. ; Zhang, S. N., ***Distribution of number of peaks within a long gamma-ray burst***, Astronomy & Astrophysics, Volume 685, id.A34, 7 pp.; eprint arXiv:2402.17282 (2024).
4. Shui, Qing C. search by orcid ; Zhang, S. ; Wang, Peng J. ; Mushtukov, Alexander A. search by orcid ; Santangelo, A. ; Zhang, Shuang N. ; Kong, Ling D. ; Ji, L. search by orcid ; Chen, Yu P. search by orcid ; Doroshenko, V. search by orcid ; **Frontera, F.** ; Chang, Z. ; Peng, Jing Q. ; Yin, Hong X. ; Qu, Jin L. ; Tao, L. ; Ge, Ming Y. ; Li, J. ; Ye, Wen T. ; Li, Pan P., ***Cyclotron line evolution revealed with pulse-to-pulse analysis in the 2020 outburst of 1A 0535+262***, Monthly Notices of the Royal Astronomical Society, Volume 528, Issue 4, pp.7320-7332 (2024).
5. Maccary, R. search by orcid ; Maistrello, M. search by orcid ; Guidorzi, C. search by orcid ; Sartori, M. search by orcid ; Amati, L. search by orcid ; Bazzanini, L. search by orcid ; Bulla, M. search by orcid ; Camisasca, A. E. search by orcid ; Ferro, L. search by orcid ; **Frontera, F.** search by orcid ; Tsvetkova, A. search by orcid, ***Distribution of the number of peaks within a long gamma-ray burst: The full Fermi/GBM catalogue***, Astronomy & Astrophysics, Volume 688, id.L8, 6 pp. (2024).
6. Bazzanini, Lorenzo ; Ferro, Lisa ; Guidorzi, Cristiano ; Angora, Giuseppe ; Amati, Lorenzo ; Brescia, Massimo ; Bulla, Mattia ; **Frontera, Filippo** ; Maccary, Romain ; Maistrello, Manuele ; Rosati, Piero ; Tsvetkova, Anastasia, ***Long gamma-ray burst light curves as the result of a common stochastic pulse-avalanche process***, Astronomy & Astrophysics, Volume 689, id.A266, 9 pp.; eprint arXiv:2403.18754 (2024).
7. Guidorzi, C. ; Maccary, R. ; Tsvetkova, A. ; Kobayashi, S. ; Amati, L. ; Bazzanini, L. ; Bulla, M. ; Camisasca, A. E. ; Ferro, L. ; Frederiks, D. ; **Frontera, F.** ; Lysenko, A. ; Maistrello, M. ; Ridnaia, A. ; Svinkin, D. ; Ulanov, M., ***VizieR Online Data Catalog: GRB variability-luminosity relationship (Guidorzi+, 2024)***, VizieR On-line Data Catalog: J/A+A/690/A261. Originally published in: 2024 A&A...690 A.261G
8. **Frontera, F.**, ***A Short History of the First 50 Years: From the GRB Prompt Emission and Afterglow Discoveries to the Multimessenger Era***, Universe 2024, 10, 260. https://doi.org/10.3390/universe10060260.
9. Guidorzi, C. ; Maccary, R. ; Tsvetkova, A. ; Kobayashi, S. ; Amati, L. ; Bazzanini, L. ; Bulla, M. ; Camisasca, A. E. ; Ferro, L. ; Frederiks, D. ; **Frontera, F.** ; Lysenko, A. ; Maistrello, M. ; Ridnaia, A. ; Svinkin, D. ; Ulanov, M., ***New results on the gamma-ray burst variability-luminosity relation***, Astronomy & Astrophysics, Volume 690, id.A261, 14 pp; eprint arXiv:2409.01644 (2024)
10. **F. Frontera**, ***Hard X-ray/Soft gamma-ray Laue Lenses for High Energy Astrophysics***, Chapter of the 3rd edition of the Springer book "Observing Photons in Space - A Guide to Experimental Space Astronomy", in the press (2024).

Curriculum Vitae

Marco Merafina

- Born in Rome (Italy) on May 29, 1959
- Graduated in Physics at University of Rome "La Sapienza" on January 30, 1986
- Researcher at Physics Department - University of Rome "La Sapienza" since 1992
- Member of the Executive Committee of Physics Department 1995-1999
- Member of Academic Board of University of Rome "La Sapienza" for *macroarea 1* (Mathematics, Physics, Chemistry, Geology and Information Science) 2006-2009
- Member of Administration Board of University of Rome "La Sapienza" 2002-2006, 2009-2013
- Member of Board of Faculty of Phd in Astronomia e Astrofisica (Università La Sapienza) 2006-2013
- Member of Board of Faculty of the International Phd in Astronomy, Astrophysics and Space Science; PhD supervisor and tutoring 2011-2019
- Member of Direction Board of AURIS (Associazione Università, Ricerca, Innovazione e Società - www.aurisonlus.it) 2007-
- Frascati National Laboratories -INFN- associate 2015-

Scientific activity
- Author of more than 50 international publications
- Referee for the journals: ApJ, MNRAS, A&A, ApSS
- Member of Board of Referees of the journal "Scienze e Ricerche" 2015-

Research Topics
I. Equilibrium and dynamical stability of selfgravitating systems
Study of compact objetcs like relativistic stellar clusters, as possible progenitors of supermassive black holes observed at the inner regions of active galactic nuclei. Study of the equilibrium configurations and analysis of dynamical and thermodynamical stability for models of stellar clusters with anisotropy in velocity distribution of stars.

II. Galactic halos, dark matter and dark energy
Study of semidegenerate particles systems (Fermions) in gravitational equilibrium as a possible description for galactic halos, considerable in cosmological problem of dark matter. Generalization to semidegenerate distributions with cutoff energy in phase space in presence of visible mass. Study of selfgravitating equilibrium configurations in presence of anisotropy in velocity distribution of particles. Models of spheroidal dwarf galaxies with exotic composition of dark matter halos by macro strange matter conglomerates. Research development on the effects of the presence of dark energy on large scale selfgravitating structures and study of the formation of substructures in the center of galaxy clusters.

III. Termodynamic treatment of astrophysical systems
Study of thermodynamical instabilities connected to the evolution of selfgravitating systems strongly influenced by relaxation processes like globular clusters. Development of models describing the evolution of globular clusters to the onset of gravothermal catastrophe, starting from a new statistical approach which defines a different formalism of the various thermodynamical ensembles, out of the framework of the Boltzmanian theory, by using techniques based on effective potentials applied to distribution function. Generalization to multi-mass and multi-population models with particular focus on the equipartition energy problem and evolution of the system. Development of N-body simulations is also considered.

Main International Meetings

- Marcel Grossmann Meeting on General Relativity (Roma 1985, Perth 1988, Kyoto 1991, Stanford 1994, Jerusalem 1997, Rio de Janeiro 2003, Paris 2009, Stockholm 2012, Rome 2015 -chair-)
- International Symposium on Cosmology and Relativistic Astrophysics, Tartu (Estonia) 1988
- Workshop on Dynamics of Globular Clusters, Berkeley (USA) 1992
- XI S.Cruz Summer Workshop on Globular Clusters, S.Cruz (USA) 1992
- Workshop "The Universe of Gamow: Original Ideas in Astrophysics and Cosmology", invited talk, Odessa (Ucraina) 1999
- Workshop "4-th Gamow International Conference", invited talk, Odessa (Ucraina) 2009
- Workshop "The astrophysics with the ongoing and future experiment: space-based experiments, ground-based experiments", invited talk, Mondello 2013
- Workshop "The Unquiet Universe", chair, Cefalù 2014
- Conference "Modelling and Observing Dense Stellar System (MODEST 15-S)", Kobe (Japan) 2015
- Conference "COSMIC-LAB: Star Clusters as Cosmic Laboratories for Astrophysics, Dynamics and Fundamental Physics (MODEST 16)", Bologna 2016
- Workshop "Frontier Research in Astrophysics - II", invited talk, Mondello 2016
- XXII SIGRAV Conference "A century of General Relativity", invited talk, Cefalù 2016
- Workshop "Stellar aggregates over mass and spatial scales", Bad Honnef (Germany) 2016
- Workshop "Multifrequency Behaviour of High Energy Cosmic Sources - XII", invited talk, Mondello 2017
- Workshop "The Amazing Life of Stars", invited talk, Cefalù 2017
- Workshop "Frontier Research in Astrophysics - III", invited talk, Mondello 2018
- Workshop "Multifrequency Behaviour of High Energy Cosmic Sources - XIII", invited talk, Mondello 2019
- Workshop ECT* "STRANEX: Recent progress and perspectives in STRANge EXotic atoms studies and related topics", Trento 2019
- Workshop "The Hitchhiker's Advanced Guide to Quantum Collapse Models and their impact in science, philosophy, technology and biology", Frascati 2022
- Workshop "Multifrequency Behaviour of High Energy Cosmic Sources - XIV", invited talk, Mondello 2023
- THEIA Workshop ECT* "SPICE: Strange hadrons as a Precision tool for strongly InteraCting systEms", Trento 2024
- Workshop "Frontier Research in Astrophysics - IV", invited talk, Mondello 2024

Teaching Activity at Physics Department – University of Rome "La Sapienza"

- Laboratory of Physics (CL Chemistry) 1999-2004
- Laboratory of Mechanics 2002-2007 (CL Physics) 2002-2007
- Laboratory of Advanced Calculus (CL Astronomy and Astrophysics) 2007-2009
- Selfgravitating Systems (CL Astronomy and Astrophysics) 2005-
- Dinamics of Stellar Systems (CL Astronomy and Astrophysics) 2005-2006, 2011-

	Publications
1989	Merafina M. and Ruffini R. "Some remarks on the Zel'dovich-Podurets relativistic solutions for a system of selfgravitating classical particles" Europhysics Letters, 9, 621 (1989)
1989	Merafina M. and Ruffini R. "Systems of selfgravitating classical particles with a cutoff in their distribution function" Astronomy and Astrophysics, 221, 4 (1989)
1990	Merafina M. The semidegenerate configurations of a selfgravitating system of fermions" Nuovo Cimento, 105B, 985 (1990)

1990	Ingrosso G., Merafina M. and Ruffini R. Systems of selfgravitating bosons with a cutoff in their distribution function: newtonian treatment", Nuovo Cimento, 105B, 977 (1990)
1990	Gao J.G., Merafina M. and Ruffini R. "The semidegenerate configurations of a selfgravitating system of fermions" Astronomy and Astrophysics, 235, 1 (1990)
1990	Merafina M. and Ruffini R. "The relativistic configurations of systems of particles with a cutoff in their phase space distribution functions" Astronomy and Astrophysics, 227, 415 (1990)
1991	Gao J.G., Merafina M. and Ruffini R. "The semidegenerate configurations of a selfgravitating system of fermions" Acta Astrophysica Sinica (Tianti Wuli Xuebao), 11 (4), 297 (1991)
1992	Boccaletti D., Merafina M., Ruffini R. "A re-investigation of the gravothermal catastrophe. The case of a self-gravitating gaseous sphere with a King-like distribution function" Journal of the Korean Physical Society (Suppl.), 25, S201 (1992)
1992	Merafina M., Bisnovatyi-Kogan G.S., Ruffini R., Vesperini E. "Stability of the dense stellar clusters to relativistic collapse" Journal of the Korean Physical Society (Suppl.), 25, S241 (1992)
1992	Ingrosso G., Merafina M., Ruffini R., Strafella F. "System of selfgravitating semidegenerate fermions with a cutoff of energy and angular momentum in their distribution function" Astronomy and Astrophysics, 258, 223 (1992)
1993	Bisnovatyi-Kogan G.S., Merafina M., Ruffini R., Vesperini E. "Stability of the dense stellar clusters - I" Proceedings of XI S.Cruz Summer Workshop on Globular Clusters, 1992 PASP Conference Series, 48, 705 (1993)
1993	Boccaletti D., Merafina M., Ruffini R. "Thermodynamic instabilities in King clusters" Proceedings of XI S.Cruz Summer Workshop on Globular Clusters, 1992 PASP Conference Series, 48, 709 (1993)
1993	Boccaletti D., Merafina M. "Thermodynamics of the King clusters" Proceedings of Workshop on Dynamics of Globular Clusters, 1992 PASP Conference Series, 50, 123 (1993)
1993	Bisnovatyi-Kogan G.S., Merafina M., Ruffini R., Vesperini E. "Stability of the dense stellar clusters - II" Proceedings of Workshop on Dynamics of Globular Clusters, 1992 PASP Conference Series, 50, 125 (1993)
1993	Bisnovatyi-Kogan G.S., Merafina M., Ruffini R., Vesperini E. "Stability of dense stellar clusters against relativistic collapse" Astrophysical Journal, 414, 187 (1993)
1995	Merafina M., Ruffini R. "Relativistic collisionless clusters with arbitrarily large central redshift" Astrophysical Journal Letters, 454, L89 (1995)
1997	Merafina M., Ruffini R. "On a new family of stable relativistic star clusters" International Journal of Modern Phys. D, 6, 785 (1997)
1998	Bisnovatyi-Kogan G.S., Merafina M., Ruffini R., Vesperini E. "Stability of dense stellar clusters against relativistic collapse. II Maxwellian distribution functions with different cutoff parameters" Astrophysical Journal, 500, 217 (1998)
1999	Merafina M. "Relativistic stellar clusters" Odessa Astronomical Publications, 12, 210 (1999)
2001	Fanelli D., Merafina M., Ruffo S. "A one-dimensional toy model of globular clusters" Physical Review E, 63, 066614 (2001)
2006	Bisnovatyi-Kogan G.S., Merafina M. "Selfgravitating gas spheres in a box and relativistic clusters: relation between dynamical and thermodynamical stability" Astrophysical Journal, 653, 1445 (2006)
2009	Bisnovatyi-Kogan G.S., Merafina M., Vaccarelli M.R. "Spherically symmetric stellar clusters with anisotropy and cutoff energy in momentum distribution: I. The Newtonian regime" Astrophysical Journal, 703, 628 (2009)

2010	Bisnovatyi-Kogan G.S., Merafina M., Vaccarelli M.R. “Spherically symmetric stellar clusters with anisotropy and cutoff energy in momentum distribution: II. The relativistic regime” Astrophysical Journal, 709, 1174 (2010)
2012	Merafina M., Bisnovatyi-Kogan G.S., Tarasov S.O. “A brief analysis of self-gravitating polytropic models with a non-zero cosmological constant” Astronomy and Astrophysics, 541, A84 (2012)
2013	Bisnovatyi-Kogan G.S., Chernin A., Merafina M. “Dark energy and key physical parameters of clusters of galaxies” Acta Polytechnica, 53, 550 (2013)
2013	Chernin A.D., Bisnovatyi-Kogan G.S., Teerikorpi P., Valtonen M.J., Byrd G.G., and Merafina M. “Dark energy and the structure of the Coma cluster of galaxies” Astronomy and Astrophysics, 553, A101 (2013)
2013	Bisnovatyi-Kogan G.S. and Merafina M. “Galactic cluster winds in presence of a dark energy” Monthly Notices of the Royal Astronomical Society, 434, 3628 (2013)
2014	Merafina M., Bisnovatyi-Kogan G.S., Donnari M. “Galaxy clusters in presence of dark energy: a kinetic approach” Astronomy and Astrophysics, 568, A93 (2014)
2014	Merafina M., Alberti G. “Self-gravitating Newtonian models of fermions with anisotropy and cutoff energy in their distribution function” Physical Review D, 89, 123010 (2014)
2014	Merafina M., Vitantoni D. “Data analysis of globular cluster Harris Catalogue in view of the King models and their dynamical evolution. I. Theoretical model” Acta Polytechica CTU Proc., 1, 231 (2014)
2014	Merafina M., Vitantoni D. “Data analysis of globular cluster Harris Catalogue in view of the King models and their dynamical evolution. II. Observational evidences” Acta Polytechica CTU Proc., 1, 235 (2014)
2015	Merafina M., Alberti G. “Self-gravitating relativistic models of fermions with anisotropy and cutoff energy in their distribution function” Physical Review D, 92, 023005 (2015)
2016	Merafina M. “A new point of view in the analysis of equilibrium and dynamical evolution of globular clusters” Mem. S.A.It., 87, 583 (2016)
2016	Donnari M., Arca-Sedda M., Merafina M. “Massive black holes interactions during the assembly of heavy sub-structures in the centre of galaxy clusters” Mem. S.A.It., 87, 685 (2016)
2017	Merafina M. “Dynamical evolution of globular clusters: Recent developments” International Journal of Modern Phys. D, 26, 1730017 (2017)
2019	Bisnovatyi-Kogan G.S., Merafina M. “Two-body problem in presence of cosmo-logical constant” International Journal of Modern Phys. D, 28, 1950155 (2019)
2020	Merafina M., Saturni F.G., Curceanu C., Del Grande R., Piscicchia K. “Self-gravitating strange dark matter halos around galaxies” Physical Review D, 102, 083015 (2020)
2023	Bisnovatyi-Kogan G.S., Merafina M. “Orbital precession and other properties of two-body motion in the presence of dark energy” International Journal of Modern Phys. D, 32, 2350030 (2023)
2024	Teodori M., Straniero O., Merafina M. “Energy equipartition in Globular Clusters through the eyes of dynamical models” Astronomy and Astrophysics, 691, A202 (2024)

	Proceedings
1986	Merafina M. and Ruffini R. “On selfgravitating classical systems with a phase space cutoff" Proceedings of the Fourth Marcel Grossmann Meeting on General Relativity, B, 1501 North Holland Physics Publishing, Amsterdam (1986)

1989	Ingrosso G., Merafina M. and Ruffini R. “On systems of selfgravitating fermions with a cutoff in their distribution function” Proceedings of the Fifth Marcel Grossmann Meeting on General Relativity, B, 1265 D.Blair and M.Buckingham, World Scientific Publishing, Singapore (1989)
1989	Merafina M. and Ruffini R. “On systems of selfgravitating classical particles with a cutoff in their distribution function” Proceedings of the Fifth Marcel Grossmann Meeting on General Relativity, B, 1255 D.Blair and M.Buckingham, World Scientific Publishing, Singapore (1989)
1992	Boccaletti D., Merafina M., Ruffini R. “Gravithermal instability of selfgravitating systems with an energy cut-off in their distribution function” Proceedings of the Sixth Marcel Grossmann Meeting on General Relativity, B, 897 H.Sato and T.Nakamura, World Scientific Publishing, Singapore (1992)
1992	Ingrosso G., Merafina M., Ruffini R., Strafella F. “Galactic halos and limits on the particle mass” Proceedings of the Sixth Marcel Grossmann Meeting on General Relativity, B, 1565 H.Sato and T.Nakamura, World Scientific Publishing, Singapore (1992)
1996	Merafina M., Bisnovatyi-Kogan G.S., Ruffini R., Vesperini E. “Stability of the dense stellar clusters to relativistic collapse. Maxwellian distribution functions with different cutoff parameters” Proceedings of the Seventh Marcel Grossmann Meeting on General Relativity, A, 447 R.T.Jantzen and G.MacKeiser, World Scientific Publishing, Singapore (1996)
1999	Merafina M. “Thermodynamical stability of relativistic stellar systems” Proceedings of the Eighth Marcel Grossmann Meeting on General Relativity, A, 345 T.Piran, World Scientific Publishing, Singapore (1999)
2000	Merafina M. “Dynamical and thermodynamical instability in relativistic clusters” Proceedings of the Second ICRA Network Workshop: The Chaotic Universe Advanced Series in Astrophysics and Cosmology vol. 10, 590 V.G.Gurzadyan and R.Ruffini, World Scientific Publishing, Singapore (2000)
2002	Fanelli D., Merafina M., Ruffo S. “A 1-D toy model of globular cluster formation” Proceedings of the Ninth Marcel Grossmann Meeting on General Relativity, B, 904 V.G.Gurzadyan, R.T.Jantzen, R.Ruffini, World Scientific Publishing, Singapore (2002)
2005	Merafina M., Bisnovatyi-Kogan G.S. “Relation between dynamic and thermodynamic stability of relativistic stellar clusters with cutoff and gas spheres in a spherical box” Proceedings of the Tenth Marcel Grossmann Meeting on General Relativity, C, 2411 M.Novello and S.Perez Bergliaffa, World Scientific Publishing, Singapore (2005)
2010	Bisnovatyi-Kogan G.S., Merafina M. “Galaxy clusters in presence of dark energy” Proceedings of Vulcano Workshop, Vulcano (2010)
2010	Merafina M., Bisnovatyi-Kogan G.S, Vaccarelli M.R. “Relativistic stellar clusters: equilibrium models with anisotropic momentum distribution and dynamic and thermodynamic stability of isotropic models” AIP Conferences Proceedings, 1206, 399 (2010)
2012	Merafina M., Bisnovatyi-Kogan G.S. “Relativistic stellar clusters with anisotropic momentum distribution” Proceedings of the Twelfth Marcel Grossmann Meeting on General Relativity, C, 2110 T.Damour and R.T.Jantzen, World Scientific Publishing, Singapore (2012)
2012	Bisnovatyi-Kogan G.S., Chernin A., Merafina M. “Galaxy clusters in presence of dark energy” Proceeding of the Conference “Galaxies: Origin, Dynamics, Structure & Astrophysical Disks”, Sochi (2012)

2015	Merafina M., Bisnovatyi-Kogan G.S., Tarasov S.O. "Polytropic equilibrium models with non-zero cosmological constant" Proceedings of the Thirteenth Marcel Grossmann Meeting on General Relativity, B, 1549 R.T.Jantzen and K.Rosquist, World Scientific Publishing, Singapore (2015)
2016	Arca-Sedda M., Donnari M., Merafina M. "Formation and evolution of heavy sub-structures in the centre of galaxy clusters: the local effect of dark energy" Proceedings of the 51st Rencontres de Moriond - Cosmology, 137 (2016)
2016	Donnari M., Arca-Sedda M., Merafina M. "Can dark energy explain the observed outflow in galaxy clusters?" Proceedings of the 51st Rencontres de Moriond - Cosmology, 303 (2016)
2017	Merafina M., Saturni F. "Macro dark matter selfgravitating halos around galaxies" Proceeding of the Conference "Frontier Research in Astrophysics - II" Proceedings of Science - POS (FRAPWS2016) 017, Mondello (2016)
2018	Donnari M., Merafina M., Arca-Sedda M. "The local effect of Dark Energy in galaxy clusters" Proceedings of the Fourteenth Marcel Grossmann Meeting on General Relativity, C, 2210 M.Bianchi and R.T.Jantzen, World Scientific Publishing, Singapore (2018)
2018	Merafina M., Piscicchia K., Donnari M. "Gravity and Thermodynamics in globular clusters. Theoretical developments and results by numerical simulations" Proceedings of the Fourteenth Marcel Grossmann Meeting on General Relativity, C, 2509 M.Bianchi and R.T.Jantzen, World Scientific Publishing, Singapore (2018)
2018	Piscicchia K., Merafina M. "Gravity and Thermodynamics in globular clusters. Gravothermal instability and some observational evidences" Proceedings of the Fourteenth Marcel Grossmann Meeting on General Relativity, C, 2515 M.Bianchi and R.T.Jantzen, World Scientific Publishing, Singapore (2018)
2018	Alberti G., Merafina M. "Anisotropic fermionic matter in a general relativistic framework and dynamic stability of anisotropic systems" Proceedings of the Fourteenth Marcel Grossmann Meeting on General Relativity, C, 2485 M.Bianchi and R.T.Jantzen, World Scientific Publishing, Singapore (2018)
2018	Merafina M. "Dynamical evolution of globular clusters: Recent developments" Proceedings of the Fourteenth Marcel Grossmann Meeting on General Relativity, A, 693 M.Bianchi and R.T.Jantzen, World Scientific Publishing, Singapore (2018)
2018	Merafina M. "Does the core collapse in globular clusters onset before than commonly believed?" Proceeding of the Conference "XII Multifrequency Behaviour of High Energy Cosmic Sources Workshop" Proceedings of Science – POS (MULTIF2017) 004, Mondello (2017)
2019	Merafina M. "Multimass King models with Kroupa mass function" Proceeding of the Conference "Frontier Research in Astrophysics - III" Proceedings of Science - POS (FRAPWS2018) 010, Mondello (2018)
2020	Merafina M. "Massive hadronic candidates to dark matter" Proceeding of the Conference "XIII Multifrequency Behaviour of High Energy Cosmic Sources Workshop" Proceedings of Science – POS (MULTIF2019) 011, Mondello (2019)
2023	Merafina M. "The dynamics of Globular Clusters with the GAIA Data" Proceeding of the Conference "XIV Multifrequency Behaviour of High Energy Cosmic Sources Workshop" Proceedings of Science – POS (MULTIF2023) 013, Mondello (2023)
2024	Merafina M. "What choice of particle mass values for dark matter candidates?" Proceeding of the Conference "Frontier Research in Astrophysics - IV" Proceedings of Science - POS (FRAPWS2024) 008, Mondello (2024)

Pace Carlo Maria

Position: Adjunct Professor of the ICRANet Faculty
Period covered: From December 5, 2023

Scientific Work

The correct solutions of the Einstein's field equation and their consequences

List of Publication

Pace, C. M. (2024) The Solution of the Einstein's Equations in the Vacuum Region Surrounding a Spherically Symmetric Mass Distribution. *Journal of Modern Physics*, **15**, 1353-1374. doi: 10.4236/jmp.2024.159055.

Pace, C. M. (2024) The Correct Reissner-Nordstrøm, Kerr and Kerr-Newman Metrics. *Journal of Modern Physics*, **15**, 1502-1522. doi: 10.4236/jmp.2024.1510062.

Pace, C. M. (2024) The Gravitational Potential and the Gravitational Force According to the Correct Schwarzschild Metric. *Journal of Modern Physics*, **15**, 2256-2273. doi: 10.4236/jmp.2024.1512092.

Surname Name **Photo** 

Quevedo Hernando

Position: Full Professor - National Autonomous University of Mexico -
Period covered: 2024

I Scientific Work

Topics:

- Exterior and interior solutions of Einstein's equations and applications in relativistic astrophysics.
- Physics of black holes and naked singularities.
- Geometrothermodynamics of black holes.
- Applications of geometrothermodynamics in cosmology.
- Topological quantization of classical field theories.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students

II c Diploma thesis supervision

- Sasha Zaldivar (PhD-Physics)
  Topic:Geometric description of ideal quantum gases and Bose-Einstein condensation
- Elly Bayona (PhD -Astrophysics)
  Topic:Axially symmetric gravitational collapse

-Jesús Anaya (PhD – Physics)
Topic: Geometrothermodynamic cosmology

- Luis Cedeno (PhD – Mathematics)
  Topic: Quantum geometrothermodynamics
- Carlos Romero (PhD – Physics)
  Topic: Black hole extended geometrothermodynamics
- Jose Ladino (PhD – Astrophysics)
  Topic: Black hole shadows in alternative theories of gravity

II d Other Teaching Duties

II e. Work With Postdocs

- Francisco L. Escamilla, UNAM
- SakenToktarbay, Kazakh National University

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

III a. Within ICRANet

III b. Outside ICRANet

Course: Differential Geometry – University of Texas – Texas (USA)
Course: Mathematical Physics – Kazakh National University (Kazakhstan)

IV. Other

2024 List of Publications

"Gravitational repulsive effects in 3D regular black holes" (Orlando Luongo, Hernando Quevedo, S. N. Sajadi) *General Relativity and Gravitation,***56**, 17 (2024).

"Accretion disk in the Hartle-Thorne spacetime" (Kuantay Boshkayev, Talgar Konysbayev, Yergali Kurmanov, Orlando Luongo, Marco Muccino, Hernando Quevedo, Ainur Urazalina) *The European Physical Journal Plus,***139,** 273 (2024).

"Numerical analyses of M31 dark matter profiles" (Kuantay Boshkayev, Talgar Konysbayev, Yergali Kurmanov, Orlando Luongo, Marco Muccino, Hernando Quevedo, Gulnur Zhumakhanova*) International Journal of Modern Physics D***33**, 2450016 (2024).

"Anisotropic Generalized Polytropic Spheres: Regular 3D Black Holes" (S. Naseh, M. Khodadi, O. Luongo and H. Quevedo) *Physics of the Dark Universe***45**, 101525 (2024).

"Repulsive gravity in regular black holes" (O. Luongo and H. Quevedo) *Classical and Quantum Gravity***41**, 125011 (2024)

"Adiabatic theory in Kerr spacetimes" (Kuantay Boshkayev, Gulmira Nurbakyt, Hernando Quevedo, Gulnara Suliyeva, Aliya Taukenova, Abylaikhan Tlemissov, Zhanerke Tlemissova, Ainur Urazalina, Zdeněk Stuchlík), *General Relativity and Gravitation***56**, 67 (2024).

"C3 matching conditions for anisotropic fluids" (A.C. Gutiérrez -Piñeres and H. Quevedo) *International Journal of Theoretical Physics* **63***,* 218 *(*2024*).*

"Quasi-periodic oscillations in rotating and deformed spacetimes" (K. Boshkayev, T. Konysbayev, Ye. Kurmanov, M. Muccino, and H. Quevedo), Monthly *Notices of the Royal Astronomical Society* **531***,* 3876 *(*2024*).*

"Horizon replicas in black hole shadows" (D. Pugliese and H. Quevedo) *Nuclear Physics B*, enviado (2024).

"On the single versus the repetitive Penrose process in a Kerr black hole" (R. Ruffini, M. Prakapenia, H. Quevedo, and S. Zhang), Physical Review Letters, accepted (2024).

Antonio Enea Romano

- **Education**

  University of Wisconsin at Madison, Madison, WI-USA

  Ph.D. Physics, May 20 2007

  Master in Physics, December 2002

- **Positions held**

  2023-now, Adjunct Professor, ICRANet, Pescara, Italy

  2022-now, Principal Investigator of UDEA group, LIGO collaboration

  2011-now, Full Professor, Head of Cosmology and Gravitation group, UDEA

  2010/8-2011/10, Distinguished fellow, National Taiwan University, Taipei

  2007/10-2010/2, Postdoctoral fellow, Yukawa Institute, Kyoto, Japan

- **Visiting Positions held**

  2017-now, Visiting Scientist, CERN, Switzerland

  2012/6 -2012/8, Visiting Researcher, ICTP, UNESP, Sao Paolo, Brazil

  2012/11-2013/2, Visiting Researcher, YITP, Kyoto University , Kyoto, Japan

  2012/7-2013/9, Visiting Researcher, McGill University, Montreal, Canada

  2013/12-2014/2, Visiting Researcher, Universidad de Chile, Santiago, Chile

  2014/6-2015/6, Research fellow, University of Crete, Heraklion, Greece

  2015/6-2015/7, Visiting Researcher, King's College, London, UK

  2015/11-2015/12, Visiting Researcher, YITP, Kyoto University , Kyoto, Japan

  2016/12-2016/1, Visiting Researcher, National Taiwan University, Taipei, Taiwan

  2019/5-2019/9 Visiting Scholar, Bishop's University, Sherbrooke, Canada

- **Awards**

  Paper selected as editor highlight in EPL (Europhysics Letters) Letters,2012

  Honorable mention for the Gravity Research Foundation essay context, 2011

  Japanese Society for the Promotion of Science post-doctoral fellowship 2007

  Marie Curie fellowship 2006

  University of Wisconsin Scholarship 2001,2002,2004,2005

  Della Riccia Fellowship for Italian graduate student in USA, 2000-2002

  Jerusalem Winter School of Theoretical Physics, 2002, full support

- **Referee**

  Refereed for Journal of Cosmology and Astroparticle Physics, Physics Letters B, European Physics Journal, Modern Physics Letters,

- **Recent Talks and Events**

  "The MESS and dualities of cosmological perturbations"
  30th Texas Symposium on Relativistic Astrophysics, Portsmouth, UK, 12/2019

  "The MESS and dualities of cosmological perturbations"
  30th Texas Symposium on Relativistic Astrophysics, Portsmouth, UK, 12/2019

  "The MESS and dualities of cosmological perturbations"
  Perimeter Institute, Waterloo, Canada, 7/2019

"Hubble bubble or Hubble trouble?"
MG15, Fifteenth Marcel Grossmann Meeting - MG15
Rome , Italy, July 2018

Pleanary speaker
November 2016, 1st Colombian Meeting on High Energy Physics

"Adiabaticity and gravity theory independent conservation laws for cosmological perturbations"
European Physical Society Conference on High Energy Physics
Venice , Italy, July 2017

"Adiabaticity and gravity theory independent conservation laws for cosmological perturbations"
21st International Conference on General Relativity and Gravitation (GR21)
New York City , USA, July 10-15, 2016

"H_0 tension and the effects of local structure"
2nd LeCospa International Symposium
Taipei , Taiwan, 14-18/12/2015

"Directional dependence of the local estimation of H_0 and the nonperturbative effects of primordial curvature perturbations"
JGRG 25
Kyoto , Japan, 7-11/7/2015
Queen Mary University of London, Taiwan, 14-18/12/2015

"Non Pertubative Effects Of Primordial Curvature Pertubations On Cosmological Observables"
Marcel Grossmann Meeting - MG14
Rome , Italy, 12-18/7/2015

"H_0 tension and the effects of local structure"
KICC, Cambridge University , UK, 17/6/2015

"Effects of primordial curvature perturbations on the apparent value of the cosmological constant"
Beyond LCDM
Oslo , Norway, 12/2015
Turin University, McGill University 1/2015

"Correction to the apparent value of the cosmolgical constant due to non pertubative local structures"
20th International Symposium on Particles, Strings and Cosmology, PASCOS 2014
Warsaw, Poland, 7/2014

"Inhomogeneities and fake-dark"
20th International Conference on General Relativity and Gravitation (GR20)"
Warsaw, Poland, 7/2013
Montreal, McGill University 9/2013

"Quantifying the corrections to the apparent value of the cosmological constant due large scale structure"
Gravity and Cosmology 2012 workshop
YITP, Kyoto University, Kyoto, Japan 12/2012;

"Uncertainties on the determination of the equation of state of dark energy"
LeCosPA International Symposium (LeCosPA2012), Taipei, Taiwan, February 6-11 2012 , invited speaker

"Corrections to the apparent value of the cosmological constant due to local inhomogeneities"
Perimeter Institute, Waterloo Canada 09/2011;
National Taiwan University, Taipei, Taiwan, 09/2011;
KEK, Tuskuba ,Japan 08/2011;

"Effects of inhomogeneities on apparent cosmological observables: 'fake" evolving dark energy"
Yukawa International Seminar (YKIS2010), "Cosmology -The Next Generation-", June/July 2011;

"Inhomogeneities, cosmic acceleration and dark energy"
Nineteenth Workshop on General Relativity and Gravitation in Japan (JGRG19), Tokyo, Japan, 11/2009;

"On the relation between positive averaged acceleration and physical observables in LTB spaces"
12th Marcel Grossman Meeting, July 2009, Paris,France;

"Effects of particle production during inflation"
Perimiter Institute, Waterloo ,Canada, October 2008;
University of Toronto, Toronto ,Canada, October 2008;

"Inhomogeneities as alternatives to Dark Energy"
LeCosPA Workshop on Dark Energy and Vacuum Structure, December 2008, Taipei, Taiwan;
KEK Workshop "Are we living in an accelerating Universe?", December 2008, Tsukuba, Japan;

1 Research funding

2 Funded Research Projects

- Japanese foundation for promotion of science(JSPS), 2007-2008, 12000 USD
- Japanese foundation for promotion of science(JSPS), 2008-2009, 12000 USD
- National Taiwan University, 2010-2011, 5000 USD
- "Testing the standard cosmological model studying the effects of non gaussianity and large scale inhomogeneities."

  University of Antioquia 2011-2013, Funded Research Project 45000 USD
- "Cosmological effects of local inhomogeneities"

  University of Antioquia 2013-2016, Funded Research Project 60000 USD
- "Effects of primordial curvature perturbations on cosmological observables"

  University of Antioquia 2015-2018, Funded Research Project 60000 USD
- "Features of primordial curvature perturbations spectra"

  University of Antioquia 2016-2019, Funded Research Project 60000 USD
- "LARGE SCALE INHOMOGENEITIES AND THE FRACTAL STRUCTURE OF THE UNIVERSE"

  ICRANET and University of Antioquia, 2018-2021, Funded Research Project 30000 USD
- "Cosmograv research group sustainability"

  University of Antioquia 2016-2019, Funded Research Project 15000 USD
- "Cosmograv research group sustainability"

  University of Antioquia 2019-2021, Funded Research Project 15000 USD
- "Cosmology after BICEP"

  Colciencias grant for researcher exchange with Japan, 2014-2016, 15000 USD
- "Effect of large scale inhomogeneities on cosmological observations"

  British Council, UK-Colombia cooperation grant, 2014-2016, 15000 USD

SigismondiCostantino

Position: Adjunct Professor
Period covered:11.1.2024-11.12.2024

I Scientific Work

Observation of the Solar Maximum Activity (January 2024-December 2024) from Asiago, Pescara and Rome with H-alpha (since May) and white light telescopes.

Fermi mechanism in the M9.75 solar coronal mass ejection of June 8 2024 with relativistic protons (Lincei Academy and Tor Vergata University); The origin of TeV photons in collapsed astrophysic objects (ICRANet);

Flares' prediction from rhythmic active regions.

II Conferences and educational activities
*II a Conferences and Other External Scientific Work***Particellerelativistiche da unbrillamentosolare (10-12-2024) LectioMagistralisAccademiaNazionaledeiLincei**
HR2 session at the XVII Marcel Grossmann meeting dedicated to Historical Supernovae, Pescara, D'Annunzio University, 9 July 2024.

*II b Work With Students***Special Schools on Solar Flares with Galileo Galilei Lyceum in Pescara**

II c Diploma thesis supervision

*II d Other Teaching Duties****ASYAGO School of Young Astronomers with Galileo Observations (July and August 2024)***

II e. Work With Postdocs -

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

III a. Within ICRANet

Special School on Boreal Aurorae with Galileo Galilei Lyceum in Pescara (May 2024)

Special School on Solar Flares with Galileo Galilei Lyceum in Pescara (since Sep 2024)

III b. OutsideICRANet

Astrophysics Laboratory theses of Patrizio Malloni and Flavio Cencioni (Sapienza University)

ASYAGO School of Young Astronomers with Galileo Observations (July and August 2024)

IV. Other Referee for Science Journals

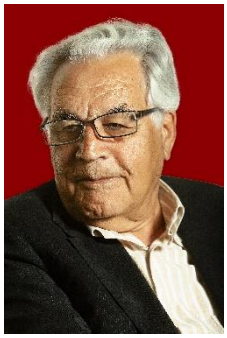
Chair of final State's Examination Commission at Newton Lyceum, Rome.

Recipient of Lincei Academy Prize for General Relativity and Didactic

2024List of Publication

1. Ruffini, R., Sigismondi, C. 2024. Fitting the Crab Supernova with a Gamma-RayBurst. Universe 10. doi:10.3390/universe10070275
2. Sigismondi, C. 2024. Nakedeyeobservations of Auroraeatlowmagneticlatitudes. The Astronomer's Telegram 16635.
3. Sigismondi, C. 2024. Black Holes: la luce che gravita. Gerbertvs, International Academic Publication on History of Medieval Science 21, 5-14.
4. Sigismondi, C. and 6 colleagues 2024. New pulsatingmodes for Betelgeuse. The Astronomer's Telegram 16501.
5. Sigismondi, C., De Vincenzi, P. 2024. Eclipses: A Brief History of CelestialMechanics, Astrometry and Astrophysics. Universe 10. doi:10.3390/universe10020090
6. Sigismondi, C. 2024. A cypresspollen solar corona observed in Rome. Gerbertvs, International AcademicPublication on History of Medieval Science 21, 1-4.
7. Sigismondi, C., Costa, C., Noschese, A., Guhl, K., Bisconte, M. 2024. Signal-to Noiseimprovements forobservations of 2023 Betelgeuse'sOccultation. Journal for OccultationAstronomy 14, 27–31.
8. Sigismondi, C. 2023. Dante e le Osservazioni Astronomiche, in Dante Alighieri nel 700° anniversario della morte, a cura di M. Martorana e R. Pascual, Ricerche di Storia della Filosofia e Teologia Medievali, IF Press, Ateneo Pontificio Regina Apostolorum, Roma 2023.
9. Sigismondi, C. 2023. Detecting the penumbra of Betelgeuse with a diffuse telescopeduring the Leona occultation. Gerbertvs, International AcademicPublication on History of MedievalScience 19, 361-366.
10. Sigismondi, C. 2023. Meteorologicalcontributions to the image's shiftat the Clementine Gnomon. BALMER, Bollettino Astronomico delle Linee Meridiane e delle Effemeridi diRoma 1, 11-14.
11. Sigismondi, C.,Misurare l'altezza del Sole con una camera oscurain casa, BALMER, Bollettino Astronomico delle Linee Meridiane e delle Effemeridi diRoma,2,43 (2024)
12. Sigismondi, Costantino, Dal Pian, Maria, and Noschese, Alfonso: NuovaRicognizione della meridiana del Salone del Palazzo della Ragione a Padova al perielioe sue effemeridi 2025, BALMER, Bollettino Astronomico delle Linee Meridiane e delleEffemeridi di Roma,2,33 (2024)
13. Sigismondi, Costantino: Ephemerides for the meridiantransits of the Sunat the meridian line of the Vatican Obelisk: year 2025, BALMER, Bollettino Astronomicodelle Linee Meridiane e delle Effemeridi di Roma,2,23 (2024)
14. Sigismondi, Costantino: Ephemerides for the meridiantransits of the Sunin s. Maria degli Angeli – Rome, for the year 2025, BALMER, Bollettino Astronomico delleLinee Meridiane e delle Effemeridi di Roma,2,13 (2024)
15. Sigismondi, Costantino: The meridiantransits of αPiscisAustralis andSaturnat the Vatican Obelisk on 26 november 2024, BALMER, Bollettino Astronomicodelle Linee Meridiane e delle Effemeridi di Roma,2,9 (2024)
16. Sigismondi, Costantino, Lanciano, Nicoletta, Bruno, Angelo, and Costa,Claudio: Multiple solar transits to measure the deviation of the meridian line in PalazzoMattei di Giove in Rome (1780), BALMER, Bollettino Astronomico delle Linee Meridianee delle Effemeridi di Roma,2,5 (2024)
17. Sigismondi, Costantino: The Full Moon transitat the Obelisk of Augustus'meridian line on 15 november 2024, BALMER, Bollettino Astronomico delle LineeMeridiane e delle Effemeridi di Roma,2,1 (2024)
18. Sigismondi, Costantino: Ephemerides for the meridiantransits of the Sunin s. Maria degli Angeli – Rome, for the year 2024, BALMER, Bollettino Astronomico delleLinee Meridiane e delle Effemeridi di Roma,1,27 (2023)
19. Sigismondi, Costantino: Ricognizione della meridiana del Salone delPalazzo della Ragione a Padova al perielio e sue effemeridi 2024, BALMER, BollettinoAstronomico delle Linee Meridiane e delle Effemeridi di Roma,1,15 (2023)
20. Sigismondi, Costantino: Meteorologicalcontributions to the image'sshiftat the Clementine Gnomon, BALMER, Bollettino Astronomico delle Linee Meridiane edelle Effemeridi di Roma,1,11 (2023)
21. Sigismondi, Costantino: Introducing BALMER: un Bollettino Astronomicoper le Meridiane e le Effemeridi di Roma, BALMER, Bollettino Astronomico delle LineeMeridiane e delle Effemeridi di Roma,1,1 (2023)
22. Sigismondi, Costantino: Ephemerides for the meridiantransits of the Sunat the meridian line of the Vatican Obelisk: year 2024, BALMER, Bollettino Astronomicodelle Linee Meridiane e delle Effemeridi di Roma,1,41 (2023)
23. C. Sigismondi, et al.Astronomybefore the Telescope, Proc. MGXVII meeting (2024)
24. C. Sigismondi, et al.RelativisticParticles from the Sun, Proc. MGXVII meeting (2024)
25. C. Sigismondi, et al.Theobservation of GRB (10)540703, Proc. MGXVII meeting (2024)
26. C. Sigismondi, et al.HistoricalSupernovae, Proc. MGXVII meeting (2024)

Yousef Sobouti



Position: **Founder, Institute for Advanced Studies in Basic Sciences (IASBS)**
Period covered: **1992**

Position: **Founding President, IASBS**
Period covered: **1992 – 2010**

Position: **Professor of Physics, Shiraz University**
Period covered: **1964 -1997**

Position: **Professor of Physics, IASBS**
Period covered: **1993 – 2020**

Position: **Founder, Biruni Observatory of Shiraz University**
Period covered: **1971**

Position: **Founding Director, Biruni Observatory of Shiraz University**
Period covered: **1971 – 1981**

Position: **Founder and Founding Director, Center for Research in Climate Change and Global Warming, IASBS**
Period covered: **2012 - present**

Position: **Fellow, The World Academy of Sciences (TWAS)**
Period covered: **1987 – present**

Position: **Fellow, Iran Academy of Sciences**
Period covered: **1988 – present**

Position: **Iran Academy of Sciences, Head, Basic Sciences Branch**
Period covered: **2012-2019 and 2022 – 2024**

I Scientific Work

- **Education:**

  B.Sc., Physics, Tehran University, 1953

  M.A., Physics, University of Toronto, 1960

  Ph.D., Astronomy and Astrophysics, University of Chicago, 1963

- **Positions held**:

Lecturer, Dept. of Math., University of Newcastle on Tyne, 1963-1964

Associate Professor, Physics, Shiraz University, 1964-1970

Visiting Associate Professor, Astronomy, University of Pennsylvania, 1968-1969

Professor of Physics, Shiraz University, 1971 to 1999

Chairman, Physics Department, Shiraz University, 1972-1974 and 1978-1980

Visiting Senior Researcher, Astronomical Institute, University of Amsterdam, 1975-1976

Visiting Scholar, Astronomy and Astrophysics Center, University of Chicago, 1984-1985

Visiting Professor, Physics Department, Northeastern University, Boston, 1991-1992

Professor of Physics, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran 1991- 2020

Academy of Sciences of Iran, Head of Basic Sciences Branch, 2012 –2019, 2022 –present

Adjunct Professor, International Center for Relativistic Astrophysics Network (ICRANET), Pescara, Italy, 2015

- **Publications (Papers)**

1. Sobouti, Y. and Sheikhahmadi H., "Remove point-mass concept-remove singularities from GR", Modern Physics Letters A, accepted Nov 28 (2024).

2. Sobouti, Y. and Sheikhahmadi H., "Point Mass Concept Cause of Singularities in GR", to be appeared in the proceedings of Seventeenth Marcel Grossmann Meeting, Pescara, Italy, (2024).

3. Sobouti, Y., "Three arguables: point particle singularity, asymmetry in EM and quantum waves, and the left out restricted Lorentz gauge from U(1), revised and abridged", *Astron. Rep.* 67 (Suppl 2), pp. S134–S139, https://doi.org/10.1134/S1063772923140196, (2023).

4. Sobouti, Y., "Three arguable concepts: point particle singularity, asymmetric action of EM on quantum wave functions, and the left out restricted Lorentz gauge from U (1)", Quantum Studies: Mathematics and Foundations, 10(2), pp. 223-236, DOI: 10.1007/s40509-022-00290-0, (2023).

5. Sobouti, Y., "Astronomy in Iran (an update, 2021)", in Euro-Asian Astronomical Society, - (dir.), *Astronomical and Astrophysical Transactions, Vol. 33, No. 3.*, Cambridge Scientific Publishers, Coll. «Astronomical and Astrophysical Transactions», France, ISBN : 9781908106803, pp. 187-190, doi : https://doi.org/10.17184/eac.7521, (2022).

6. Ruffini, R. and Sobouti, Y., "A friendly exchange between Professor Remo Ruffini and Professor Yousef Sobouti during the editorial preparation of the Proceedings publication", in Euro-Asian Astronomical Society, - (dir.), *Astronomical and Astrophysical Transactions, Vol. 33, No. 3.*,

Cambridge Scientific Publishers, Coll. «Astronomical and Astrophysical Transactions», France, ISBN: 9781908106803, pp. 185-186, doi : https://doi.org/10.17184/eac.7520, (2022).

7. Sobouti, Y., “Astronomy in Iran, an update, 2021”, IUT International E-Newsletter, Volume 3, Special Issue, November 2021, pp. 9-10, (2021).

8. Sobouti, Y., “Massive Gravity as an Alternative Gravity”, Gravitation and Cosmology, Vol. 26, Number 1, pp. 1–6, (2020).

9. Sobouti, Y., “An Oscillator representation of elementary particles”, J. Phys. Communication, Journal of Physics Communications, Volume 2, Number 8 (2018)2.

10. Sobouti, Y., "Iran’s commitments toward meeting the goals of Paris Agreement: harnessing the global temperature rise", Региональные проблемы, 21(3 (1)), 112-114, (2018).

11. Sobouti, Y., Jahani Poshteh, M. B., “A cosmological model with time varying cosmological constant”, (2017).

12. Sobouti, Y., “Harmonic Oscillators and Elementary Particles”, arXiv:1608.04598v1 [physics.gen-ph], (2016).

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

14. Sobouti, Y., Darvishzadeh, R., Naghavi Azad, A., “Climate of Iran-Projection of Temperature and Precipitation until 2030”, Science Cultivation 5 (2), pp. 18-25, (2015).

15. Sobouti, Y., “Notes on Iran's higher education, pre-1979”, 2nd International Conference on Advanced Science and Technology for Sustainable Development in Iran, Freie Universitat Berlin, Germany, 8 -10 August, (2015).

16. Sobouti, Y. And Naghavi Azad, A., “Projection of the Regional Climate of Iran”, Science Cultivation, Vol. 4 (2), pp. 124-129,(2014).

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

18. Sobouti, Y., “Climate and Its Changes in 20th and 21st Centuries”, Science Cultivation, Vol. 1 (2), pp. 5-15, (2011).

19. Moravveji, E., Guinan, E. F., Sobouti, Y., "On the Mass and Evolutionary Status of the Bright Red AGB Supergiant α^1 Herculis” in Why Galaxies Care about AGB Stars II: Shining Examples and Common Inhabitants, Edited by F. Kerschbaum, T. Lebzelter, and R.F. Wing. San Francisco,

Proceedings of a conference held at University Campus, Viena, Austria, 16-20 August 2010, Astronomical Society of the Pacific, 2011, 163-164, (2010).

20. Sobouti, Y., “Dark Companion of Baryonic Matter in Spiral Galaxies” in DARK MATTER IN ASTROPHYSICS AND PARTICLE PHYSICS, Edited by Hans Volker Klapdor-Kleingrothaus, Irina V Krivosheina, Proceedings of the 7th International Heidelberg Conference on Dark 2009. Held 18 - 24 January 2009 in Christchurch, New Zealand, Published by World Scientific Publishing Co. Pte. Ltd., 2010. ISBN: 9789814293792, 356-362, (2010).

21. Sobouti, Y., "Dark companion of baryonic matter in spliral galaxies", arXiv:0812.4127 [gr-qc], 1-3, (2008).

22. Hasani Zonoozi, A., Haghi, H., Sobouti, Y., “Distinguishing between different alternative theories of gravity, using different IMF’s in stellar population synthesis models”, 14th Meeting on Research in Astronomy at IASBS, (2010).

23. Hasani Zonoozi, A., Haghi, H., Sobouti, Y., “Stellar population synthesis, a discriminant between gravity models”, Astron. & Astrophys., 1-13, (2010).

24. Moravveji, E., Guinan, E. F., Wasatonic, R., Sobouti, Y., Nasiri, S., "Investigating the Semi-Regular Light Variations of the bright M5 supergiant: α Herculis", Astrophys. Space Sci., 328: (1), 113-117, (2010).

25. Sobouti, Y., Hasani Zonoozi, A., Haghi, H., "Tully-Fisher relation, key to dark companion of baryonic matter", Astron. & Astrophys. (A&A), 507: (2), 635-638, (2009).

26. Sobouti, Y., “Dark companion of baryonic matter - Logarithmic potentials are inherent to GR”, arXiv:0812.4127v1 [gr-qc], 1-4, (2009).

27. Sobouti, Y., “Dark companion of baryonic matter-Beyond the point source”, (2009).

28. Sobouti, Y., "Dark companion of Baryonic matter, III", arXiv:0903.5007v1 [gr-qc], 1-4, (2009).

29. Ardalan, F., Arfaei, H., Mansouri, R., Balalimood, M., Farhud, D., Malekzadeh, R., Firouzabadi, H., Izadpanah-Jahromi, K., Safavi, A., Kaveh, A., Saidi, F., Shafiee, A., Sobouti, Y., “Iran's scientists condemn instances of plagiarism”, Nature, 462(7275), 847-847, (2009).

30. Sobouti, Y., "Revised Dynamics or Dark Matter in Galactic and Extra Galactic Scales?", Astronomy & Astrophysics (A & A), (2008).

31. Sobouti, Y., "The Morality of Exact Sciences", Science and Technology and the Future Development of Societies: International Workshop Proceedings 2008, 10-13, (2008).

32. Sobouti, Y., "Dark Companion of Baryonic Matter", arXiv:0810.2198v1 [gr-qc], 1-4, (2008).

33. Sobouti, Y., "Review of Cosmic Anger: Abdus Salam — the First Muslim Nobel Scientist", MAA Online (The Mathematical Association of America), Publisher: Oxford University Press, ISBN: 9780199208463, 1-305, (2008).

34. Sobouti, Y., “a f(R) Gravitation for Galactic Environments” in THE ELEVENTH MARCEL GROSSMANN MEETING On Recent Developments in Theoretical and Experimental General Relativity, Gravitation and Relativistic Field Theories, Edited by Hagen Kleinert, Robert T Jantzen, Proceedings of the MG11 Meeting on General Relativity. Held 23-29 July 2006 in Berlin, Germany, Published by World Scientific Publishing Co. Pte. Ltd., 2008. ISBN: 9789812834300, 1230-1232, (2008).

35. Dadashi, N., Safari, H., Nasiri, S., Sobouti, Y., “Exact solutions for standing kink modes of the longitudinally stratified coronal loops”, Solar Physics, arXiv:0802.1322v1 [astro-ph], 1-10, (2008).

36. Rahvar, S., Sobouti, Y., “An Inverse f(R) Gravitation for Cosmic Speed up, and Dark Energy Equivalent”, Mod.Phys.Lett.A, 23: (23), 1929-1937, (2008).

37. Ter-Kazarian, G. T., Sobouti, Y., "An Extended Phase-Space Stochastic Quantization of Constrained Hamiltonian Systems", J. Phys. A: Math. Theor., 41: (31), 315303-1-315303-8, (2008).

38. Etemad, Sh., Sobouti, Y., "Trends in Basic Sciences in Contemporary Iran: Growth and Structure of Mainstream Basic Sciences", In Science and Technology and the Future Development of Societies, Editor: Glenn Schweitzer, National Research Council of the National Academies, the National Academies Press, Washington, D. C., 24-30, (2008).

39. Sobouti, Y., "Understanding others the science way", Proceedings of the Workshop on "Science the Gateway to Understanding, Tehran, October 2008", 37-43, (Editors: Glenn Schwitzer and Yousef Sobouti, The National Academies Press, Washington, D.C., 2008).

40. Saffari, R., Sobouti, Y., "Erratum An f(R) gravitation for galactic environments", A & A, 472: (3), 833-833, (2007).

41. Sobouti, Y., "Astronomy in Iran", Proceedings of the International Astronomical Union 2(SPS5), August 2007, 147-148, (2007).

42. Sobouti, Y., "An f(R) Gravitation for Galactic Environments", Galaxy Evolution Across the Hubble Time, Edited by F. Combes and J. Palous, Proceedings of the International Astronomical Union 2, IAU Symposium No.235, held 14-17 August, 2006 in Prague, Czech Republic. Cambridge: Cambridge University Press, 2007, 138-138, (2007).

43. Sobouti, Y., "An f(R) Gravitation for Galactic Environments", Astron. & Astrophys. (A&A), 464: (3), 921-925, (2007).

44. Nasiri, S., Safari, H., Sobouti, Y., "Damping of MHD Waves as Heating Mechanism of Solar Corona", Solar and Stellar Physics Through Eclipses ASP Conference Series, Vol. 370,

proceedings of the conference held 27-29 March, 2006 at Ankara University, ÖRSEM Campus, Side, Antalya, Turkey. Edited by O. Demircan, S. O. Selam, and B. Albayrak. San Francisco, 370, 68-73, (2007).

45. Safari, H., Nasiri, S., Sobouti, Y., "Fast Kink Modes of Longitudinally Stratified Coronal Loops", Astron. Astrophys. (A&A), 470, 1111-1116, (2007).

46. Sobouti, Y., "Trends in Basic Sciences in Contemporary Iran: The Growth and Cognitive Structure of Mainstream Basic Sciences", To appear in the proceedings of the "Interacademy Workshop on Science & Technology and the Future Development of Societies", Fondation des Treilles, Nice, June 26 - July 1, (2006).

47. Sobouti, Y., "An f(R) Gravitation for Galactic Environments", Proceedings of the International Astronomical Union, Volume 2, Issue S238 (Black Holes from Stars to Galaxies – Across the Range of Masses), Published online by Cambridge University Press: 01 August 2006, 451-452, (2006).

48. Sobouti, Y., "The Morality of the Exact Sciences", To appear in the proceedings of the "Interacademy Workshop on Science & Technology and the Future Development of Societies", Fondation des Treilles, Nice, June 26 - July 1, (2006).

49. Safari, H., Nasiri, S., Sobouti, Y., "Oscillations of longitudinally density stratified coronal loops", Astronomy & Astrophysics, arXiv:astro-ph/0605566v2, 1-6, (2006).

50. Sobouti, Y., "An f(R) gravitation instead of dark matter", Astron. & Astrophys. (A&A), (2006).

51. Sobouti, Y., "The Effect of Density Stratification on the Modal Structure of Solar Coronal Loops", 26th meeting of the IAU, Joint Discussion 3, 16-17 August, 2006, Prague, Czech Republic, JD03, 45-45, (2006).

52. Sobouti, Y., "Revised Dynamics or Dark Matter in Galactic Scales?", Edited by W. Sutantyo; P.W. Premadi; P. Mahasena; T. Hidayat and S. Mineshige, The 9th Asian-Pacific Regional IAU Meeting, held in Nusa Dua, Bali, Indonesia, 26-29 July 2005. ISBN: 979-3507-63-2, Publisher: Institut Teknologi Bandung Press, 2006, 218-218, (2006).

53. Safari, H., Nasiri, S., Karami, K., Sobouti, Y., "Resonant Absorption in Dissipative Flux Tubes", Astron. & Astrophys. (A&A), 448: (1), 375-378, (2006).

54. Nasiri, S., Sobouti, Y., Taati Asil, F., "Phase Space Quantum Mechanics – Direct", J. Math. Phys., 47: (9), 092106-1-092106-15, (2006).

55. Sobouti, Y., "Alternative Dynamics or Dark Matter", The 9th Asian Pacific Reginal IAU Meeting (APRIM 2005), July 26-29, Bali, Indonesia, (2005).

56. Sobouti, Y., "Dynamics of Compact Objects", Proceedings of 10th IASBS Conference on Astronomy, Feb. (2005).

57. Sobouti, Y., "Dark matter or the other dynamics", Iranian Journal of Physics Research, 5: (3), 113-119, (2005).

58. Sobouti, Y., Karami, K., Nasiri, S., "Flux Tube Oscillations and Coronal Heating", IAU 8th Asian-Pacific Regional Meeting, 1, 409-412, (2003).

59. Safari, H., Sobouti, Y., "An Exact Property of Small Oscillations of Rotating Stars", in Solar and Solar-Like Oscillations: Insights and Challenges for the Sun and Stars, 25th meeting of the IAU, Joint Discussion 12, 18 July 2003, Sydney, Australia, (2003).

60. Karami, K., Nasiri, S., Sobouti, Y., "Normal Modes of Magnetic Flux Tubes and Dissipation", Astron. & Astrophys. (A&A), 396: (3), 993-1002, (2002).

61. Sobouti, Y., "Symmetries and Eigensolutions of Liouville's Equation, in Group Theoretical Methods in Physics", Joint Institute for Nuclear Research in press, (2001).

62. Sobouti, Y., Rezania, V., "The r-modes of rotating fluids", Astron. & Astrophys., 375: (2), 680-690, (2001).

63. Sobouti, Y., Rezania, V., "The R-Modes of Rotating Fluids", J. Royal Astron. Soc. Canada, 95: (4), 155-, (2001).

64. Sobouti, Y., "Symmetries and eigensolutions of Liouville's equation", Proceedings, 23rd International Colloquium on Group Theoretical Methods in Physics (GROUP 23): Dubna, Russia, July 31-August 5, 2000, 569-575, (2000).

65. Sobouti, Y., "Eigensolutions of Antonov's Equation" in Stellar Dynamics: From Classic to Modern, Proceedings of the International Conference held in Saint Petersberg, August 21-27, 379-384, (2000).

66. Sobouti, Y., Rezania, V., "Liouville's Equation in Post Newtonian Approximation II. The Post Newtonian Modes", Astron. Astrophys., 345: (3), 1115-1122, (2000).

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68. Rezania, V., Sobouti Y., "Integrals and static solutions of general relativistic Liouville's equation in post Newtonian approximation", arXiv:astro-ph/9804120, 1-16, (1998).

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72. Jalali, M. A., Sobouti, Y., "Some Analytical Results in Dynamics of Spheroidal Galaxies", Celest. Mech. Dyn. Astr., 70: (4), 225-270, (1998).

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76. Dehghani, M. H., Sobouti, Y., "Dynamical Group of Liouville's Equation for Quadratic Potentials", Astron. Astrophys., 299, 293-296, (1995).

77. Samimi, J., Sobouti, Y., "On The Stability and Normal Modes of Polytropic Stellar Systems Using the Symmetries of Linearized Liouville's Equation", Astron. Astrophys., 297: (3), 707-716, (1995).

78. Sobouti, Y., Nasiri, S., "A Canonical Quantization in Phase Space Frontiers in Theoretical Physics", Turkish. J. phys., 19: (1), 458-464, (1995).

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80. Sobouti, Y., "Astronomy in Iran", Suppl. J. Astrophys. Astr., 16, 469-, (1995).

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83. Sobouti, Y., Nasiri, S., "A PHASE SPACE FORMULATION OF QUANTUM STATE FUNCTIONS", Int. J. Mod. Phys. B, 7: (18), 3255-3272, (1993).

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۱۷۸. ثبوتی، ی.، «چگونه می‌توان به افغانستان کمک کرد»، چهره‌های ماندگار: دکتر یوسف ثبوتی، چاپ اول، ۶۱-۵۸، ۱۳۸۳

۱۷۹. ثبوتی، ی.، «دانشگاه‌ها چگونه متاع خود را به بهایش عرضه کنند»، نامه فرهنگستان علوم جمهوری اسلامی ایران، شماره ۲۱، تابستان ۱۳۸۲

۱۸۰. ثبوتی، ی.، «دانشگاه‌ها چگونه متاع خود را به بهایش عرضه کنند»، مجموعه مقالات چهل و هفتمین نشست رؤسای دانشگاه‌ها، ۴۰۶-۳۹۹، ۱۳۸۱

۱۸۱. ثبوتی، ی.، «تاثیر متقابل سنت و توسعه علمی بر یکدیگر»، کنگرهٔ راهبردهای توسعهٔ علمی ایران، تهران، اردیبهشت ۱۳۸۰

۱۸۲. ثبوتی، ی.، «تنگناهای اجتماعی و فرهنگی آموزش و پژوهش کشور»، آموزش مهندسی ایران، پیاپی ۵، ۲۹-۲۳، بهار ۱۳۷۹

۱۸۳. ثبوتی، ی.، «بار فرهنگی دانش‌ها و فناوری‌های نوین»، مجموعه مقالات همایش علم و فناوری- آینده و راه‌بردها، انتشارات مرکز تحقیقات استراتژیک، جلد۱، صفحات ۴۴-۴۲، ۱۳۷۹

۱۸٤. ثبوتی، ی.، «محمد عبدالسلام (۱۳۰۴- ۱۳۷۵)»، مجله فیزیک، مرکز نشر دانشگاهی، ۹۷- ۹۶، ۱۳۷۵

۱۸۵. ثبوتی، ی.، «نوسانات آزاد اجرام زمین گونه»، پژوهش فیزیک ایران، سال یکم شماره ۱، زمستان ۱۳۷۴

۱۸٦. ثبوتی، ی.، «به یاد چاندراسکار»، مجله فیزیک، مرکز نشر دانشگاهی، رفتگان، ۱۳۳- ۱۳۲، تابستان ۱۳۷۴

۱۸۷. ثبوتی، ی.، «در حاشیه مقام علم در کشور ما»، نامه فرهنگ، شماره ۱۶، ۱۵۸ – ۱۵۹، ۱۳۷۳

۱۸۸. ثبوتی، ی.، «برگی از شاهنامه حکیم یوسف ثبوتی»، ثبوتی‌نامه، یادنامه استاد یوسف ثبوتی، انجمن فیزیک ایران- ۹۹ - ۹۸، ۱۳۷۱

- **Books (Publications)**

1. Thermodynamics and Statistical Mechanics, (2023), (Revisions and additions are in progress).

2. Basic Sciences of Zanjan: the story of the foundation of the Institute for Advanced Studies in Basic Sciences, narrated by Y. Sobouti, the founder [by Mandana Farhadian], (2022), Nashre Ney publication, Tehran, Iran.

3. Relativity: Special and General (a graduate-student textbook in Persian), Iran University Press, 2018.

4. Warmed Earth: What has the climate of the 21st Century to offer, Gita Shenasi Press, Tehran, (a book on climate change for Persian speaking communities), 2011.

5. Thermal physics (Book by Philip M. Morse), translation (1993), Nashre Daneshgahi Press, Iran.

6. Stellar Evolution (by Jack Meadows), translation (1984), Dena Press, Iran

- **Books (Editor)**

1. ICRANet-Isfahan Astronomy Meeting: From the Ancient Persian Astronomy to Recent Developments in Theoretical and Experimental Physics, Astrophysics and General Relativity, Editors: R. Ruffini, Y. Sobouti and S. Shakeri, Cambridge Scientific Publishers, 186pp, ISBN 978-1-908106-88-9, (2024).

2. ICRANet-Isfahan Astronomy Meeting: From the Ancient Persian Astronomy to Recent Developments in Theoretical and Experimental Physics, Astrophysics and General Relativity, Journal of the Eurasian Astronomical Society, Editors: R. Ruffini, Y. Sobouti and S. Shakeri, Cambridge Scientific Publishers,170 pp, ISBN 978-1-908106-80-3, (2023).

3. Commitments of the Islamic Republic of Iran to Climate Change. (2017). (2015 Paris Conference), on the order of the Researchers Support Fund, Letter of the Academy of Sciences, Guest Editor, Iran.

4. Science the Gateway to Understanding, Proceedings of the Workshop on, Tehran, October 2008, Editors: Glenn Schweitzer and Yousef Sobouti, The National Academies Press, Washington, D.C. (2008).

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- **Conferences (recent)**

  - International Coordinating & Organizing Committee of Seventeen Marcel Grossmann Meeting, The 'Gabriele d'Annunzio' University, ICRANet and Aurum, Pescara, Italy, Jul 7-12, 2024

  - Scientific Committee Member of 5th International Conference on Physics, Mathematics, and Computer Science, Mustansiriyah University, Baghdad, Iraq, April 22-23, 2024

  - Scientific Commitee Member of 17th National Conference on Astronomy and Astrophysics of Iran, Shahid Beheshti University, 2024

- Scientific Committee Member of 8th Regional Conferences on Climate Change and Global Warming, Center for Research in Climate Change and Global Warming, IASBS**,** 2023
- Scientific Committee Member of 7th Regional Conferences on Climate Change and Global Warming, Center for Research in Climate Change and Global Warming, IASBS**,** 2022
- Scientific Committee Member of ICRANet-ISFAHAN Astronomy Meeting, November 2021
- Scientific Committee Member of 6th Regional Conferences on Climate Change and Global Warming, Center for Research in Climate Change and Global Warming, IASBS**,** 2021
- International Coordinating Committee of Sixnteen Marcel Grossmann Meeting, Virtual Meeting, July 5-10, 2021
- Scientific Committee Member of 23rd National Meetings on Research in Astronomy, IASBS, 2020

- **Major contributions to institutional developments**
  - Responsible for the initial conception and realization of Biruni Observatory, Shiraz University, Shiraz, Iran 1971-1975, and Director of the Observatory, 1975-1980
  - Responsible for the creation and development of graduate studies in physics (M.Sc., 1967 and Ph.D., 1986), Shiraz University, Shiraz, Iran
  - Responsible for the initial conception and creation of Institute for Advanced Studies in Basic Sciences, Gava Zang, Zanjan, Iran, 1991, Director, 1991-2010
  - Responsible for the initial conception and creation of Abdul - Rahman Sufi College (a private 1st degree college science and humanity), 2004, Head of the Board of Trustees, 2004 - present
  - Founding member of the Physical Society of Iran, 1983-present
  - Founding member of the Astronomical Society of Iran, 1987-present
  - Founding member of the Iranian Society of Ethics in Science and Technology, 2004-present

- **Memberships and fellowships in societies and scientific organizations**
  - Founding member and member of the Board of Directors of the Physical Society of Iran, 1983-1988, President, 1989-1991 and 1996-2000
  - Founding member of the Astron. Soc. of Iran, 1987, President 1987-1993 and 1996-1999
  - Member of the American Astronomical Society, 1968-2002
  - Member of the International Astronomical Union, Commissions 28, 35, 1969 present
  - Founder of Birouni Observatory, Shiraz, Iran, 1971
  - Iranian Journal of Science and Technology, Board of Advisors, 1971-1976, Board of Editors 1983 -1990

- Iranian Journal of Physics, Board of Advisors, 1987 - present
- Member of the Third world Academy of Science, 1987 - present
- Member of the Academy of Sciences of Iran, 1989 - present
- Member of the Scientific Council, International Center for Theoretical Physics, Trieste, Italy, appointed by UNESCO and IAEA, 1989-1992
- Founder of Institute for Advanced Studies in Basic Sciences, Zanjan, Iran 1991
- Member of Board of Trustees of The Regional Library of Science and Technology, appointed by the Ministry of Culture and Higher Education of Iran, 1991-1998
- Member of the Board of Trustees of the University of Medical Sciences of Zanjan, 2004
- Member of Technical Advisory Committee of Commission on Science and Technology for Sustainable Development in the South (COMSATS), 2004
- Member of the International Advisory Committee, Marcel Grossmann Meetings, a la Sapiensa-based (Rome, Italy) annual conference in Honor of Marcel Grossman, the mathematician who helped Einstein to formulate his General Relativity, 2006 – present
- Founder of Sufi School of Business, a graduate school, stationed in Zanjan, in progress since 2015
- Journal of the Eurasian Astronomical Society, Astronomical and Astrophysical Transactions (AapTr), Vol. 33, No. 3., Cambridge Scientific Publishers, Coll. «Astronomical and Astrophysical Transactions», Guest Editor, 2022

II b Work with Students

II c Diploma thesis supervision

- Over 50 students, between 1964 to 1990
- After 1990 to 2018:

Supervision:

1. Mehdi Haghi, MSc, Thesis title: “Symmetries of the Liouville equation for the simple coordinate potential”, Shiraz University, Graduation date: 1990
2. Amir Hosein Fariborz, MSc, Thesis title: “Outdoor synchronous oscillator”, Shiraz University, Graduation date: 1990
3. Mansour Haghighat, MSc, Thesis title: “Eigenvalues of Liouville operator functions with simple coordinate potential”, Shiraz University, Graduation date: 1990
4. Mohammad Ali Hoseinpour Feizi, MSc, Thesis title: “Chaos in simple quantum systems”, Shiraz University, Graduation date: 1990

5. Ali Mohammad Jamilzadeh, MSc, Thesis title: “Chaos in classical dynamical systems”, Shiraz University, Graduation date: 1990

6. Sadollah Nassiri Gheydari, PhD, Thesis title: “Cannon formulation of quantum statistical mechanics”, Shiraz University, Graduation date: 1992

7. Mohammad Hosein Dehghani, PhD, Thesis title: “Liouville Equation Symmetry Group”, Shiraz University, Graduation date: 1992

8. Javad Tahmasebi Birgani, PhD, Shiraz University, Graduation date: 1992

9. Hasan Ranjbar Asgari, MSc, Thesis title: “Spherical solutions of Brans-Dicke equations”, Shiraz University, Graduation date: 1994

10. Hamid Reza Khalesifard, PhD, Thesis title: “Two wave mixing as a new method for measurement of nonlinear refractive index”, Shiraz University, Graduation date: 1996

11. Mansour Haghighat, PhD, Thesis title: “Heavy Hadron weak decay form factors”, Shiraz University, Graduation date: 1996

12. Hossein Hakimi Pajouh, MSc, Thesis title: “Phase Transition and Dynamic Exponets for Convective Motions in Nondissipative Fluids”, IASBS, Graduation date: 1995

13. Reza Alemi, MSc, Thesis title: “Quantum Behavior of Accelerated Electrons as Dissipative Quantum System”, IASBS, Graduation date: 1995

14. Malek Zareyan, MSc, Thesis title: “Dirac Equation in the Randers Metric and Hydrogen Atom in the Finslerian Formalism”, IASBS, Graduation date: 1995

15. Ali Nayeri, MSc, Thesis title: “Tethered Surfades and Space-Time: A Model for the Universe”, IASBS, Graduation date: 1995

16. Habib Gharar Khosroshahi, MSc, Thesis title: “The effect of gravitational waves on stars\”, IASBS, Graduation date: 1996

17. Mahmood Hoseini Farzad, PhD, Thesis title: “Four-wave vortex combination without approximation of slow amplitude changes and its quantum properties”, Shiraz University, Graduation date: 1996

18. Morteza Bayat, MSc, Thesis title: "Classification of Certain Plane Curves Satisfying R=f(d)" , IASBS, Graduation date: 1996

19. Hassan Firuzjahi, MSc, Thesis title: “Patterns Formation in Statistical Description of Hydrodynamical Instabilities”, IASBS, Graduation date: 1997

20. Peyman Ahmadi, MSc, Thesis title: “Long Period Magnetic Phenomena in the Sun as Hydromagnetic Mades of Oscillation”, IASBS, Graduation date: 1998

21. Mohammad Rahim Bordbar, MSc, Thesis title: “An Introduction to flame spectrophotometry”, Shiraz University, Graduation date: 1998

22. Maziyar Khosravi, MSc, Thesis title: “Boson stars in post-Newtonian approximation and poly-tropical structure”, Shiraz University, Graduation date: 1998

23. Arezoo Dianat, MSc, Thesis title: “Hydrogen Atom in Friedmann Universe”, IASBS, Graduation date: 1999

24. Vahid Rezania, PhD, Thesis title: “Normal Modes of Relativistic Systems in Postnewtonian Approxi- Mation and Thestability Curve ofr - Modes in Neutron Stars”, IASBS, Graduation date: 1999

25. Shahram Abbasi, MSc, Thesis title: “A Study of g-Modes of Oscillation of the Sun”, IASBS, Graduation date: 2000

26. Yousef Ali Aabedini, PhD, Thesis title: “Free earth oscillations”, IASBS, Graduation date: 2000

27. Ahmad Hosseini Zadeh, MSc, Thesis title: “Brightness Fluctuations in Globular Clusters”, IASBS, Graduation date: 2001

28. Kayoomars Karami, PhD, Thesis title: “Coronal Heating by Damping of MHD Waves and Third Order Effect of Rotation on Stellar Oscillations”, IASBS, Graduation date: 2003

29. Jalil Naji Damirani, MSc, Thesis title: “Mass Distribution Function for Self-Gravitating Spherical System”, IASBS, Graduation date: 2004

30. Hosein Safari, PhD, Thesis title: “Solar Coronal Plasma Heating I. Loops Oscillations and Resonant Absorption II. Nano-Flares Heating”, IASBS, Graduation date: 2006

31. Fatemeh Taati Asil, PhD, Thesis title: “Phase Space Quantum Mechanics-An Extended Phase Formalism Approach”, IASBS, Graduation date: 2006

32. Hadi Rahmani Baygi, MSc, Thesis title: “Long Term Lumitiosity Variations and Orbital Period Changes in CG CYg”, IASBS, Graduation date: 2006

33. Seyed Hossein Razizadeh, MSc, Thesis title: “A Chromospheric Activity Study of the Binary Star ER Vul Peculae”, Zanjan University, Graduation date: 2006

34. Akram Hassani Zonoozi, PhD, Thesis title: “I. Initial Mass Function: a Distinguishing Factor for Gravity Models II. The Flattening of the Mass Function of the Globular Cluster Palomar 14”, IASBS, Graduation date: 2011

35. Zohreh Ghaffari, MSc, Thesis title: “Metallicity of Starburst Galaxies in Chandra Deep Field South (CDF-S)”, IASBS, Graduation date: 2011

36. Parvin Mostafavi, MSc, Thesis title: “Physical Characteristics of Early Type Galaxies at Redshift $0.3<2<1$”, IASBS, Graduation date: 2011

37. Ehsan Moravveji, PhD, Thesis title: “Analysis of the Observational Data of the Blue Supergiant Star Rigel: An Asteroseismological Approach”, IASBS, Graduation date: 2012

38. Amir Naghavi Azad, MSc, Thesis title: “Projecting the Climate of Iran and Its Geographical Neighbours Using Regional Climate Model (RegCM)”, IASBS, Graduation date: 2013

39. Mehdi Mahmoodi, MSc, Thesis title: “Planetary Atomospheres in Solar System”, IASBS, Graduation date: 2014

40. Mahdi Yousefzadeh Soraki, MSc, Thesis title: “Automatic Identification of Supergranular Cell Boundaries”, IASBS, Graduation date: 2014

41. Roohollah Lotfi, MSc, Thesis title: “Study of the atmosphere of the planets of the solar system”, Abdolrahman Sufi Razi Higher Educational Institute, Graduation date: 2014

42. Nasim Ildartanha, MSc, Thesis title: “Reconstructing the Solar Magnetic Field by a Lagrange Multiplier Technique Subject to the Helicity Conservation”, IASBS, Graduation date: 2015

43. Rasul Darvishizadeh, MSc, Thesis title: “Forecast of Iran's climate and its geographical neighbors from 2010 to 2030 using RegCM regional model”, IASBS, Graduation date: 2015

44. Behzad Tahmasebzadeh, MSc, Thesis title: “Inflationary Cosmological Models in Scalar-Tensor Gravity “, IASBS, Graduation date: 2015

45. Zahra Ghafourizadeh, MSc, Thesis title: “The Effect of Dark Energy on Dynamics of Galaxy Clusters”, IASBS, Graduation date: 2015

46. Saeed Rajani, MSc, Thesis title: “Perturbed Metric and its Application in Cosmology”, IASBS, Graduation date: 2016

47. Mohammad Bagher Jahani Poshteh, PhD, Thesis title: “Black Holes in Horava-Lifshitz and Einsteinian Cubic Gravities: Thermodynamics, Phenomenology”, IASBS, Graduation date: 2018

Advisor:

48. Habib Gharar Khosroshahi, PhD, Thesis title: “The Photometric Plane of Galaxies”, IASBS, Graduation date: 2000

49. Iraj Gholami Ghadikolaei, MSc, Thesis title: “A New Technique to Study the Variability of the Sun and Data Analysis”, IASBS, Graduation date: 2001

50. Mahyar Madadi, PhD, Thesis title: “Lattise Boltzmann Simulation of Fluid Flow and Dispersion in Fracture Networks With Self-Affine Surface”, IASBS, Graduation date: 2002

51. Mohammad Taghi Mirtorabi, PhD, Thesis title: “Near Infrared Tio Band and Visual Photometry of Pulsating Giant and Chromospherically Active Stars”, Zanjan University, Graduation date: 2002

52. Sharareh Tavaddod, MSc, Thesis title: “Correction of Tip-Tilt Aberration with Adaptive Optics”, IASBS, Graduation date: 2003

53. Ebrahim Karimi, MSc, Thesis title: “A Study on Laser Cooling and Trapping of Neutral Atoms”, IASBS, Graduation date: 2003

54. Rozita Mohebbi, MSc, Thesis title: “Velocity Curve Analysis of the Spectroscopic Bjnary Stars”, IASBS, Graduation date: 2006

55. Narges Fathalian, MSc, Thesis title: “Investigation of Galactic Disks Rotation Curve in Modified Gravity”, IASBS, Graduation date: 2006

56. Hossein Teimoorinia, PhD, Thesis title: “Physical Properties of Distant Galaxies from Spectro-Photometric Analysis of Multi-Wavelength, Multi-Observatory Deep Surveys”, IASBS, Graduation date: 2010

57. Fateme Amirkhanlou, MSc, Thesis title: “Segmentation of Solar Coronal Image; Application of Neural Networks”, IASBS, Graduation date: 2010

58. Mostafa Rajabi Ebgha, MSc, Thesis title: “Measurement of Tree Growth Using Moire Technique”, IASBS, Graduation date: 2012

II d Other Teaching Duties

- Teacher, High school, Tabriz, Iran, 1953-1956
- Teacher, Cartographic Organization of Iran, Tehran, 1956-1958
- Teaching various physics courses, Shiraz University, 1964 - 1988
- Teaching Physics courses (such as Quantum Mechanics, Gravity, Electrodynamics, Classical Mechanics, General Relativity, Structure and Evolution of Galaxies, Climate Change and Global Warming, Special Relativity, Symmetry and Principles of Conservation and Continuity Equations, statistical mechanics, Thermodynamics), IASBS, Zanjan, 1991 to present

II e Work with Postdocs

1. “Calculate the torque applied to spherical particles, Double break in optical tweezers”, Researcher: Ibrahim Madadi, Supervisor: Prof. Yousef Sabouti, Start Date: 2013/08/23, Date of Completion: 2013/11/21, Admission of postdoctoral researcher Allameh Tabatabai Award of the National Elite Foundation.

2. “Modeling and Assessment Time Series Climate Data in National and Regional Level Using Neural Network and Comparing with IPCC Projections”, Researcher: Fereshteh Jadari, Supervisor: Prof. Yousef Sabouti, Start Date: 2014/08/23, Date of Completion: September 2015, Admission of postdoctoral researcher Allameh Tabatabai Award of the National Elite Foundation.

3. “Development and application of new Chemometric methods for the Assessment of effects of global change on natural systems from environmental monitoring and climate change data”, Researcher: Mahsa Dadashi, Supervisor: Prof. Yousef Sabouti, Start Date: 2014/05/22, Date of Completion: May 2015, Admission of postdoctoral researcher Allameh Tabatabai Award of the National Elite Foundation.

4. “Study of noncommutativity on the scalar field models and its role in accelerated expansion of the Universe”, Researcher: Heidar Sheikh Ahmadi, Supervisor: Prof. Yousef Sabouti, Start Date: 2015/09/23, Date of Completion: July 2017, Admission of postdoctoral researcher Allameh Tabatabai Award of the National Elite Foundation.

5. “Investigation of the synchronic effect of synaptic delay and oscillation frequency heterogeneity on neuronal symmetry”, Researcher: Ehsan Bolhasani, Supervisor: Prof. Yousef Sabouti and Dr. Alireza Valizadeh, Start Date: 2015/09/23, Date of Completion: October 2016, Admission of postdoctoral researcher Allameh Tabatabai Award of the National Elite Foundation.

6. “Criticality hypothesis and its relation to memory in the brain”, Researcher: Amin Mousavi, Supervisor: Prof. Yousef Sabouti and Dr. Alireza Valizadeh, Start Date: 2015/09/23, Date of Completion: May 2017, Admission of postdoctoral researcher Allameh Tabatabai Award of the National Elite Foundation.

7. “Investigation of Doppler effect and linear profiles with one-dimensional hydrodynamic model of rings (P-H) in Transition area (Moss area)”, Researcher: Edris Tajfiroozeh, Supervisor: Prof. Yousef Sabouti, Start Date: February 2017, Date of Completion: February 2019, Admission of postdoctoral researcher of Iran National Science Foundation.

8. “Investigation of Doppler effect and linear profiles with one-dimensional hydrodynamic model of rings (P-H) in Transition area (Moss area)”, Researcher: Hamed Ghasemi, Supervisor: Prof. Yousef Sabouti, Start Date: June 2017, Date of Completion: June 2018, Admission of postdoctoral researcher of the National Elite Foundation.

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

III a. Within ICRANet

1. Sientifice Commitee Member of ICRANet-ISFAHAN Astronomy Meeting, November 2021

2. The Second ICRA Network Workshop, The Chaotic Universe, Pescara, Rome, Italy, February 1999

3. Adjunct Professor, International Center for Relativistic Astrophysics Network (ICRANet), Pescara, Italy, 2015

III b. Outside ICRANet

1. IAU 13th General assembly, Prague, 1967

2. IAU Sym. on planetary nebulae, Czechoslovakia, August 1967

3. IAU 14th General Assembly, Brighton, 1972

4. Black hole astrophysics, Les Houches, August 1972

5. Summer Session on Theory Astrophysics, Trieste, August 1973

6. AAS 141st Meeting, Tuscan, December 1973

7. AAS 143rd Meeting, Rochester, August 1974

8. International School of Physics (E. Fermi), Isolated gravitating systems in General Relativity, Varenna, July 1976

9. IAU Colloquium 38, Stellar Convection, Nice, France, August 1976

10. AAS 150th Meeting, Atlanta, June 1977

11. IAU Symposium 76, Planetary Nebulae, Cornell, June 1977

12. Conference on current problems in stellar pulsation instabilities, Baltimore, June 1978

13. IAU 17th General Assembly, Montreal, August 1979

14. Third Marcel Grossmann Meeting, Shanghai, 1981 (and member of International Advisory Committee)

15. AAS 164th Meeting, Tucson, January 1985

16. IAU Symposium 123, Helio- and astro-seismology, Aarhus, Denmark, July 1986

17. IAU Symposium 126, Globular systems in galaxies, Harvard, Cambrige, August 1986

18. Guest scientist, International Center for Theoretical Physics, Trieste, Summer 1986

19. Aspen Center for Physics, Workshop on Galaxies, June 1987

20. Second Regional Conference on Mathematical Physics, Adana, Turkey, 1987

21. Visiting Fellow, International Center for Theoretical Physics, Trieste, Summer 1988

22. IAU 20th General Assembly, Johns Hopkins University, August 1988

23. Visiting fellow, International Center for Theoretical Physics, Trieste, Summer 1989

24. Fourth Regional Conference on Mathematical Physics, Tehran, Iran 1990

25. Colloquium 132, International Astronomical Union, Problems of stability and instability in stellar system, Delhi October 1990

26. Wigner symposium, Gosslar, Germany, July 1991

27. Third World Academy of Science, General Assembly, Kuwait, October 1992

28. 6th Asian Pacific Regional Meeting of the IAU, Pune, India, August 1993

29. Frontiers in Theoretical Physics, Edirne, Turkey, December 1993

30. IAU 22nd General Assembly, The Hague, August 1994

31. VII International Conference on Symmetry Methods in Physics, Dubna, Russia, 1995

32. Third World Academy of Science, 5th General Assembly, Abuja, Nigeria, Septamber 1995

33. The 7th Asian-Pacific Regional of IAU Meeting, Pusan, Korea, August 1996

34. Inter University Centre for Astronomy & Astrophysics (IUCAA), Pune, India, August 1997

35. 23rd General Assembly Meeting, IAU, Kyoto, Japan, August 1997

36. 6th General Assembly of The Third World Academy of Sciences (TWAS) and the Third Network of Scientific Organizations (TWNSO), Rio does Janerio, Brazil, September 1997

37. The Third World Academy of Sciences (TWAS), Trieste, Italy, November 1997

38. 10th General Meeting, The Third World Academy of Sciences (TWAS), Trieste, Italy, December 1998

39. 7th General Assembly, The Third World Academy of Sciences (TWAS), Dakar, Senegal, November 1999

40. International Colloquium on Group Theoretical Methods in Physics, Dubna, Russia, August 2000

41. Stellar Dynamics from Classic to Modern, San Petersburg, Russia, August 2000

42. 12th General Meeting, Third World Academy of Sciences, Tehran, October 2000

43. Canadian Astronomical Society, Annual Meeting, McMaster University, Hamilton, May 2001

44. 8th General Assembly The Third World Academy of Sciences (TWAS), New Delhi, India, October 2001

45. Potsdam University, Invited lecturer, Potsdam, Germany, March 2002

46. IAU 8th Asian-Pacific Regional Meeting, Tokyo, Japan, July 2002

47. 25th General Assembly Meeting, IAU, Sydney, Australia, July 2003

48. 9th General Assembly The Third World Academy of Sciences (TWAS), Beijing, China, October 2003

49. 15th General Meeting, Third World Academy of Sciences, Trieste, Italy, October 2004

50. National Academy of Science of Armenia and Byurakan Astrophysical Observatory, Invited Lecturer, Yerevan, Armenia, March 2004

51. IAU 9th Asian-Pacific Regional Meeting, Bali, Indonesia, July 2005

52. 16th General Meeting, Third World Academy of Sciences, Alexandria, Egypt, December 2005

53. Inter-Academy Workshop on Science & Technology and the Future Development of Societies, Invited lecturer and head of the Iranian Delegation, Nice, France, June 2006

54. 11th Marcel Grossmann Meeting, Berlin, Germany, July 2006

IV. Other

HONORS

- Recipient of Medallion for Excellence in Research, Government of Iran, 1978
- Fellow of The Third World Academy of Sciences, elected 1987
- Fellow of The Academy of Sciences of Iran, elected 1990
- Award of the Book of the Year of the Islamic Republic of Iran, 1995
- TWAS 2000 Medal Lecturer in Physical Sciences, Tehran, October 2000
- Khwarazmi Award, 2001
- The Lasting Face in Science, Tehran, October 2001
- SOBOUTI-NAMEH, A Tribute to Professor Sobouti on his Seventieth Birthday, Physical Society of Iran, ISBN 964-6648-10-X, 2002
- Iranian Physics Association celebration, Called the annual physics conference in 2002 as Sobouti's conference, 2002
- Afzalipour Award, for Outstanding Research in Physics, 2005
- Islamic Development Bank, Prize in Science and Technology for Institute for Advanced Studies in Basic Sciences – Zanjan under the directorship of Prof Yousef Sobouti, 2006
- Chair of Research in Physics, Fund for Research Support in Iran, 2007

- Exemplary Professor, “Ministry of Science, Research and Technology”, 2008
- TWAS Regional Office Prize for Scientific Institution Building in Central and south Asian Region, Bangalore, 2012
- Allamah Tabtabaee Prize, as Distinguished Scientist, Tehran, 2013
- Selected scientist of the Academy of Sciences, and proposed to the President to receive the 1st degree scientific award, 2013
- Letter of the Academy of Sciences, Iran. Journal of the Academy of Sciences of the Islamic Republic of Iran. No. 3, (Summer 2018). Academy of Sciences Publications.
- Zamini-e-Asemani, Anthology of Articles in Honor of the Prestigious Scholar PROFESSOR YOUSEF SOBOUTI, The Academy of Sciences, Islamic Republic of Iran, 2019.
- The first-place winner of the Zanjan Province Book of the Year Award in the Pure Sciences, for the book “Special and General Relativity”, 2019.
- The laureate of the first National Aburihan Award in the field of Aerospace Engineering and Astronomy, 2019.
- First Rank Special Award, and honoured for “Lasting Role in the Development of Education and Research”, 34th Khwarizmi International Award, 2021
- Medal of excellence of the Iranian National Commission for UNESCO, (“In the Shade of the Sun” medal), 2021
- 1st Prof. Gharib’s Award on Basic Sciences, Iranian Association for Ethics in Science and Technology, 2022
- The 650th Bukhara Night: Yousef Sobouti Night, 05/01/2023; Unveiling the book of “Basic Sciences of Zanjan: Story of the Foundation of the Institute for Advanced Studies in Basic Sciences”, narrated by Y. Sobouti, Founder; Mandana Farhadian, Editor; Nashr e Ney, Publisher, 2023
- The 60th Anniversary of the Establishment of the Physics Department of Shiraz University and commemoration of Professor Yousef Sobouti, Shiraz University, Shiraz, 6 June 2023

Non science publications

- Trends in Basic Sciences in Contemporary Iran: Growth and Structure of Mainstream Basic Sciences", (with Sh. Etemad)In Science and Technology and the Future Development of Societies, Editor: Glenn Schweitzer, National Research Council of the National Academies, the National Academies Press, Washington, D. C., 24-30, 2008.
- The Morality of Exact Sciences, In Science and Technology and the Future Development of Societies, Editor: Glenn Schweitzer, National Research Council of the National Academies, the National Academies Press, Washington, D. C., 10-13, 2008.

- Understanding others the science way, Proceedings of the Workshop on " Science the Gateway to Understanding, Tehran, October 2008", Editors: Glenn Schwitzer and Yousef Sobouti, The National Academies Press, Washington, D.C., 2008.

- Review of Cosmic Anger: Abdus Salam — the First Muslim Nobel Scientist, the Mathematical Association of America, Online, 2008.

Lectures (2019-2024):

❖ «آمایش سرزمین»، نشست تغییر اقلیم و آینده ایران، شورای آینده نگاری، فرهنگستان علوم جمهوری اسلامی ایران، ۱۵ مهر ۱۴۰۳

❖ «فرض جرم نقطه‌ای در گرانش نیوتنی و انشتینی در تضاد با مکانیک کوانتومی و مسئول تکینگی‌هاست»، بیست‌ونهمین مدرسه آموزش ویژه فیزیک، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱۷ شهریور ۱۴۰۳

❖ The Classical Point Particle Singularity: An Illusion in GR and Elsewhere!, Seventeenth Marcel Grossmann Meeting, Pescara, Italy, 7-12 July 2024

❖ Remove point-particle concept – remove singularities from GR
  - دانشکده فیزیک دانشگاه زنجان، ۲۱ آبان ۱۴۰۳
  - دانشکده فیزیک دانشگاه تبریز، ۹ آبان ۱۴۰۳

❖ Singularities in GR stem from the classical point-particle concept، بیست و ششمین گردهمایی پژوهشی نجوم ایران: ۲۱-۱۹ خرداد ۱۴۰۳، دانشگاه تحصیلات تکمیلی علوم پایه زنجان

❖ Removing point-particle singularity from gravitational theories، (فرض نقطه ای بودن جرم و بار الکتریکی غیر کوانتمی است و تکینه‌گی می‌آفرینند. این فرض را از گرانش نیوتنی و انیشتنی خواهیم زدود)، Institute for Research in Fundamental Sciences (IPM)، SoA Weekly Seminar، چهارشنبه ۵ اردیبهشت ۱۴۰۳

❖ Remove point-particle concept – remove singularities from GR (Singularities in GR stem from the classical point-particle concept)، سمینار عمومی دانشکده فیزیک، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، دوشنبه ۳ اردیبهشت ۱۴۰۳

❖ Point particle concept the cause of singularities in non-quantum physics, Government College University Lahore, Lahore, Pakistan, 14 February 2024

❖ Point particle singularities in non-quantum physics (Here in gravitation)، هفدهمین همایش ملی نجوم و اخترفیزیک ایران، دانشگاه شهید بهشتی، ۱۱ بهمن ۱۴۰۲

❖ Muhammad Abdus Salam, Ninth Abdus Salam Memorial Lectura At LUMS, Lahore, Pakistan, 16 Feb, 2024

❖ «در خصوص تکنولوژی روز دنیا»، هشتمین همایش ملی تعامل صنعت و دانشگاه، اتاق بازرگانی و صنایع و معادن زنجان، چهارشنبه ۱۶ اسفند ۱۴۰۲

❖ «سخن ثبوتی در مرجعیت علمی»، نشست دوازدهم: مرجعیت علمی در حوزه علوم پایه و بنیادی، مرکز تحقیقات سیاست علمی کشور، هفدهم آبان ماه ۱۴۰۲

❖ A lecture on climate change education in Iran, the second international seminar on climate change education, Organized by the Office for Climate Education and the French Ministry of Education, Paris, France, 12-15 September 2023

❖ Three Arguable Concepts: point particle singularity, asymmetric action of EM on quantum wave functions, and the Left out restricted Lorentz gauge from U(1)

- دانشکده فیزیک دانشگاه تبریز، ۱۹ شهریور ۱۴۰۲
- کنفرانس فیزیک ایران ۱۴۰۲، ۶ تا ۹ شهریور ۱۴۰۲، دانشگاه اصفهان
- ECOSF and UISMS jointly hosted a Lecture on Popularising Mathematics and Science, Lecture Series on Popularising Mathematics and Science, July 25, 2023
- 28th Special School on Topics in Physics, IASBS, July 8-13, 2023
  بیست و هشتمین مدرسه آموزش ویژه فیزیک، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۲۲-۱۷ تیر ماه ۱۴۰۲
- Institute for Research in Fundamental Sciences (IPM), SoA seminars, Tehran, July 5, 2023
- 5th Zeldovich Seminar, Yerevan, June 12-17, 2023
- 4th international conference on pure sciences (ICPS), Mustansiriyah university, Baghdad, April 17, 2023
- Shahid Beheshti University, February 25, 2023
- 16th National Conference on Astronomy and Astrophysics of Iran, Yazd University, February 15-16, 2023
- 9th International Conference on Materials Science and Nanotechnology for Next Generation, Gazi University, Ankara, Turkey, September 22-24, 2022
- Shiraz University, April 12, 2022

- دانشگاه زنجان، ۱۳ تیر ۱۴۰۱
- بیست و چهارمین گردهمایی پژوهشی نجوم ایران، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۲۵ خرداد ۱۴۰۱
- سمینار عمومی فیزیک، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱ آذر ۱۴۰۰
- سمینار عمومی فیزیک، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۲۴ خرداد ۱۴۰۰

❖ Understanding Others the Science Way, Lecture Series on Popularising Mathematics and Science, ECOSF and UISMS, July 25, 2023

❖ زمین در زیر بار جمعیت و مصرف

- نهمین همایش منطقه‌ای تغییر اقلیم و گرمایش زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۲۶ و ۲۷ اردیبهشت ۱۴۰۳
- هشتمین دوره مدرسه علوم زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۴ اردیبهشت ۱۴۰۳
- هشتمین همایش منطقه‌ای تغییر اقلیم و گرمایش زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۲۷ و ۲۸ اردیبهشت ۱۴۰۲
- هفتمین دوره مدرسه علوم زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱۱ اردیبهشت ۱۴۰۲
- گردهمایی موزه‌های علوم و دانشگاهی و تغییرات اقلیمی، موزه ملی علوم و فناوری ایران، ۱۵ اسفند ماه سال ۱۴۰۱

❖ تفاهم با دیگران

- همایش سیاست‌ها و راهبردهای توسعه در نیروهای مسلح، دانشگاه افسری امام علی (ع)، ۵ شهریور ۱۴۰۲
- شب موزه ملی علوم و فناوری ایران، موزه ملی علوم و فناوری با همکاری ایکوم ایران و فرهنگستان علوم پزشکی، ۵ شهریور ۱۴۰۲
- سومین مدرسه آموزش شیمی، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱ شهریور ۱۴۰۲
- نشست اخلاق و آموزش، سلسله نشست‌های اخلاق در علوم و فناوری، انجمن ایرانی اخلاق در علوم و فناوری، ۹ خرداد ۱۴۰۱

- تغییر اقلیم و تاثیر ان بر منابع آب، اداره کل آموزش و پرورش شهر تهران، گروه درسی جغرافیا، ۲۲ دی ۱۴۰۱
- سیر علم و علم پژوهی در دنیا، دانشگاه علوم پزشکی زنجان، ۱ مهر ۱۴۰۱
- گذر از طبیعیات ارسطوئی به فیزیک امروز، بیست و هفتمین مدرسه فیزیک، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۲۱ تیر ۱۴۰۱
- گنجینه صوتی فرهنگستان علوم (پادکست)، دکتر یوسف ثبوتی، بهار و تابستان ۱۴۰۱
- گرمایش زمین و محیط زیست، ششمین مدرسه علوم زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱۶ خرداد ۱۴۰۱
- نشست اخلاق و آموزش (با حضور پرفسور ثبوتی)، انجمن ایرانی اخلاق در علوم و فناوری، ۹ خرداد ۱۴۰۱
- سخن ثبوتی به مناسبت سال جهانی علوم پایه برای توسعه پایدار ۲۰۲۲
  - سومین سمینار علوم ریاضی و چالش‌ها، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱۱ آبان ۱۴۰۱
  - دانشگاه زنجان، ۲ شهریور ۱۴۰۱
  - دانشگاه شهید بهشتی، ۱۷ اسفند ۱۴۰۰

- نکاتی در باره آب و آمایش سرزمین - فرازهایی ازاندیشه‌های گذشتگان، هفتمین همایش منطقه‌ای تغییر اقلیم و گرمایش زمین، پژوهشکده تغییر اقلیم و گرمایش زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان ، ۱۲ اسفند ۱۴۰۰
- زمین چرا گرم می‌شود
  - روز دانشجو، دانشکده علوم زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱۶ آذر ۱۴۰۰
  - وبینار شاخه زمین‌شناسی فرهنگستان علوم جمهوری اسلامی ایران، ۹ آذر ۱۴۰۰
  - سمینار عمومی، دانشکده فیزیک، دانشگاه شهید بهشتی، ۲۹ آبان ۱۴۰۰

- سخن ثبوتی برای مرکز آموزش نجوم ادیب، ۲ یادمان پروفسور احمد کیاست‌پور ، ۵ آذر ۱۴۰۰
- سخن ثبوتی در مراسم نکوداشت یونسکو، دانشگاه هنر، تهران، ۱۶ آبان۱۴۰۰
- Astronomy in Iran, an update, 2021
  - شانزدهمین همایش ملی نجوم و اخترفیزیک ایران، دانشگاه یزد، ۲۶-۲۷ بهمن ۱۴۰۱
  - کنفرانس ایکرانت-اصفهان، ۱۲ آبان ۱۴۰۰

- ابوریحان بیرونی
  - مرکز دایره‌المعارف بزرگ اسلامی (مرکز پژوهش‌های ایرانی و اسلامی)، ۱ آذر ۱۴۰۰
  - روز گرامیداشت ابوریحان بیرونی، تجلیل از پژوهشگران برجسته علوم پایه، فرهنگستان علوم جمهوری اسلامی ایران، ۲۷ آبان ۱۴۰۰

- نانوشته‌های دانش‌های تجربی
  - همایش فیزیک ۴۵، دانشگاه تبریز، ۱۰ آبان ۱۴۰۳
  - بیست و ششمین مدرسه فیزیک، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۲۳ تیر ۱۴۰۰
- گفتگو با دکتر یوسف ثبوتی پیرامون مقام والای معلم، شبکه شاد (آموزش و پرورش استان زنجان)، ۲۱ اردیبهشت ۱۴۰۰
- بار فرهنگی دانش‌ها و فناوری‌های نوین، بزرگداشت روز ملی آزمایشگاه و زادروز حکیم اسماعیل جرجانی، دانشگاه شیراز، ۲۹ فروردین ۱۴۰۰
- تعهدات جمهوری اسلامی ایران در قبالِ کنوانسیون چارچوب سازمان ملل برای تغییر اقلیم ۱ – نشست پاریس ۲۰۱۵، همایش منطقه‌ای تغییر اقلیم و گرمایش زمین، دانشگاه تحصیلات تکمیلی علوم پایه زنجان، ۱۴ اسفند ۱۳۹۹
- مطالعات آموزش عالی در ایران: تجربه زیسته دانش‌پژوهان (پرفسور یوسف ثبوتی)، هفتمین نشست از مجموعه نشست‌های الکترونیکی، ۱۹ اسفند ماه ۱۳۹۹
- سخن ثبوتی در بزرگداشت دکتر مصطفی معین، به میزبانی کتابخانه ملی و با مشارکت مؤسسه رحمان، انجمن ایرانی اخلاقی در علم و فناوری، انجمن ایرانی مطالعات فرهنگی و ارتباطات و انجمن آسم و آلرژی، ۲۸ بهمن ۱۳۹۹
- رد پای انسان صنعتی در ماجرای گرم شدن زمین، فرهنگستان علوم جمهوری اسلامی ایران، ۱۰ آذر ۱۳۹۹
- بررسی آینده دانشگاه‌ها در برنامه هفتم توسعه، پنل بیست و نهم میز آینده‌پژوهی آموزش عالی، مرداد ۱۳۹۹
- تجربه دانشگاه تحصیلات تکمیلی علوم پایه زنجان در تعامل با جامعه، مرکز تحقیقات سیاست علمی کشور، ۲۴ خرداد ۱۳۹۹

- ❖ سخنی از گذشته های آموزش عالی ایران، راه‌بردهای توسعه با محوریت آموزش عالی، هفتمین همایش پیشرفت و توسعه علمی کشور، دانشگاه خاتم، ۸ بهمن ۱۳۹۸
- ❖ Lorentz Covariance almost implies electromagnetism and more, University of Salahaddin, College of science, Department of Physics, (2017).

2023-2024 List of Publication

1. Sobouti, Y. and Sheikhahmadi H., "Remove point-mass concept-remove singularities from GR", Modern Physics Letters A, accepted Nov 28 (2024).

2. Sobouti, Y. and Sheikhahmadi H., "Point Mass Concept Cause of Singularities in GR", to be appeared in the proceedings of Seventeenth Marcel Grossmann Meeting, Pescara, Italy, (2024).

3. Sobouti, Y., "Three arguables: point particle singularity, asymmetry in EM and quantum waves, and the left out restricted Lorentz gauge from U(1), revised and abridged", *Astron. Rep.* (2023).
4. Sobouti, Y., "Three arguable concepts: point particle singularity, asymmetric action of EM on quantum wave functions, and the left out restricted Lorentz gauge from U (1)", Quantum Studies: Mathematics and Foundations, pp. 1-14, DOI: 10.1007/s40509-022-00290-0, (2023).

Sergio Torres

Position: Adjunct Professor
Period covered: January – December, 2024

I Scientific Work

Analysis of Type Ia Supernovae (SN) data aimed at detecting and characterizing potential space and red-shift anisotropies that can explain the Hubble tension problem (discrepancy between the Hubble constant values measured using SN redshift/luminosity data and derived from Cosmic Microwave Background surveys). Develop statistical techniques to test of Dark Energy models using SN data.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

1) Sebastián Rueda-Blanco, Camilo Delgado-Correal, Mario-A. Higuera-G., Sergio Torres-Arzayus, "A statistical overview of DES SN Ia light curves application to study the Hubble Tension", *CoCo 2024: Cosmology in Colombia*, Bucaramanga, Colombia. November 2024.

2) Sebastián Rueda-Blanco, Camilo Delgado-Correal, Mario-A. Higuera-G., Sergio Torres-Arzayus, "Constraining Late-Time Physics to Solve the Hubble Tension", *32nd General Assembly International Union (IAUGA 2024)*, poster ID 2915, Capetown, South Africa. August 2024.

3) Sebastián Rueda-Blanco, Camilo Delgado-Correal, Mario-A. Higuera-G., Sergio Torres-Arzayus, "Late-Time Physics constraints to Dark Energy", *Latin American Conference on Astrophysics and Relativity* (LACAR-2024), National Astronomic Observatory, Bogotá, Colombia. June 24-27, 2024

II b Work With Students

Research collaboration with the Astronomy/Astrophysics group at the Andes University (Bogotá, Colombia)

Research collaboration with the Astronomy/Astrophysics group at the National University (Bogotá, Colombia)

II c Diploma thesis supervision

Currently co-directing research work by a PhD candidate at the National University (Bogotá, Colombia):

Sebastián Rueda-Blanco, "Evaluation of a Dynamic Dark Energy model to study the Hubble rate problem"

II d Other Teaching Duties

II e. Work With Postdocs

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

III a. Within ICRANet

III b. Outside ICRANet

Astrophysics seminar, Universidad Nacional (Colombia)

IV. Other

2024 List of Publications

1) Sergio Torres-Arzayus, Camilo Delgado-Correal, Mario-A. Higuera-G., Sebastián Rueda-Blanco, "Evaluating a Sigmoid Dark Energy Model to Explain the Hubble Tension", *Astron. Nachr.*, **345**, e20240034, 2024, arXiv: 2311.05510, doi.org/10.1002/asna.20240034

2) Sergio Torres-Arzayus, "Dark Energy Constraints from Pantheon+ Ia Supernovae Data", *Astrophysics and Space Science*, **369**, 17 (2024). arXiv: 2311.04759, doi.org/10.1007/s10509-024-04282-x

Zen Vasconcellos, Cesar Augusto

Position: Full Professor/UFRGS - Adjoint Professor/ICRANet

Period covered: 2024

I Scientific Work

Research on Cosmology, Quantum Gravity, Nuclear Astrophysics

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- *Chair of the IWARA2024* - Sep 2 – 6, 2024, Machu Picchu, Peru

II b Work With Students

II c Diploma thesis supervision:

1) PhD Student Fabio Kopp (UFRGS), on "Mecanismos de reaquecimento interno em estrelas de nêutrons" (Defense: 2023)

2) PhD Student Benno Bodmann (UFSM), on "Implications of the Branch-Cut Gravitation" (Defense: 2023)

3) PhD Student Geovane Naysinger, on "Foliated Quantum Gravity", in progress

4) MhD Student Ramiro Ramos Boere de Souza, in progress

5) MhD Student João Gabriel Galli Gimenez, in progress

6) MhD Student Luisa Nadal Camargo, in progress

7) MhD Student Rodrigo Fraga da Silva, in progress

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

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

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2024 List of Publication

ARTICLES

1) Strange Stars in the Color-Flavor Locked (CFL) Phase: Masses, Radii and Deformabilities
Fábio Köpp, Jorge Ernesto Horvath, Dimiter Hadjimichef, César A. Zen Vasconcellos, Astronomische Nachrichten, 2024, e20240121

2) Repulsive Vector Couplings and Massive Strange Stars
Fábio Köpp, Jorge Ernesto Horvath, Dimiter Hadjimichef, César A. Zen Vasconcellos, Astronomische Nachrichten, 2024, e20240121

3) The Accelerating Universe in a Noncommutative Analytically Continued Foliated Quantum Gravity
César A. Zen Vasconcellos, Peter O. Hess, José A. de Freitas Pacheco, Fridolin Weber, Benno Bodmann
Classical and Quantum Gravity, 41, 2024 24, 245004

4) The Branch-Cut Quantum Gravity with a Self-coupling Inflaton Scalar Field: the Wave function of the Universe

Fridolin Weber, Peter O. Hess, Benno Bodmann, José de Freitas Pacheco, Dimiter Hadjimichef, Marcelo Netz-Marzola, Geovane Naysinger, Moisés Razeira, César A. Zen Vasconcellos
Astronomische Nachrichten, 345 2024 2-3, e230148
5) Primordial Gravitational Waves in Wheeler-DeWitt Noncommutative Linearized Branch-cut Quantum Gravity
César A. Zen Vasconcellos, Peter O. Hess, José A. de Freitas Pacheco, Fridolin Weber, Remo Ruffini, Benno Bodmann (in press)
6) Effects of a generalized uncertainty principle on the MIT bag model equation of state
Marcelo Netz-Marzola, César Augusto Zen Vasconcellos, Dimiter Hadjimichef
Astronomische Nachrichten, 345 2024 2-3, e240016
7) Noncommutative branch-cut quantum gravity with a self-coupling inflation scalar field: Dynamical equations
Peter O. Hess, Fridolin Weber, Benno Bodmann, José de Freitas Pacheco, Dimiter Hadjimichef, Marcelo Netz-Marzola, Geovane Naysinger, Moisés Razeira, César A. Zen Vasconcellos
Astronomische Nachrichten, 345 2024 2-3, e230171
8) Noncommutative branch-cut quantum gravity with a self-coupling inflation scalar field: Dynamical equations
Fridolin Weber, Peter O. Hess, Benno Bodmann, José de Freitas Pacheco, Dimiter Hadjimichef, Marcelo Netz-Marzola, Geovane Naysinger, Moisés Razeira, César A. Zen Vasconcellos
Astronomische Nachrichten, 345 2024 2-3, e230152

BOOKS

1) Cultural Astronomy in Latin America, Steven Gullberg and César Augusto Zen Vasconcellos, World Scientific Pu. Co., 2024.
2) Pulsar Astronomy China's New Facilities: Unveiling Compact Stars, Renxin Xu, Zhifu Gao, Jorge Horvath, César Augusto Zen Vasconcellos, World Scientific Pub. Co., 2024.

Lecturers

Surname Name: **Sang Pyo Kim** **Photo**

Position: Professor, Kunsan National University& APCTP (Associate Member)
Period covered: 2024.01.01– 2024.12.31

I Scientific Work

(i) Studied Hawking radiation as well as Schwinger effect in charged black holes and electromagnetic fields

(ii) Explored the QED vacuum polarization effect in supercritical magnetic fields and applied to astrophysics, such as magnetars

II Conferences and educational activities

II a Conferences and Other External Scientific Work
*Organized
(a) CosPA 2024 hosted by Ningbo University on June14 – June18, 2024 (AP CosPA Org, Ex Officio)

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

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

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

(i) 2024.06.14– 2024.07.26: visiting professor at Ningbo University, China

(ii) 2023.12.16– 2023.12.19: invited talk at BRICS-AGAC, New Delhi, India

(iii) 2023.12.19– 2023.12.22: invited talk at DAE-BRNS High Energy Physics, Varanasi, India

(iv) 2024.12.25– 2025.02.26: visiting professor at National Central University, Taiwan

2024List of Publication

(i) Chul-Min Kim, Sang Pyo Kim, "Schwinger Pair Production and Vacuum Birefringence around High Magnetized Neutron Stars," [e-Print: 2308.15830 [astro-ph.HE]] Astron.Rep. 67 (2023) Suppl 2, S122-S128

(ii) Arpan Kar, Hyomin Kim, Sang Pyo Kim, Stefano Scopel, "WIMP constraints from black hole low-mass X-ray binaries," [e-Print: 2311.16539 [hep-ph]]
JCAP 03 (2024) 030

(iii) Dong-Hoon Kim, Chul Min Kim,Sang Pyo Kim, "Quantum refraction effects in pulsar emission**,**"[e-Print: 2401.03667 [gr-qc]]Mon.Not.Roy.Astron.Soc. 531 (2024) 1, 2148-2161

(iv) Chiang-Mei Chen, Chun-Chih Huang, Sang Pyo Kim, Chun-Yu Wei, "Catastrophic emission of charges from near-extremal Nariai black holes," [e-Print: 2309.00218 [hep-th]] Phys.Rev.D 110 (2024) 8, 085020

(v) Dong-Hoon Kim, Chul Min Kim ,Sang Pyo Kim, "Strong-field QED effects on polarization states in dipole and quadrudipole pulsar emissions," Eur. J. Phys. C 84 (in press)

(vi) Chiang-Mei Chen, Chun-Chih Huang, Sang Pyo Kim, Chun-Yu Wei, "Catastrophic Emission of Charges from Near-Extremal Charged Nariai Black Holes. II. Rotation Effect," [e-Print: 2408.12343 [hep-th]](submitted to Phys. Rev. D)

(vii) Liang Liu, Sang Pyo Kim, "Gravitational and electromagnetic radiations from binary black holes with electric and magnetic charges," [e-Print: 2201.01138 [gr-qc] AIP Conf.Proc. 2874 (2024) 1, 020001

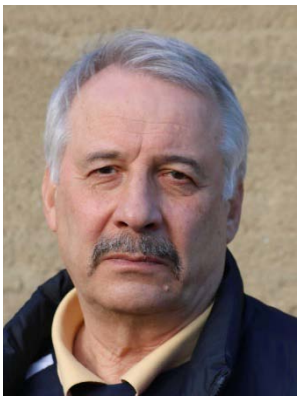
(viii) Chul Min Kim, Sang Pyo Kim, "Magnetars as laboratories for strong field QED," [e-

Print: 2112.02460 [astro-ph.HE]] AIP Conf.Proc. 2874 (2024) 1, 020013

Visiting Scientists

Surname Name

Bulanov Sergei **Photo**



Position: Head of department of Radiation Physics and Electron Acceleration, ELI-ERIC, ELI-Beamlines, Dolni Brezany, Czech Republic

Period covered: 2023-2024

I Scientific Work

Physics of ultra-high power laser interaction with matter (theory and experiment) aimed at developing novel sources of high energy charged particles (electrons and ions) and hard photons. Relativistic astrophysics and modelling of astrophysical processes under the conditions of terrestrial laboratories. Fundamental physics of nonlinear QED vacuum. Nonlinear wave theory.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

2023:

1. *Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers VSPIE. OPTICS+OPTOELECTRONICSApril 2023, Prague, Czech Republic. Invited talk: "Decay of a strong electromagnetic wave in near-critical plasmas due to the radiation loss effects: elementary process underlying the gamma flash generation"*
2. *Japan-ELI Joint Workshop onCollaboration in High Power Laser Science and Technology, April 2023, PACIFICO Yokohama, Japan; Invited talk "Beyond the horizon of petawatt physics"*
3. *Torino 2023 Fundamental Plasma Physics (June 2023, Turin, Italy), Invited talk "Gamma Ray Flash Generationin the Extreme Power Laser-MatterInteraction"*
4. *The 79 Fujiwara Seminar "Prospects for High-Field Science"Awaji Yumebutai International Conference Center, Awajishima, Hyogo, Japan, July 2023, Invited talk "On the electromagnetic wave interaction with subluminal, luminal, and superluminal mirrors"*
5. *LPHYS 23, virtually, Annual workshop, July 2023, Invited talk "On the electromagnetic wave interaction with luminal mirrors"*

2024:

1. *HEDS-2024, OPIC-2024, April 2024, Pacifico Yokohama, Yokohama, Japan. Key-note lecture "On parallels and anti-parallels(the similarities and differences)between particle acceleration in space and in laser plasma"*
2. *Lumière et Laser à Saint-Martin de Pallières, 3-5 Août 2024, France, Invited talk: "Relativistic Mirrors and Boiling Vacuum"*
3. *Physics in Intense Fields (PIF24) virtual, August 2024, Invited talk: "High Efficiency Gamma Flash Generation in the Interactionof the Super Strong Field Laser Radiation with Matter"*
4. *The first workshop on New Opportunities of Strong-Field Quantum Electrodynamics (1st NeoSFQED), 19-23 August 2024, Beijing, China. Plenary talk: "From Nonlinear Optics of Quantum Vacuumto Relativistic Catoptrics"*

5. *66th Annual Meeting of the APS Division of Plasma Physics, October 7–11, 2024; Atlanta, Georgia, USA, Invited talk: "Electron acceleration and electron-photon collision by multi-PW lasers for extreme field science"*

II b Work With Students

II c Diploma thesis supervision

Supervision of PhD thesis (Carlo Maria Lazzarini, ELI-BL and Czech Technical University in Prague) "Physics and technology of electron accelerationwith high repetition rate lasers"

II d Other Teaching Duties

II e. Work With Postdocs

Work with 7 Postdocs at ELI-BL and CVUT (P. Hadjisolomou, A. Macleod, P. Valenta, M. Matys, M. Lamac, S. Lorenz, M. Jirka) on the theory, computer simulations and experiment on high intense laser radiation interaction with plasmas.

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

III a. Within ICRANet

III b. Outside ICRANet

The ELI-BL and ICRANet have joint scientific (R&D) project "Novel Sources of Hard Photons from Relativistic Laser-Matter Interaction Driven by (Multi-) PW Lasers"

IV. Other

2023-2024List of Publication(as of today S. V. Bulanov published 2 monographs,540 scientific papers in referred journals, and 196 papers in the conference proceedings; his citation index is of 33400 and h-index=83)

1. M. Matys, J. Psikal, K. Nishihara, O. Klimo, M. Jirka, P. Valenta and S. V. Bulanov, "High-Quality Laser-Accelerated Ion Beams from Structured Targets", Photonics, 10, 862 (2023).
2. A. J. MacLeod, P. Hadjisolomou, T. M. Jeong, and S. V. Bulanov, "All-optical nonlinear Breit-Wheeler pair production with γ-flash photons", Phys. Rev. A 107, 012215 (2023).
3. M. Lamač, U. Chaulagain, J. Nejdl, and S. V. Bulanov, "Generation of intense magnetic wakes by relativistic laser pulses in plasma", Scientific Reports 13, 170113 (2023).
4. M. Jirka, P. Sasorov, and S. V. Bulanov, "Radiation from a polarized vacuum in a laser-particle collision", Phys. Rev. A 107, 052805 (2023).
5. T. M. Jeong, S. V. Bulanov, P. Sasorov, and P. Hadjisolomou, "Propagation of intense electromagnetic pulse with a small conical phase shift induced by Axicon optics", Opt. Express 31(13), 21614 (2023).
6. Y.-J. Gu, K. V. Lezhnin, S. V. Bulanov, "Collisionless relativistic magnetic reconnection driven by electron vortices in laser-plasma interaction", Fundamental Plasma Physics, 100018 (2023).

7. B. K. Russell, P. T. Campbell, Q. Qian, J. A. Cardarelli, S. S. Bulanov, S. V. Bulanov, G. M. Grittani, D. Seipt, L. Willingale, and A. G. R. Thomas, "Ultrafast relativistic electron probing of extreme magnetic fields", Phys. Plasmas 30, 093105, 122104 (2023).
8. A. J. Macleod, J. P. Edwards, T. Heinzl, B. King, and S. V. Bulanov, "Strong-field vacuum polarisation with high energy lasers", New J. Phys. 25, 093002 (2023).
9. M. Lamač, K. Mima, J. Nejdl, U. Chaulagain, and S. V. Bulanov, "Anomalous Relativistic Emission from Self-Modulated Plasma Mirrors", Phys. Rev. Lett. 131, 205001 (2023).
10. D. Horváth, G. Grittani, M. Precek, R. Versaci, S. V. Bulanov and V. Olšovcová, "Time dynamics of the dose deposited by relativistic ultra-short electron beams", Phys. Med. Biol. 68, 22NT01 (2023).
11. P. Hadjisolomou, R. Shaisultanov, T. M. Jeong, P. Valenta, S. V. Bulanov, "The Effect of Ultrastrong Magnetic Fields on Laser-Produced Gamma-Ray Flashes", Phys. Rev. Research 5, 043153 (2023).
12. S. V. Bulanov, G. M. Grittani, R. Shaisultanov, T. Z. Esirkepov, C. P. Ridgers, S. S. Bulanov, B. K. Russell, A. G. R. Thomas, "On the energy spectrum evolution of electrons undergoing radiation cooling", Fundamental Plasma Physics, 9, 100036 (2024).
13. T. Z. Esirkepov and S. V. Bulanov, "Luminal mirror", Phys. Rev. E 109, L023202 (2024).
14. P. Sasorov, G. Bagdasarov, N. Bobrova, G. Grittani, A. Molodozhentsev, and S. V. Bulanov, "Capillary discharge in the high repetition rate regime", Phys. Rev. Research 6, 013290 (2024).
15. K. V. Lezhnin, Kenan Qu, N. J. Fisch, and S. V. Bulanov, "On parallel laser beam merger in plasmas", Phys. Plasmas 31, 032114 (2024).
16. U. Chaulagain, M. Lamaˇc, M. Raclavský, K. P. Khakurel, Kavya H. Rao, K. Ta-Phuoc, S. V. Bulanov, and J. Nejdl, "Correction: ELI Gammatron Beamline: A Dawn of Ultrafast Hard X-ray Science", Photonics 11, 295 (2024).
17. C. M. Lazzarini, G. M. Grittani, P. Valenta, I. Zymak, R. Antipenkov, U. Chaulagain, L. V. N. Goncalves, A. Grenfell, M. Lamac, S. Lorenz, M. Nevrkla, A. Spacek, V. Sobr, W. Szuba, P. Bakule, G. Korn, and S. V. Bulanov, "Ultrarelativistic electron beams accelerated by terawatt scalable kHz laser", Phys. Plasmas 31, 030703 (2024).
18. K. Mima, M. Matys, Y. Sentoku, H. Nagatomo, N. Iwata, T. M. Jeong, S. V. Bulanov, "Generations of spiral laser beam, spiral electron beam and longitudinal magnetic fields in hole-boring", Fundamental Plasma Physics, 11, 100057 (2024).
19. P. Valenta, D. Maslarova, R. Babjak, B. Martinez, S. V. Bulanov, and M. Vrani´c, "Direct laser acceleration: A model for the electron injection from the walls of a cylindrical guiding structure", Phys. Rev. E 109, 065204 (2024).
20. T. M. Jeong, S. V. Bulanov, R. Shaisultanov, P. Hadjisolomou, "Intensity patterns of a focused electromagnetic spherical wave with aberration", Optics Express 32, 21946(2024).
21. T. Wei, Y. Arikawa, S. R. Mirfayzi, Y. Gu, T. Hayakawa, A. Morace, K. Mima, Z. Lan, R. Yamada, K. Yamanoi, K. Honda, S. V. Bulanov, A. Yogo, "Realizing Laser-driven Deuteron Acceleration with Low Energy Spread via In-situ D2O-deposited Target", Phys. Plasmas 31, 073903 (2024).
22. E. A. Vishnyakov, A. Sagisaka, K. Ogura, T. Zh. Esirkepov, B. Gonzalez-Izquierdo, C. D. Armstrong, T. A. Pikuz, S. A. Pikuz, W. Yan, T. M. Jeong, S. Singh, P. Hadjisolomou, O. Finke, G. M. Grittani, M. Nevrkla, C. M. Lazzarini, A. Velyhan, T. Hayakawa, Y. Fukuda, J. K. Koga, M. Ishino, K. Kondo, Y. Miyasaka, A. Kon, M. Nishikino, Y. V. Nosach, D. Khikhlukha, I. P. Tsygvintsev, D. Kumar, J. Nejdl, D. Margarone, P. V. Sasorov, S. Weber, M. Kando, H. Kiriyama, Y. Kato, G. Korn, K. Kondo, S. V. Bulanov, T. Kawachi, and A. S. Pirozhkov. "Metrology for sub-Rayleigh-length target positioning in ∼1022 W/cm2 laser–plasma experiments", High Power Laser Science and Engineering. 12, e32 (2024).
23. M. Jirka and S. V. Bulanov, "Effects of Colliding Laser Pulses Polarization on e− e + Cascade Development in Extreme Focusing", Phys. Rev. Lett. 133, 125001 (2024).
24. T. Z. Esirkepov and S. V. Bulanov, "On the electromagnetic wave interaction with subluminal, luminal, and superluminal mirrors", Phys. Lett. A 526, 129953 (2024).

25. S. Lorenz, G. M. Grittani, K. Kondo, A. Kon, Y.-K. Liu, A. Sagisaka, K. Ogura, N. Nakanii, K. Huang, A. Bierwage, S. Namba, H. Ohiro, T. A. Pikuz, J. K. Koga, P. Chen, H. Kiriyama, M. Kando, T. Zh. Esirkepov, S. V. Bulanov, and A. S. Pirozhkov, "In-vacuum post-compression of optical probe pulses for relativistic plasma diagnostics", High Power Laser Science and Engineering. 12, e53 (2024).
26. S. V. Bulanov and T. Z. Esirkepov, On the Electromagnetic Wave Reflection at the Subluminal, Luminal, and Superluminal Mirrors, J. Phys.: Conf. Ser. 2894, 012021 (2024).
27. T. M. Jeong, S. V. Bulanov, P. Valenta, P. Hadjisolomou, "On the synergic approach toward the experimental realization of interesting fundamental science within the framework of relativistic flying mirror concept", Reviews of Modern Plasma Physics 8, 9 (2024).

Behzad Eslam Panah

Position:
1-Part-time researcher in ICRANet,
2-ICRANet-Mazandaran's coordinator,
3-Faculty member of the University of Mazandaran

Period covered:

2020 up to now

I Scientific Work

I am working on various interesting topics in theoretical physics, such as complicated solutions for black holes, nonlinear electrodynamics, thermodynamics of black holes, the structure of compact objects (neutron stars, white dwarfs, hybrid stars, quark stars, and dark energy stars) in modified theories of gravity.

II Conferences and educational activities

I am working with my postdoctoral fellow on extracting features of black holes in the presence of ModMax nonlinear electrodynamics. We have published two papers in this regard, and other works are under study.

I am working with my master's student on the geometrical thermodynamics of black holes in dilaton-massive gravity. We are preparing an interesting paper on this subject.

I am teaching the following courses:
General Relativity for master students
Advanced Quantum for master students
Classical Mechanics for undergraduate students
Electromagnetic Physics for Undergraduate Students

III. Service activities

I am working as a part-time researcher for ICRANet. In this regard, I have published 10 papers with affiliation ICRANet in 2024.

I am working as a member of ICRANet-Mazandaran with some members of ICRANet-Belarus on a joint project related to compact objects in modified theories of gravity.

2021 List of Publication

1-**Editorial: Black Holes, Extended Phase Space Thermodynamics and Phase Transitions**

Chandrasekhar Bhamidipati, Mohamed Chabab, and **Behzad Eslam Panah**

Journal Ref: Frontiers in Physics 9 (2021) 706197

DOI: https://doi.org/10.3389/fphy.2021.706197

2-**Can the power Maxwell nonlinear electrodynamics theory remove the singularity of electric field of point-like charges at their locations?**

Behzad Eslam Panah

Journal Ref: Europhysics Letters (EPL) 134 (2021) 20005

DOI: https://doi.org/10.1209/0295-5075/134/20005

arXiv: https://arxiv.org/abs/2103.08343

3-**Charged 4D Einstein-Gauss-Bonnet-AdS Black Holes: Shadow, Energy Emission, Deflection Angle and Heat Engine**

Behzad Eslam Panah, Khadije Jafarzade, and Seyed Hossein Hendi

Journal Ref: Nuclear Physics B 961 (2020) 115269

DOI: https://doi.org/10.1016/j.nuclphysb.2020.115269

arXiv: https://arxiv.org/abs/2004.04058

4-**Geometrical thermodynamics and P-V criticality of charged accelerating AdS black holes**

Khadije Jafarzade, Jafar Sadeghi, **Behzad Eslam Panah**, and Seyed Hossein Hendi

Journal Ref: Annals of Physics. 432 (2021) 168577

DOI: https://doi.org/10.1016/j.aop.2021.168577

5-**Thermal Stability, P-V Criticality and Heat Engine of Charged Rotating Accelerating Black Holes**

Behzad Eslam Panah, and Khadije Jafarzade

Journal Ref: General Relativity and Gravitation. 54 (2022) 19

DOI: https://doi.org/10.1007/s10714-022-02904-9

arXiv: https://arxiv.org/abs/1906.09478

6-**The structure of hybrid neutron stars in Einstein-Λ gravity**

Tayebeh Yazdizadeh, Gholam Hossein Bordbar, and **Behzad Eslam Panah**

Journal Ref: Physics of the Dark Universe. 35 (2022) 100982

DOI: https://doi.org/10.1016/j.dark.2022.100982

arXiv: https://arxiv.org/abs/1906.09478

7- **Structure of magnetized strange quark star in perturbative QCD**

Jalil Sedaghata, Seyed Mohammad Zebarjad, Gholam Hossein Bordbara, and **Behzad Eslam Panah**

Journal Ref: Physics Letters B 829 (2022) 137032

DOI: https://doi.org/10.1016/j.physletb.2022.137032

arXiv: https://arxiv.org/abs/2204.01333

8- **Neutron stars in mimetic gravity**

Hajar Noshad, Seyed Hossein Hendi, and **Behzad Eslam Panah**

Journal Ref: Eur. Phys. J. C 82 (2022) 394

DOI: https://doi.org/10.1140/epjc/s10052-022-10358-1

arXiv: https://arxiv.org/abs/2111.03924

9- **Is the remnant of GW190425 a strange quark star?**

Jalil Sedaghat, Seyed Mohammad Zebarjad, Gholam Hossein Bordbar, **Behzad Eslam Panah**, Rahim Moradi

Journal Ref: Physics Letters B 833 (2022) 137388

DOI: https://doi.org/10.1016/j.physletb.2022.137388

arXiv: https://arxiv.org/abs/2104.00544

10- **Dark energy star in gravity's rainbow**

Aliyeh Bagheri Tudeshki, Gholam Hossein Bordbar, and **Behzad Eslam Panah**

Journal Ref: Physics Letters B 835 (2022) 137523

DOI: https://doi.org/10.1016/j.physletb.2022.137523

arXiv: https://arxiv.org/abs/2208.07063

11-**Two-dimensional Lifshitz-like AdS black holes in F (R) gravity**

Behzad Eslam Panah

Journal Ref: J. Math. Phys. 63 (2022) 112502

DOI: https://doi.org/10.1063/5.0104272

arXiv: https://arxiv.org/abs/2210.11249

12- **Charged Accelerating BTZ black holes**

Behzad Eslam Panah

Journal Ref: Fortschritte der Physik. 71 (2023) 2300012

DOI: https://doi.org/10.1002/prop.202300012

arXiv: https://arxiv.org/abs/2203.12619

13- **Black holes in dRGT massive gravity with the signature of EHT observations of M87***

Seyed Hossein Hendi, Khadije Jafarzade, and **Behzad Eslam Panah**

Journal Ref: Journal of Cosmology and Astroparticle Physics. 02 (2023) 022

DOI: https://doi.org/10.1088/1475-7516/2023/02/022

arXiv: https://arxiv.org/abs/2206.05132

14- **Stable three-dimensional (un)charged AdS gravastars in gravity's rainbow**

Horrieh Barzegar, Mohsen Bigdeli, Gholam Hossein Bordbar, and **Behzad Eslam Panah**

Journal Ref: European Physical Journal C 83 (2023) 151

DOI: https://doi.org/10.1140/epjc/s10052-023-11295-3

arXiv: https://arxiv.org/abs/2302.02433

15- **Effect of massive graviton on dark energy star structure**

Alliyeh Bagheri Tudeshki, Gholam Hossein Bordbar, and **Behzad Eslam Panah**

Journal Ref: Phys. Dark Universe. 42 (2023) 101354

DOI: https://doi.org/10.1016/j.dark.2023.101354

arXiv: https://arxiv.org/abs/2303.04813

16- **Topological phantom AdS black holes in F(R) gravity**

Behzad Eslam Panah, and Mannuel E Rodrigues

Journal Ref: European Physical Journal C 83 (2023) 237

DOI: https://doi.org/10.1140/epjc/s10052-023-11402-4

arXiv: https://arxiv.org/abs/2303.12815

17-**Three-dimensional energy-dependent C-metric: black hole solutions**

Behzad Eslam Panah

Journal Ref: Physics Letters B 844 (2023) 138111

DOI: https://doi.org/10.1016/j.physletb.2023.138111

arXiv: https://arxiv.org/abs/2307.15371

18-**Three-dimensional accelerating AdS black holes in F(R) gravity**

Behzad Eslam Panah, Mohsen Khorasani, and Jalil Sedaghat

Journal Ref: European Phyiscal Journal Plus. 138 (2023) 728

DOI: https://doi.org/10.1140/epjp/s13360-023-04339-w

arXiv: https://arxiv.org/abs/2309.02472

19-**Structure of 3D gravastars in the context of massive gravity**

Horrieh Barzegar, **Behzad Eslam Panah**, Gholam Hossein Bordbar, and Mohsen Bigdeli

Journal Ref: Physics Letters B 847 (2023) 138280

DOI: https://doi.org/10.1016/j.physletb.2023.138280

arXiv: https://arxiv.org/abs/2310.18287

20-**Effect of rainbow function on the structural properties of dark energy star**

Aalliyeh Bagheri Tudeshki, Gholam Hossein Bordbar, and **Behzad Eslam Panah**

Journal Ref: Physics Letters B 848 (2024) 138333

DOI: https://doi.org/10.1016/j.physletb.2023.138333

arXiv: https://arxiv.org/abs/2311.13138

21- **Effect of rainbow function on the structural properties of dark energy star**

A. Bagheri Tudeshki, G. H. Bordbar, **B. Eslam Panah**

Journal Ref: Physical Letter B 848 (2024) 138333

DOI: https://doi.org/10.1016/j.physletb.2023.138333

arXiv: https://arxiv.org/abs/2311.13138

22- **Thermodynamics and Optical Properties of Phantom AdS Black Holes in Massive Gravity**

Kh. Jafarzade, **B. Eslam Panah**, M. E. Rodrigues

Journal Ref: Classical and Quantum Gravity 41 (2024) 065007

DOI: https://doi.org/10.1088/1361-6382/ad242e

arXiv: https://arxiv.org/abs/2402.08704

23- **Analytic Electrically Charged Black Holes in F(R)-ModMax Theory**

Behzad Eslam Panah

Journal Ref: Progress of Theoretical and Experimental Physics 2024 (2024) 023E01

DOI: https://doi.org/10.1093/ptep/ptae012

arXiv: https://arxiv.org/abs/2402.12492

24- **Quark stars in massive gravity might be candidates for the mass gap objects**

J. Sedaghat, **B. Eslam Panah**, R. Moradi, S. M. Zebarjad, G. H. Bordbar

Journal Ref: European Physical Journal C 84 (2024) 171

DOI: https://doi.org/10.1140/epjc/s10052-024-12505-2

arXiv: https://arxiv.org/abs/2402.14040

25**- Accelerating AdS black holes in gravity's rainbow**

B. Eslam Panah, S. Zare, H. Hassanabadi

Journal Ref: European Physical Journal C 84 (2024) 259

DOI: https://doi.org/10.1140/epjc/s10052-024-12624-w

arXiv: https://arxiv.org/abs/2403.09757

26-**Thermodynamic topology of topological black hole in F(R)-ModMax gravity's rainbow**

B. Eslam Panah, B. Hazarika, P. Phukon

Journal Ref: Progress of Theoretical and Experimental Physics 2024 (2024) 083E02

DOI: https://doi.org/10.1093/ptep/ptae116

arXiv: https://arxiv.org/abs/2405.20022

27- **Thermodynamic topology of topological charged dilatonic black holes**

Bidyut Hazarika, **Behzad Eslam Panah**, Prabwal Phukon

Journal Ref: European Physical Journal C 84 (2024) 1204

DOI: https://doi.org/10.1140/epjc/s10052-024-13598-5

arXiv: https://arxiv.org/abs/2407.05325

28-**Phantom BTZ black holes**

Behzad Eslam Panah, Manuel E. Rodrigues

Journal Ref: European Physical Journal C 84 (2024) 1125

DOI: https://doi.org/10.1140/epjc/s10052-024-13485-z

arXiv: https://arxiv.org/abs/2409.12214

29- **Thermodynamics and thermal stability of BTZ-ModMax black holes**

Behzad Eslam Panah

Journal Ref: Contrib. Sci. & Tech Eng. 1(3) (2024) 25

DOI: https://doi.org/10.22080/cste.2024.5112

arXiv: https://arxiv.org/abs/2410.16346

30- **Quasinormal modes and emission rate of ModMax (A)dS black holes**

Behzad Eslam Panah, Angel Rincon, Narges Heidari

arXiv: https://arxiv.org/abs/2411.02907

Lecian Orchidea Maria Photo

Position: Assoc. Prof.
Period covered: 2024

I Scientific Work

Research activity in Theoretical Physics and Mathematics.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Seminar

26 January 2026: O.M. Lecian, Some new theorems on scarred waveforms in desymmetrised PSL(2, Z) billiards and in those of its congruence subgroups, PUC-Rio - Pontifícia Universidade Católica do Rio de Janeiro, Rio de Janeiro,
Brasil.

Participation in Conferences

March 20, 2024, Schwarzschild-spacetime blackhole with dust, 2nd International Cosmology, Astronomy and Astrophysics Conference, Paris, France- online event.

March 18-20, 2024 About some generalised Reissner-Nordstrom spacetimes, The Reissner-Nordstrom spacetime with a blackhole surrounded of dust, 2nd International Summit on Gravitation, Astrophysics and Cosmology-ISGAC2024, Florence, Italy.

II b Work With Students /

II c Diploma thesis supervision /

II d Other Teaching Duties

Assoc. Prof., Sapienza University of Rome, Rome, Italy, Experimental Physics Professorship, Department of Clinical and Modelcular Medicine.

Assoc. Prof., Sapienza Univeristy of Rome, Department of Civil
and Industrial Engineering, Fundamentals of Physics I Professorship.

II e. Work With Postdocs /

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

III a. Within ICRANet

III b. Outside ICRANet

Referee activity

Frontiers in

IV. Other

Participation in Research Consortia

The String Theory Universe COST Action
- European Cooperation in Science and Technology.

ISQG- International Society for Quantum Gravity.

WASET- World Academy of Science, Engineering and Technology.

Conference Organization

Organizing Committee Member
International Summit on Aerospace and Mechanical engineering
July 22-24, 2024, Brussels, Belgium.

Technical Committee Member/ Reviewer
7th International Conference on Physics, Mathematics and Statistics (ICPMS2024)
May, 23-25, 2024, Yichang, China.

Organizing Committee Member
2nd International Cosmology, Astronomy and Astrophysics Conference (Cosmology-2024)
March 20-21, 2024, Paris (France).

Editorial Board Committee
Quantum Research.

Guest Editor

Axioms MDPI, Special Issue 'Mathematical Physics in General Relativity
Theory'.

2024 List of Publication

Research papers:

OML, Transient Phenomena of Inviscid Accretion Gas-radiation Slim Disc in A Gravitational Potential after Adiabatic Perturbations of the Velocities, International Journal of Mathematics and Computer Research 12, 4562 (2024).

O.M. Lecian, The Schwarzschild spacetimes with a linear term and a cosmological constant, Universe MPDI 10(11), 408 (2024).

O.M. Lecian, Some Analytical Grad-Shafranov Solutions in General
Relativity: The Separation of Variables and the
azimuthal-Angle Dependence, Online Journal of Conference Proceedings, OJCP January 2024.

Book

O.M. Lecian, Non-rotating Spherically-symmetric Blackhole Spacetimes, OmniScriptum S.R.L. LAP Lambert Academic Publishing, Chisinau (2024).

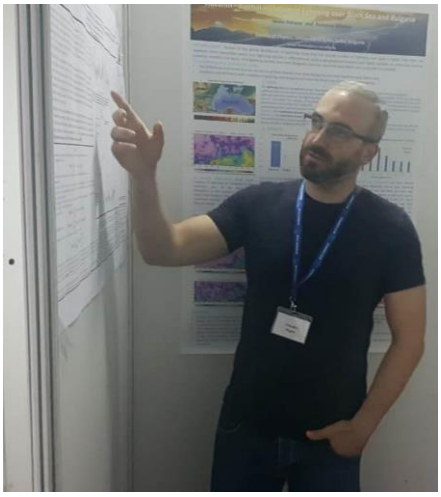
Invited contributions

OML, Alternative General-Relativity-related experiments and Particle physics, Encyclopedia MDPI (2024).

O.M. Lecian, The Kottler-Schwarzschild-Kiselev spacetimes, Encyclopedia MDPI (2024).

Surname Name

Photo



Klaudio Peqini

Position: Faculty staff at the Department of Physics, Faculty of Natural Sciences, University of Tirana
Period covered: 2021

I Scientific Work

Areas of interest:

- Modeling the geomagnetic field and its spatial-temporal variations
- Magnetohydrodynamics
- Fluid dynamics
- System dynamics
- Earth and Universe Sciences
- Mathematical modeling and numerical solutions

Current projects:

2022-2023 Participant in the project: "3D Modeling of Hydrocarbon Fields – Reserves - Indicators for Work-Oil Recovery Improvement Methods (OER)". The project was in partnership with the Department of Energy Sources of the Polytechnic University of Tirana and was supported by the National Agency of Scientific Research and Innovation (NASRI).

II Conferences and educational activities

II a Conferences and Other External Scientific Work

1. D. Prenga, **K. Peqini** , R. Osmanaj: "The study of the dynamics for electorate system by using q-distributions-a case study". Oral presentation in the International Conference of Mathematical Modeling in Physical Sciences (IC–MSQUARE 2021), held virtually but planned in Budapest, Hungary, 06-09 September 2021.
2. **K. Peqini** , D. Prenga, R. Osmanaj: "Scaling laws and phase space analysis of a geomagnetic domino model". Oral presentation in the International Conference of Mathematical Modeling in Physical Sciences (IC–MSQUARE 2021), held virtually but planned in Budapest, Hungary, 06-09 September 2021.

3. J. Hoxha, **K. Peqini** , A. Uka: "Forecasting dipolar geomagnetic field from palaeo-models and synthetic models using neural networks". Oral presentation in the Joint Scientific Assembly IAGA – IASPEI 2021, held virtually but planned in Hyderabad, India, 21-27 August 2021.
4. A. Uka, **K. Peqini** , J. Hoxha: "FORECASTING VELOCITY FIELD AT THE CORE-MANTLE BOUNDARY USING NEURAL NETWORKS". Oral presentation in the Joint Scientific Assembly IAGA – IASPEI 2021, held virtually but planned in Hyderabad, India, 21-27 August 2021.
5. R. Osmanaj, **K. Peqini** , D. Hyka: "QCDLAB2, A Learning Tool for Students in Lattice QCD". Oral presentation in the Annual International Conferences on Sciences & Engineering, held virtually but planned in Athens, Greece, 19-22 July 2021.

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

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

III a. Within ICRANet

III b. Outside ICRANet

Courses taught:

- Analytical Mechanics
- General Theory of Relativity
- Advanced Numerical Methods

IV. Other

Scientific visit

20-24.11.2021 Visit to the Climate, Atmosphere and Water Resources Institute of the Bulgarian Academy of Sciences (CAWRI-BAS), Sofia, Bulgaria.

Scientific positions:

08.2021 Representative of Albania to the International Association of Geomagnetism and Aeronomy (IAGA).

2021 List of Publication

1. 12.2021 **Peqini K.** , Prenga D., Osmanaj R., 2021. Scaling laws and phase space analysis of a geomagnetic domino model. J. Phys.: Conf. Ser. 2090 012030. Impact factor: 0.547.
2. 12.2021 Prenga D., **Peqini K.** , Osmanaj R., 2021. The analysis of the dynamics of the electorate system by using q-distribution-a case study. J. Phys.: Conf. Ser. 2090 012073. Impact factor: 0.547.
3. 12.2021 **Peqini K.** , Osmanaj R., 2021. A Computational Model of Maxwell's Distribution for Undergraduates. International Journal of Physics and Chemistry Education, 13(2), 33-45. https://doi.org/10.51724/ijpce.v13i2.14
4. 12.2021 Osmanaj R., **Peqini K.** , Hyka D., 2021. The Use of PhET Simulations in Teaching Modality in High Schools in Albania before and during COVID 19-Pandemic. European Journal of Education and Pedagogy, 2(6), 91-94.

Surname: QADIR Name: Asghar Photo

Position: Fellow, Pakistan Academy of Sciences
Period covered: Since 1992, Last permanent position was
Professor Emeritus at the National University of Science and Technology, 2012—2019.

I Scientific Work

Not clear what more is expected than is given below. All work talked of below is of 2024.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

1. Recent Advances in Pure and Applied Mathematics at Government College Women University, Faisalabad, 18—19, Dec. 2024 (Keynote Speaker, online), *Beauty and Unreasonable Applicability of Mathematics*;
2. 2nd Workshop on General Relativity, Cosmology, Astrophysics and Particle Physics at the Institute of Space Technology, Islamabad, 12 Dec. 2024 (Keynote Speaker), *The Development of General Relativity and the Cosmological Constant*;
3. One Day Winter Workshop on Lie Symmetry Analysis 2024, Symmetries of Differential, Difference & Fractional Equations and Their Applications at the Lahore School of Economics, 02 Nov. 2024, (Keynote Speaker), *Linearization of Ordinary Differential Equations*;
4. MG17, 07—12 July, 2024, *Colliding Gravitational Waves of Different Strengths Revisited*;
5. 19th Conference on Recent Advances in Mathematical Methods, Models & Applications at Lahore School of Economics, 02—03 March 2024, (Keynote Speaker), *Quantum Economics Revisited*;
6. International Conference on Relativistic Astrophysics and Cosmology at COMSATS University Islamabad, Lahore Campus, 01—01 Feb. 2024 (Keynote Speaker), *The Development of General Relativity and the Cosmological Constant*;
7. Fourth International Conference on Gravitation and Cosmology at the University of Lahore, 29—31 Jan. 2024 (Keynote Speaker), *Colliding Plane Gravitational Waves*;
8. Symmetry 2024, hybrid conference organized at Suranee University of Technology, Thailand, 22—25 Jan. 2024 (Keynote Speaker online), *Some Consequences of the Connection Between Singularity Analysis and Symmetry Analysis*.
9. One or two conferences may have been missed. I also delivered many talks and seminars and various places in Islamabad and Lahore on various topics of Physics, Mathematics and Economics.

II b Work With Students (*For the year 2024*, *work before that should be in earlier reports*)

1. Noraiz Tahir, at University of Salento, Supervisor F. De Paolis; CCo-supervisors: A.A Nucita and A. Qadir, "Astrophysical Constraints on the Baryon Fraction in Galactic Halos";

2. Kamran Qadir Abbasi at Quaid-i-Azam University, Supervisor I. Hussain, Co-supervisors A.A. Siddiqui and A. Qadir, "Scattering of Gravitational Waves and their Energy".

3. Also guided other students but the work is not completed yet, and examined the theses of students for the MS and PhD.

II c Diploma thesis supervision (as given above)

II d Other Teaching Duties (Taught a 4th semester course *Game Theory* at the Department of Mathematics, Quaid-i-Azam University, in Spring Semester of 2024 for the programme of BS Mathematics with Finance and Economics.)

II e. Work With Postdocs

Ongoing work with many ex-PhD students,

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

III a. Within ICRANet None

III b. Outside ICRANet

1. As Fellow of the Pakistan Physical Society I was actively participating in arranging its activities;

2. As Fellow of the Pakistan Academy of Sciences, I attended the General Body Meetings and performed the tasks assigned to me.

3. I also evaluated and refereed various research proposals etc. and papers submitted to journals.

IV. Other

My work of 1978 on *Quantum Economics* was noted in 2018 and that led to further interest in the idea and a journal entitled *Quantum Economics and Finance*, whose Advisory Board I am on.

2024 List of Publication

1. "Complex Connections Between Symmetry and Singularity Analysis", *Math. Comput. Appl. Special issue on Symmetry Methods for Solving Differential Equations*, A. Qadir 2024, 29, 15. https://doi.org/10.3390/mca29010015.

2. "Colliding Gravitational Waves of Different Strengths Revisited", K.Q. Abbasi and A. Qadir, *Proc. MG 17*, eds. R. Ruffini and G. Vereshchagin.

3. Some others may have been missed.

Prof. Dr. Johann Rafelski

Position: **Professor of Physics**
The University of Arizona
Period covered: **2024 (appointed 1987)**

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

II Conferences and educational activities

II a Conferences and Other External Scientific Work: I consult for the CERN laboratory in Geneva. My extramural lectures are listed here: http://www.physics.arizona.edu/~rafelski/conf.html

II b Work With Students: I supervise graduate students currently three work with me; in past 24 months 4 students obtained PhD thesis working with me.

II c Diploma thesis supervision: In 3 past years six Diploma thesis were gained by students working with me.

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

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

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

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

III b. Outside ICRANet: Member of The University of Arizona Senate and the Budget committee SPBAC

IV. Other: US Fulbright Fellow at the Wigner Institute in Budapest, member of Academia Europea, Foreign Member of Hungarian Academy of Science, Fellow of American Physical Society

2024 List of Publication

Strong screening applied to thermonuclear reactions arXiv:2406.13055
C Grayson, CT Yang, M Formanek, J Rafelski
The Astrophysical Journal ApJ 976, 31

Quarks to Cosmos: Particles and Plasma in Cosmological evolution
J Rafelski, J Birrell, C Grayson, A Steinmetz, CT Yang
arXiv preprint arXiv:2409.19031 *EPJ-ST in press (200 large pages)*

Everlasting interaction: Polarization summation without a Landau pole arXiv:2311.00891
S Evans, J Rafelski
Physical Review D 110 (3), 036012

Fermi-Dirac Integrals in Degenerate Regimes: Novel Asymptotic Expansion arXiv:2405.05287
J Birrell, M Formanek, A Steinmetz, CT Yang, J Rafelski
International Journal of Theoretical Physics 63 (7), 163

Homage to Harald Fritzsch
J Rafelski
International Journal of Modern Physics A, 2441018

Comment on "All-Loop Result for the Strong Magnetic Field Limit of the Heisenberg-Euler Effective Lagrangian"
S Evans, J Rafelski
arXiv preprint arXiv:2403.09745

Dynamic Flavor Mixing Through Transition Moments
J Rafelski, A Steinmetz, CT Yang Chapter in book: Harald Fritzsch Memorial Volume, pp269-284 World Scientic 2024 ISBN 978-981-12-9226-2

CURRICULUM VITAE

Personal informations and contact details

Last Name : RAFFAELLI
First Name : Bernard
Nationality : French

✉ Institut de Mathématiques de Bourgogne, office 407

Université Bourgogne Europe
UFR Sciences et Techniques
9, avenue Alain Savary
21078 Dijon Cedex

@ bernard.raffaelli@u-bourgogne.fr
https://braffaelli.pages.math.cnrs.fr/

Professional experience

Sept. 2023 – present — **Maître de Conférences** (Associate professor) in Theoretical Physics, Institut de Mathématiques de Bourgogne - UMR CNRS 5584 Université Bourgogne Europe, France.

2022 – 2023 — **Physics Lecturer**, ESTBB school of engineering, Université Catholique de Lyon, France.

Oct. 2020 – 2023 — **Associated member**, Institut de Mathématiques de Bourgogne - UMR CNRS 5584 Université Bourgogne Europe, France.

2016 – 2019 — **Assistant Professor** in Physics, ESME Lyon school of engineering

2015 – 2016 — **Lecturer in Physics**, ESME Lyon school of engineering

2014 – 2016 — **Associated researcher**, International Center for Relativistic Astrophysics (ICRANet), Pescara headquarter, Italy.

2013 – 2014 — **JSPS Postdoctoral Research fellow**, Yukawa Institute for Theoretical Physics, Japon.

2012 – 2013 — **Attaché Temporaire d'Enseignement et de Recherche**, SPE Laboratory (Sciences of the Environment) - UMR CNRS 6134 Université de Corse.

01/2012 – 02/2012 — **Invited researcher** by Prof. Remo Ruffini, International Center for Relativistic Astrophysics (ICRANet), Rome et Pescara headquarters, Italie.

2011 – 2012 — **Attaché Temporaire d'Enseignement et de Recherche**, Theoretical Physics group, Institut de Physique de Nice (INPHYNI) - UMR CNRS 7010 Université Côte d'Azur.

Academic background

2023 – 2027	**French qualification within the rank of Associate professors**, Section CNU n°29 (Theoretical Physics)
2012 – 2016	**French qualification within the rank of Associate professors**, Section CNU n°29 (Theoretical Physics)
10/2008 – 12/2011	**PhD in Theoretical Physics** "*Semiclassical analysis of resonance and absorption phenomena by black holes*", Theoretical Physics team, SPE Laboratory (Sciences of the Environment) - UMR CNRS 6134 Université de Corse.
2005 & 2006	**French Agrégation of Physics** Université Côte d'Azur.
2003 – 2004	**DEA (Master 2) in Theoretical and mathematical Physics**, Centre de Physique Théorique - UMR CNRS 7332 Aix-Marseille Université.
2002 – 2003	**Maîtrise (Master 1) of Fundamental Physics**, Université Côte d'Azur
2001 – 2002	**Licence of Fundamental Physics**, Université Côte d'Azur.
1999 – 2001	**French Classes Préparatoires aux Grandes Ecoles**, France.

Publications

— JL. Jaramillo, R.P. Macedo, O. Meneses-Rojas, B. Raffaelli, L. Al Sheikh, *A Weyl law for black holes*, Phys.Rev.D110 :104008, 2024.

— B. Raffaelli, *The overtone level spacing of a black hole quasinormal frequencies : a fingerprint of a local $SL(2,\mathbb{R})$ symmetry*, arXiv : 2212.05538 [gr-qc]

— B. Raffaelli, *Hidden conformal symmetry on the black hole photon sphere*, JHEP03(2022)125

— JP. Provost, B. Raffaelli, Chapter 5 : "*A quantum and historical look at the status of inertia in Physics*", dans "*Topics in Mathematical Physics, Quantum Physics and Paths Integrals*", ISTE Science Publishing, *Actes de l'école de Physique théorique de Jijel*, to appear.

— B. Raffaelli, *Strong gravitational lensing and black hole quasinormal modes : Towards a semiclassical unified description*, General Relativity and Gravitation, 48(2), 1-15, (2016)

— B. Raffaelli, *A scattering approach to some aspects of the Schwarzschild black hole*, JHEP01(2013)188

— Y. Decanini, A. Folacci, B. Raffaelli, *Resonance and absorption spectra of the Schwarzschild black hole for massive scalar perturbations : a complex angular momentum analysis*, PhysRevD.84 :084035, 2011

— Y. Decanini, A. Folacci, B. Raffaelli, *Fine structure of high energy absorption cross sections for black holes*, Class. Quantum Grav. 28 :175021, 2011

— Y. Decanini, A. Folacci, B. Raffaelli, *Unstable circular null geodesics of static spherically symmetric black holes, Regge poles and quasinormal frequencies*, Phys.Rev.D81 :104039, 2010.

— JP. Provost, C. Bracco, B. Raffaelli, *Action, Mass and Non Inertia*, p487-512, AFLB (Annals of the Louis de Broglie Foundation), Volume 32 n°4, 2007

— B. Raffaelli, JP. Provost, C. Bracco, *Un problème d'oscillateurs : la formule de Planck*, p735-739, BUP (Bulletin de l'Union des Physiciens) n°885, Juin 2006

Peer-review activities

- *International Journal of Modern Physics D*
- *Physica Scripta*
- *Classical and Quantum Gravity*
- invited referee for *SciPost Physics*

Book (in French)

January 2019 — "**Mathématiques en Physique - Concepts et outils**",
JP. Provost, B. Raffaelli et G. Vallée
Eds. Dunod, Collection Sciences Sup. (384 pages),
EAN 9782100790234.

This book introduces and illustrates, through numerous examples, the main mathematical concepts and tools found in the curricula of university-level physics programs. Through its selection of applications, it offers readers a synthetic perspective on many traditional areas of physics, such as thermodynamics, electromagnetism, optics, and continuum mechanics, while also providing insights into more recent developments, including renormalization, gauge theories, Einstein's gravity, and the cosmological constant.

Conferences, seminars and public outreach

03/06/2024	*The black hole 'photon shell'*, Annual Scientific Meeting day, Institut de Mathématique des Bourgogne, Université Bourgogne Europe, France.
12-13/10/2023	*Science Fair*, Université Bourgogne Europe, France.
15/10/2022	*Science Fair*, Université Bourgogne Europe, France.
24/06/2022	*A semiclassical description of resonant scattering : the CAM approach. Part II*, working group seminar IMB/ICB/LMB, Laboratoire de Mathématiques de Besançon, France.
03/06/2022	*A semiclassical description of resonant scattering : the CAM approach. Part I*, working group seminar IMB/ICB/LMB, Institut de Mathématiques de Bourgogne, France.
11/10/2018	*Fenêtre ouverte sur l'espace-temps*, public outreach conference at the Science Fair, ESME Lyon, France.
07/06/2018	*Pôles de Regge en Physique des trous noirs*, Physics Laboratory of Ecole Normale Supérieur de Lyon, France.
01/03/2016	*D'Einstein à LIGO : l'espace-temps dans tous ces états*, Engineer"s tuedays, ESME Lyon : public outreach.
20/12/2013	*A quantum reconsideration of inertia and its consequences on Newton gravitational constant and dark energy*, High Enregy Physics group, Yukawa Institute For Theoretical Physics, Japan.
20/11/2013	*The problem of time in Quantum Gravity, a semiclassical approach*, Yukawa Institute For Theoretical Physics, Japan.
01/07/12 - 07/07/2012	*High Energy Black Hole Physics : a Complex Angular Momentum approach*, 13th Marcel Grossmann Meeting, Stockholm, Sweden.
02/2012	Seminar at the International Center for Relativistic Astrophysics (ICRA) Roma, University of Rome « La Sapienza » et ICRANet Pescara, Italy, invited by Prof. Remo Ruffini.

10/04/2012	*From Galilean Relativity to Quantum Gravity – Four issues c, ħ, G, Λ concerning Space, Time, Matter and Inertia*, Observatoire de la Côte d'Azur, Nice.
03/02/2012	*Reggeization of Black Holes Physics*, Laboratoire J.A Dieudonné, group of Applied Mathematics, Nice.
13/01/2012	*Resonance Phenomena in High Energy Black Holes Physics*, Observatoire de la Côte d'Azur, groupe ARTEMIS, Nice.
07/10/2011	*Towards a "reggeization" of Black Holes Physics ? From fascination... to observation*, Winter Workshop "Non Perturbative Quantum Field Theory", INLN (Institut non-linéaire de Nice)
20/05/2011	*Some aspects of High Energy Black Holes Physics*, INLN (Institut Non-Linéaire de Nice)
06 - 09/07/2010	*Regge poles in Black hole physics*, 11th Symposium Frontiers of Fundamental Physics, Université de Paris 7 – Denis Diderot, Paris, France.
10/02/2010	*Trous Noirs : Résonances et interprétation semiclassique*, seminar of applied mathematics, Université de Corse.
09/04/2007	*La notion d'Action en Physique Classique et Quantique*, Institut Louis de Broglie, Paris, France.

Fatemeh Rastegarnia

Last update: January 8, 2025

Contact Information

First Name: Fatemeh

Last Name: Rastegarnia

Address:

- International Center for Relativistic Astrophysics Network (ICRANet), Piazza della Repubblica 10, Pescara 65122, Italy
- Room 901, Area A, Yard 2, Talent Apartment, Yard 2, North No.2, Zhong- guancun Street, Zhongguancun, Beijing, China

E-mail:

fatemeh.rastegarnia@icranet.org

f.rastegarnia308@gmail.com

f.rastegarnia@alzahra.ac.ir

Phone:

+39 085 23054200

+86 199 10553070

Personal Information

Date of Birth: May 10, 1985

Place of Birth: Mahshahr, Khouzestan, Iran

Citizenship: Iranian

Resident in China-Beijing

Marital status: Married

Scientific Interests

High Energy Astrophysics

Data Analysis

Artificial Intelligence

Computer skills

- Scientific Software: Wolfram Mathematica
- Programming Languages: Python (For Machine/Deep learning, scientific plots, and statistical fitting)
- Data reduction of GRBs: XSPEC, RMFIT, GTBURST and 3ML (Swift-BAT, Swift- XRT, Fermi-GBM and Fermi-LAT).

Language skills

Persian: Native

English: Excellent

Italian: Good

Academic Experience

- Associate Researcher: International Center for Relativistic Astrophysics (ICRANet), Pescara, Italy (2020–present)
- Assistant Professor: Alzahra University, Tehran, Iran (January 2023 - January 2024)

Education

PhD in Astronomy and Astrophysics, Alzahra University, Tehran, Iran
Thesis title: *Application of Deep Learning in Astrophysical Objects*, (2018-2022)
Classification: Excellent
Supervisors: Prof. Mohammad Taghi Mirtorabi
Prof. Rahim Moradi

Master of science in Physics (Particle physics and Quantum field theory), Islamic Azad University of Central Tehran Branch (IAUCTB) and Institute and Institute for Theoretical Physics and Mathematics in Iran (IPM), Tehran, Iran
Thesis title: *Application of Supersymmetric algebra in N=1,D=4*, (2010-2013)
Classification: Excellent
Thesis Advisor: Prof. Mohammad Ali-Akbari

Bachelor of science in Physics, Islamic Azad University of Tehran North Branch, Tehran, Iran (2005-2010)

High school **m**athematics/physics at Aeen Roshan Nour highschool, Tehran-Iran (2001-2005)

Conferences and educational activities

- **The Sixth Galileo-Xu Guanqi Meeting, April 19-24, 2024-Hengyang, China**
- **The Fifth Zeldovich Meeting, 12–16 June 2023, Yerevan-Armenia**
- Talk title: *Deep learning in quasar physics*
  Sixteenth Marcel Grossmann Meeting 5–10 July 2021
- Planning a Workshop on Deep learning in Astronomy
  ICRANet-ISFAHAN Astronomy Meeting, November 4, 2021, Pescara, Italy
- Member of Local Organizing Committee
  6th Bego Rencontre Summer School, 4-9 July 2022, Nice, France (hybrid)

- Talk title: *Nature of the ultra-relativistic prompt emission (UPE) phase in GRB 180720B*
  Bad Honnef Black Hole Physics School, 4–9 September 2022, Bad Honnef, Germany
- **31st Texas Symposium on Relativistic Astrophysics. 12–16 September 2022, Prague, Czech Republic**
- **National Conference on Gravity and Cosmology, 24–25 January 2018, Isfahan University of Technology (IUT), Isfahan, Iran**
- **National Conference on Gravity and Cosmology,23–24 January 2019, IPM, Tehran, Iran**
- **Advanced Data Science Summer School (ADS3),18-23 Augus 2018,IPM, Tehran, Iran**
- **Data Science workshop, spring-2019, IPM, Tehran,Iran**
- **Data Science Application in Cosmology and Astrophysics workshop, USB,IPM, spring-2019, Tehran, Iran**

References

- Prof. Remo Ruffini. Email: ruffini@icra.it
- Prof. Mohammad Taghi Mirtorabi. Email: torabi@alzahra.ac.ir
- Prof. Rahim Moradi. Email: Rahim.moradi@icranet.org
- Prof. Yu Wang Email: yu.wang@icranet.org

Interests

Nature Exploration, Running, Reading, Philosophy, Traveling

List of publications

To view the full list on Google Scholar, click here

Citations 66; h-index 5

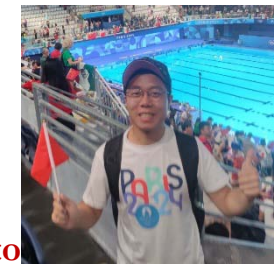
1. "The structure of the ultrarelativistic prompt emission phase and the properties of the black hole in GRB 180720B", **F. Rastegarnia**, R. Moradi, J. A. Rueda, R. Ruffini, Liang Li, S. Eslamzadeh, Y. Wang, S. S. Xue https://link.springer.com/article/10.1140/epjc/s10052-022-10750-x;
2. "Deep Learning in Searching the Spectroscopic Redshift of Quasars", **F. Rastegarnia**, M. T. Mirtorabi, R. Moradi, A. Vafaei. Sadr, Y. Wang MNRAS: https://doi.org/10.1093/mnras/stac076;
3. "FNet II: spectral classification of quasars, galaxies, stars, and broad absorption line (BAL) quasars", R. Moradi, **F. Rastegarnia**, Y. Wang , M. T. Mirtorabi
   MNRAS: https://doi.org/10.1093/mnras/stae1878;
4. "Can AI Understand Our Universe? Test of Fine-Tuning GPT by Astrophysical Data", Yu Wang, Shu-Rui Zhang, Aidin Momtaz, Rahim Moradi, **Fatemeh Rastegarnia** , Narek Sahakyan, Soroush Shakeri, Liang Li arXiv preprint arXiv:2404.10019;

5. “Ten Supernova-rise in Binary Driven Gamma-ray Bursts”, R Ruffini, CL Bianco, Liang Li, MT Mirtorabi, R Moradi,**F Rastegarnia**, JA Rueda, SR Zhang, Y Wang
arXiv preprint arXiv:2405.08231;
6. “GRB-SN Association within the Binary-driven Hypernova Model”,Remo Ruffini, Yerlan Aimuratov, Laura Marcela Becerra, Carlo Luciano Bianco, Christian Cherubini, Simonetta Filippi, Liang Li, Rahim Moradi, **Fatemeh Rastegarnia**, Brian Punsly, Jorge Armando Rueda, Narek Sahakyan, Yu Wang, She Sheng Xue
The Astrophysical Journal 955 (2), 93;
7. “Probing electromagnetic-gravitational wave emission coincidence in type I binary-driven hypernova family of long GRBs at very-high redshift”, CL Bianco, MT Mirtorabi, R Moradi, **F Rastegarnia**, JA Rueda, R Ruffini, Y Wang, M Della Valle, Liang Li, SR Zhang
Accepted/ApJ, 2024
https://arXiv preprint arXiv:2306.05855;
8. “GRB 190829A–A Showcase of Binary Late Evolution”, Yu Wang, JA Rueda, R Ruffini, R Moradi, Liang Li, Y Aimuratov, **F Rastegarnia**, S Eslamzadeh, N Sahakyan, Yunlong Zheng, **T**he Astrophysical Journal, 2022
https://doi.org/10.3847/1538-4357/ac7da3;
9. ”Deep learning in quasar physics” **F Rastegarnia**, MT Mirtorabi, R Moradi, Y Wang, A Vafaei Sadr, The Sixteenth Marcel Grossmann Meeting on Recent, 2023
https://www.worldscientific.com/doi/pdf/10.1142/9789811269776_0028;
10. "Introduction of Machine Learning for Astronomy" (Hands-on Workshop) Y Wang, R Moradi, MHZ Haghighi, **F. Rastegarnia**
https://arxiv.org/pdf/2302.06475.pdf;

GCNs

11. Y. Aimuratov, L. Becerra, C.L. Bianco, Y-C. Chen, C. Cherubini, S. Eslamzadeh, S. Filippi, M. Karlica, Liang Li, G.J. Mathews, R. Moradi, M. Muccino, G.B, Pisani, **F. Rastegarnia**, J.A. Rueda, R. Ruffini, N. Sahakyan, Y. Wang, S.S. Xue, on behalf of the ICRANet and ICRA-USTC team,'GCN CIRCULAR': https://gcn.gsfc.nasa.gov/gcn3/31056.gcn3;
12. Y. Aimuratov, C.L. Bianco, L. Li, R. Moradi, **F. Rastegarnia**, J.A. Rueda, R. Ruffini, N. Sahakyan, Y. Wang, S.S. Xue on behalf of the ICRANet team,'GCN CIRCULAR'. https://gcn.gsfc.nasa.gov/gcn/gcn3/29816.gcn3;
13. Y. Aimuratov, C.L. Bianco, L. Li, R. Moradi,**F. Rastegarnia**, J.A. Rueda, R. Ruffini, N. Sahakyan, Y. Wang, S.S. Xue on behalf of the ICRANet team,'GCN CIRCULAR'. https://gcn.gsfc.nasa.gov/gcn/gcn3/29823.gcn3;
14. GRB 220101A: The first example of a Petanova
R Ruffini, Y Aimuratov, L Becerra, CL Bianco, Y-C Chen, C Cherubini, YF Cai, S Eslamzadeh, S Filippi, M Karlica, Liang Li, GJ Mathews, R Moradi, M Muccino, **F. Rastegarnia**, JA Rueda, N Sahakyan, Y Wang, SS Xue, YF Yuan, YL Zheng, Ustc Team
https://ui.adsabs.harvard.edu/abs/2022GCN.31648....1R/abstract;

15. GRB 220101A: The most powerful GRB and BDHN I in 26 years
R Ruffini, Y Aimuratov, L Becerra, CL Bianco, Y-C Chen, C Cherubini, YF Cai, S Eslamzadeh, S Filippi, M Karlica, Liang Li, GJ Mathews, R Moradi, M Muccino, **F. Rastegarnia**, JA Rueda, N Sahakyan, Y Wang, SS Xue, YF Yuan, YL Zheng, Ustc Team
https://ui.adsabs.harvard.edu/abs/2022GCN.31465....1R/abstract;
16. GRB 221009A X-ray light-curve and the indication of TeV light-curve
Y Aimuratov, L Becerra, CL Bianco, C Cherubini, S Filippi, M Karlica, Liang Li, R Moradi, **F. Rastegarnia**, JA Rueda, R Ruffini, N Sahakyan, Y Wang, SS Xue, Icranet Team
https://ui.adsabs.harvard.edu/abs/2022GCN.32802....1A/abstract;
17. GRB 221009A: A type I BdHN of exceptional energetics
Y Aimuratov, L Becerra, CL Bianco, C Cherubini, S Filippi, M Karlica, Liang Li, R Moradi, **F. Rastegarnia**, JA Rueda, R Ruffini, N Sahakyan, Y Wang, SS Xue, Icranet Team
https://https://ui.adsabs.harvard.edu/abs/2022GCN.32780....1A/abstract;

Surname Name **Photo** 

Zhang Shurui

Position: Joint Ph.D. student
Period covered: 2022.12--

I Scientific Work

1、 Dynamics and accretion of compact objects in AGN disks: muti-messenger implications

2、 On the role of irreducible mass in black hole physics.

3、 The formation and evolutions of low-mass neutron stars

II Conferences and educational activities

II a Conferences and Other External Scientific Work

2023. 04 The Second International NIP Conference in Academy of Sciences of Albania. Roport title: *The transformation of the rotational energy of a Kerr BH.*
2023. 06 The 5th Zeldovich meeting in ARMENIA. Roport title: *The transformation of the rotational energy of a Kerr BH.*
2023. 06 The 18th Italian-Korean Symposium on Relativistic Astrophysics. Roport title: On the occurrence of stellar fission in binary-driven hypernovae.
2024. 02 Looking AHEAD to Soft Gamma-Ray Astrophysics: Prospects and Challenges. Roport title: *Electromagnetic Signatures of White Dwarf Collisions in AGN Discs.*
2024. 04 The 6th Galileo- Xu Guangqi Meeting. Roport title: *The transformation of the rotational energy of a Kerr BH.*
*2024. 07*The 17th Marcel Grossmann Meeting. Roport title: *The lightest neutron star formed from a binary system*

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

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

III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2024List of Publication

1 C. L. Bianco, M. T. Mirtorabi, R. Moradi, et al., "Probing Electromagnetic Gravitational-wave Emission Coincidence in a Type I Binary-driven Hypernova Family of Long Gamma-Ray Bursts at Very High Redshift," Astrophys. J., vol. 966, no. 2, 219, p. 219, May 2024. 2306.05855 [astro-ph.HE]. doi: 10.3847/1538-4357/ad2fa9.

2 R.Ruffini,C.L.Bianco, M. Prakapenia, H. Quevedo, J. A. Rueda, and S. R. Zhang, "The role of the irreducible mass in repetitive Penrose energy extraction processes in a Kerr black hole," arXiv e-prints (Accepted in Phys. Rev. Res.), arXiv:2405.10459, May 2024. doi: 10.48550/arXiv.2405.10459.

3 R.Ruffini,M.Prakapenia, H. Quevedo, and S. R. Zhang, "On the single versus the repetitive Penrose process in a Kerr black hole," arXiv e-prints (Accepted in PRL.), arXiv:2405.08229, May 2024. doi: 10.48550/arXiv.2405.08229.

4 S.R.Zhang,J.R.Hernandez, and R. Negreiros, "Can the central compact object in hess j1731–347 be indeed the lightest neutron star observed?" The Astrophysical Journal, vol. 978, no. 1, p. 1, 2024.

5 S.R.Zhang,Y.Luo,andY.-F. Yuan, "White dwarf collisions in AGN disks and the observational effects," Chinese Science Bulletin, 2024. doi: 10.1360/TB-2024-0603.

6 S.R.ZhangandM.Prakapenia,"The transformation of the rotational energy of a Kerr black hole," Classical and Quantum Gravity, vol. 41, no. 13, 135019, p. 135019, Jul. 2024. 10.1088/1361-6382/ad51c2. doi:

7 S.R.Zhang,Y.-F.Yuan, J.-M. Wang, and L. C. Ho, "Neutron star accretion events in AGN discs: mutimessenger implications," Mon. Not. R. Astron. Soc., vol. 532, no. 2, pp. 1330–1344, Aug. 2024. 10.1093/mnras/stae1546.

8 Y.Aimuratov,L. M.Becerra, C. L. Bianco, et al., "GRB-SN Association within the Binary-driven Hypernova Model," Astrophys. J., vol. 955, no. 2, 93, p. 93, Oct. 2023. doi: doi: 10.3847/1538-4357/ace721. arXiv: 2303.16902 [astro-ph.HE].

9 Y.Luo,X.-J. Wu, S. R. Zhang, J.-M. Wang, L. C. Ho, and Y.-F. Yuan, "White dwarf-white dwarf collisions in AGN discs via close encounters," Mon. Not. R. Astron. Soc., vol. 524, no. 4, pp. 6015–6023, Oct. 2023. doi: 10.1093/mnras/stad2188. arXiv: 2308.14449 [astro-ph.GA].

10 S.R.Zhang,Y.Luo,X.-J. Wu, J.-M. Wang, L. C. Ho, and Y.-F. Yuan, "Electromagnetic signatures of white dwarf collisions in AGN discs," Mon. Not. R. Astron. Soc., vol. 524, no. 1, pp. 940–951, Sep. 2023. doi: 10.1093/mnras/stad1855. arXiv: 2308.14458 [astro-ph.HE].

International Relativistic Astrophysics Ph. D.

Carinci Massimo

Position: PhD Student
Period covered: 2024

E-mail: carinci.massimo@libero.it

I Scientific Work

Dark matter and galactic structures

Supervisors: prof. Remo Ruffini, prof. Jorge Rueda, prof. Carlos Arguelles.

My research activity is on the RAR Model, which is a model of a semidegenerate system of fermions (sterile neutrinos) to explain the dark matter (DM) in galaxies, starting from the so-called TOV approximation in the framework of general relativity, and analyzing the numerical results (the rotation curves and the density profiles). In particular, I concentrated on the self-interacting fermionic DM, using the Relativistic Mean Field approximation, and introducing the C_v term in the original equations. So, I applied that model to the Milky Way (MW) and to the relevant case of the Bright Cluster galaxies (BCGs), taking into account the observational constraints. For the MW, I found a new compact core-diluted halo morphology, taking into account the motion of S2 and G2 around Sgr A*, but ignoring the BH hypothesis. For BCGs, the key result of this work is that the RAR model with self-interaction leads to a greater contribution of the DM in the halo. As a consequence, we have changes in the structure formation in the Universe. Moreover, this new particle-based DM halo model (always for BCGs) is in agree with the constraints on the cross section σ from N-body simulations.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

- *17th Marcel Grossmann Meeting (July 7 – 12, 2024)*

II b Work With Students

II c Diploma thesis supervision

II d Other Teaching Duties

II e. Work With Postdocs

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

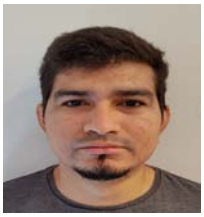
III a. Within ICRANet

III b. Outside ICRANet

IV. Other

2024 List of Publication

- *Carinci, M., (2024). "On the self-interacting dark matter in galaxies". Proceeding of the seventeenth Marcel Grossmann conference on the general relativity* (not yet published).



Lobato Ronaldo

Position: Collaborator
Period covered: 2024

I Scientific Work

II Conferences and educational activities

II a Conferences and Other External Scientific Work

1. *3er Encuentro Internacional Julio Garavito*
2. III LASF4RI for HECAP Symposium: Update of the Strategic Plan

II b Work With Students

- *Josiah Baker, master student (East Texas A&M University)*

II c Diploma thesis supervision

II d Other Teaching Duties

- *Computational physics, graduate program, UNICID (São Paulo, Brazil)*
- *Quantitative methods for decision making, undergraduate program UNICID (São Paulo, Brazil)*
- *Financial mathematics, undergraduate program UNICID (São Paulo, Brazil)*

II e. Work With Postdocs

III. Service activities

III a. Within ICRANet

3er Encuentro Internacional Julio Garavito

III b. Outside ICRANet

III LASF4RI for HECAP Symposium: Update of the Strategic Plan

IV. Other

2024List of Publication

Cosmologies in f(R, Lm) theory with non-minimal coupling between geometry and matter

IRAP Ph. D. Erasmus Mundus Students

Daniele Gregoris

Position: Teaching and Research Personnel (Associate Professor) at Jiangsu University of Science and Technology
Period covered: 1st January 2024 – 31st December 2024

I Scientific Work

- I compared and contrasted the classical versus quantum properties of a certain cosmological model whose matter-energy budget is provided by a certain canonical scalar field. The analysis of the latter part relies on the Wheeler-DeWitt equation of quantum geometrodynamics in its Born-Oppenheimer approximation; its solution has allowed for some considerations on the role of beyond scale-invariant contributions to the power spectrum in the formation of some astrophysical objects. I refer to my paper EPJC 84 (2024) 4, 352 for more details.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

II b Work With Students
II c Diploma thesis supervision
II d Other Teaching Duties

- I taught the courses of College Physics I (Mechanics and Thermodynamics) and College Physics II (Electromagnetism, Optics and Modern Physics), 40hrs each, in Spring and Fall terms respectively, for Jiangsu University of Science and Technology.
- I delivered four oral reports for master students at Jiangsu University of Science and Technology about current research trends in gravitational physics, Oppenheimer's theory of neutron stars, and cosmology.

II e. Work With Postdocs

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

III a. Within ICRANet

- I served in the International Coordinating Committee of MG17 Meeting.
- "On the uniqueness of ΛCDM-like evolution for homogeneous and isotropic cosmology in General Relativity" in the parallel session CM2 "Current status of the H_0 and growth tensions: theoretical models and model-independent constraints" of MG17.
- "Some words about gravitational entropy and Penrose's Weyl curvature conjecture" in the parallel session BH2 "Black holes in alternative theories of gravity" of MG17.

III b. Outside ICRANet

- "Some words about gravitational entropy and Penrose's Weyl curvature conjecture" at: 1. Fudan University, 2. The Institute for Fundamental Study of Naresuan University, 3. Zhejiang University of Technology, 4. Intercontinental seminars on gravity and cosmology.

- "On the uniqueness of ΛCDM-like evolution for homogeneous and isotropic cosmology in General Relativity" at: 1. Bangkok workshop on gravity and cosmology, 2. Kyoto workshop on gravity and cosmology.

IV. Other

- I have been serving as Reviewer for the American Mathematical Society (AMS) @ MathSciNet (Mathematical Reviews).
- I won the 2023 outstanding reviewer award of the journal Classical and Quantum Gravity (IOP) and since October I have been a member of the Advisory Panel of this journal.
- I have been serving as a referee also for other journals as Scientific Reports, Annals of Physics, Physica Scripta, Universe and Symmetry.
- I am a member of the national working group in Mathematical Physics GNFM (Gruppo nazionale di fisica matematica) of Italian INDAM.
- I served as an evaluator for the grant agency ANID-FONDECYT of Chile.

2024 List of Publication

On journal with referees:

- Daniele Gregoris, "Classical versus quantum features of the Berthelot cosmological model", EPJC 84 (2024) 4, 352.

Conference Proceedings:

- Daniele Gregoris, "Cosmology with interactions in the dark sector: Qualitative dynamics, singularities and applications", AIP Conf.Proc. 2874 (2024) 1, 020003; this paper has been featured in the Kudos showcase of AIP.
- Saikat Chakraborty, Daniele Gregoris, B. Mishra, "Reproducing the kinematics of the ΛCDM model under the Copernican principle and General Relativity", to appear in the proceedings of MG17.
- Daniele Gregoris, "Penrose's Weyl curvature conjecture, and Hawking-Bekenstein entropy area law", to appear in the proceedings of MG17.

Administrative, Secretarial and Technical Staff

Adamo Cristina

E mail address	cristina.adamo@icranet.org
Telephone	+39 085 23054205
Fax	+39 085 4219252
Nationality	Italian
Date and place of birth	Vibo Valentia, 12 December 1972

Work experiences

Date	09 November 2009 → present
Name of employer	ICRANet - International Center for Relativistic Astrophysics Network
	Administrative employee
Main activities and responsibilities	Administrative office: accountancy, preparing reimbursement and rewards for scientific visitors, on – line payments, analysis of bank statements.

Date	04 March 2007 → 09 October 2009
Occupation or position held	Head Administrative Office
Main activities and responsibilities	Account and budget General Account. Active and passive billing cycles. Bank settlement. Treasury management and bank relations management. RI.BA. emission. Down-payment and invoice discount management. Payment and takings management. Independent management of the main civil-fiscal fulfilments with a particular attention to the periodical settling and vat statement. General account management. Assets management. Arrangement INTRA model. Arrangement of the financial year ending. Reclassification of the budget. Management of the accounting plan. Implementation of new instruments aiming at improving the efficiency of the administrative services. Administrative management of the staff: recruitment and selection interviews, drawing up of mandatory documents (matriculation and presences books), elaboration of timesheets. Management of clients and suppliers' order. Purchase and choice of suppliers to be qualified. Prices definition, deposit and shipment management.
Name and address of employer	Solaris Srl - Manoppello (PE) - Industrial Springs Production

Date	01 April 2001 - 28 January 2004
Occupation or position held	Responsible for marketing planning
Main activities and responsibilities	Evaluation of markets perspective. Coordination and reduction of commercial plans.

	Survey of the competition sale prices Coordination of marketing plans and commercial budgets
Name and address of employer	Merker SpA - Trucks production
Date	1997 - 2000
Title of qualification awarded	Trainee at a Business Consultant
Principal subjects / occupational skills covered	Ordinary and simplified account. Fiscal fulfilments. European balance. Income tax return. Consultant office Dott. Vincenzo Micozzi - Pescara

Date	1997 - 31/03/2001
Principal subjects / occupational skills covered	Responsible for Quality Insurance (ISO UNI EN 9002) Management Assistance Purchase management Administrative and fiscal fulfilments Definition of Marketing plans and monitoring of mix marketing elements
Name and address of employer	Solaris Srl - Industrial Springs production

Date	1997 - 1997
Occupation or position held	Stageur
Main activities and responsibilities	Implementation of check systems management
Name and address of employer	Software House Polymatic - Chieti Scalo

Education and training

Date	November 1991 - 16 July 1996
Title of qualification awarded	Degree in Economics – Economics of financial middleman
Name and type of organisation providing education and training	University L.U.I.S.S. - Guido Carli – Roma – Final marks: 105/110 – Thesis: "Tax incentive for the occupational development"

Dates	1986 - 1991
Title of qualification awarded	Secondary School Degree
Name and type of organisation providing education and training	Liceo Scientifico Leonardo Da Vinci - Pescara

Dates	1997 - 2000
Title of qualification awarded	Trainee at a Business Consultant
Main Sujects	Ordinary and simplified account. Fiscal fulfilments. European balance.

	Income tax return.
Name and type of organisation providing education and training	Consultant office Dott. Vincenzo Micozzi - Pescara
Date	1998 - 1998
Title of qualification awarded	Brief Master on Tax Law
Name and type of organisation providing education and training	University D'Annunzio - Pescara
Date	1998 - 1998
Title of qualification awarded	Postgraduate Course on " European Union: institutional, juridical and economic aspects"
Name and type of organisation providing education and training	European Commission and University of Lyon: corse in Paris and Lyon. Success on final exams.
Dates	1997 - 1997
Title of qualification awarded	Expert in enterprise management
Main Subjects	Purchase and logistics, financing, administration and control, marketing, production, budget, bringing out of new products
Name and type of organisation providing education and training	Regione Abruzzo - CIFAP
Dates	1997 - 1997
Title of qualification awarded	Evaluator of Quality systems
Main subjects	Expert according to the ISO regulations. Qualification for leading controls according to the UNI EN 9002 regulations.
Personal skills and competences	
Mother tongue	Italian
English	Indipendent User
French	Basic User

Social skills and competences	Communication Ability acquired during the working experiences Aptitude to learn, adaptable to new situations, different from the known ones. Ability to work under pressure. Good aptitude to work in multicultural environment thanks to the experiences spent abroad for education or personal reasons. Team spirit
Organisational skills and competences	Innate sense of organisation both in the working place and in the management of personal and familiar life. I am considered as a reference point by the production operators.
Technical skills and competences	Mastery in quality control processes in small enterprises (I was responsible for the qualily evaluation)
Computer skills and competences	Good Knowledge of Microsoft Office (Word, Excel e PowerPoint) Very good knowledge of Team System – Gamma, Mult program Basic knowledge of graphic application Good knowledge of Internet and web search engines.

di Niccolo Cinzia

E mail address	cinzia.diniccolo@icranet.org
Telephone	+39 085 23054 219
Fax	+39 085 4219252
Nationality	Italian
Date and place of birth	Terlizzi, 23 May 1985

Work experiences

Date	01 August 2013 → present
Name of employer	ICRANet - International Center for Relativistic Astrophysics Network
Main activities and responsibilities	Secretariat Office

Date	12 June → 16 July 2013
Occupation or position held	ISTAO – Project Work
Main activities and responsibilities	Report And Presentation Of The Results Loccioni Group – Our Presence In The World: Germany, USA, China; Country Analysis: Turkey. Results, Report And Final Slide Presentation To Loccioni Managers
Name and address of employer	Loccioni Group, via Fiume 16, 60030 Angeli di Rosora, Ancona Phone +39.0731.8161 | Fax +39.0731.814.700

Date	From October 2012
Occupation or position held	Conference interpreting and translations.
Name and address of employer	OS-Card Srl – Bologna

Date	May 2012 → September 2012
Occupation or position held	Junior Export Manager
Main activities and responsibilities	Brazil country analysis. Brazilian Portuguese website translation. Company profile in Brazilian Portuguese language.
Name and address of employer	Marzoarreda – Novoli (LE)

Date	September 2011 → January 2013
Occupation or position held	Stageur
Main activities and responsibilities	Legal Office – Notary services Drafting of documents concerning: general/special power of attorney, will and testament of citizens living abroad, public acts, certificates of

	authentications, self-certifications and official certificates that can be replaced by self-certifications.
Name and address of employer	Italian General Consulate in Brazil – São Paulo Aveinda Paulista, 1963; CEP 01311-300 São Paulo (SP)
Date	October 2011 → January 2012
Occupation or position held	Italian teacher
Main activities and responsibilities	Italian teacher for native Brazilian students. Private lessons and classes. Conference interpreter for 30th São Paulo *Venice Architecture Biennial* 2012
Name and address of employer	Italian Institute of Culture in Brazil – São Paulo Avenida Higienópolis, 436; CEP 01238-000, São Paulo (SP)
Date	January → July 2011
Occupation or position held	Internship
Main activities	Editing, proofreading.
Name and address of employer	Edizioni dell'Urogallo – Literature from Portuguese-speaking countries

Education and training

Date	February → July 2013
Title of qualification awarded	Postgraduate master course in International Management
Name and type of organisation providing education and training	ISTAO – Istituto Adriano Olivetti di Studi per la gestione dell'economia e delle aziende The Masters Course in International Management prepares highly specialized students in the field of international business and trade. Organized in collaboration with ICE (Governamental Agency for the internationalization of Italian companies), Confindustria Marche (Italian Employers' federation) and the Government of the Marche Region, the Master represents one of the most important and valuable programs for new graduates approaching the business world focused on the themes of internationalization: macroeconomics and global markets, enterprise organization, emerging countries, strategies and decision-making skills, contracts, rules, techniques.
Date	May 2012
Title of qualification awarded	CEDILS Certificate Certified teacher for Italian as foreign language
Name and type of organisation providing education and training	Ca' Foscari – University of Venice

Date	November 2008 → 11 July 2011
Title of qualification awarded	Master degree in *Languages for international communication – Portugues EU/BR and Spanish*
Name and type of organisation providing education and training	Univerità degli Studi di Perugia Final marks: 110/110 cum laude Thesis: "Way to Europe. Portugal and the European integration process"

Date	November – December 2010
Title of qualification awarded	Brief Master on Europroject Management 2007-2013
Name and type of organisation providing education and training	Introduction to European Union: institutional, juridical and economic aspects. Training courses: full lifecycle of an EC funded project: proposal preparation and submission, evaluation, negotiation, technical and financial project management, reporting, technical reviews and post-project audits.

Date	November 2004 → 9 November 2008
Title of qualification awarded	Degree in *Linguistic and Cultural Mediation Sciences – Portugues EU/BR and Spanish*
Name and type of organisation providing education and training	Univerità degli Studi di Perugia Final marks: 110/110 cum laude Thesis: Modern poetry in Portugal.

Dates	1999 - 2004
Title of qualification awarded	Secondary School Degree
Name and type of organisation providing education and training	Liceo Linguistico Carlo Troya – Andria (BT)

Personal skills and competences

Mother tongue	Italian
Portuguese	Second language
Spanish	Very good
English	Good
French	Basic User

Social skills and competences	Good ability to adapt to multicultural environment, gained through my experience of studying and travelling abroad (Brazil and Europe); Very good aptitude in teamwork (working within collective projects in the postgraduate course and in academia); Ability to work under pressure.

Organisational skills and competences	Very good sense of organisation and time planning abilities; Self rigorousness and self discipline; Good analytical and problem-solving abilities gained during all study years and especially during internship at Italian General Consulate in Brazil (the Vice-Consul signed my letter of recommendation)
Computer skills and competences	Very good command of Microsoft Office (Word, Excel e PowerPoint); Very good knowledge of Internet and web search engines; Knowledge of graphic application.

Latorre Silvia

PERSONAL INFORMATION

Place and date of birth	Chieti, 23/09/1982
Nationality	Italian
E- mail	silvia.latorre@icranet.org
Phone	085 – 23054223
Fax	085 - 4219252

WORK EXPERIENCES

• Date	12/02/2008 – present
• Name of employer	ICRANet
• Firm or Sector	International Center for Relativistic Astrophysics Network
• Kind of Employment	Administrative employee
• Main Tasks	Managing the relationship with suppliers, controlling invoices, calculating reimbursement and rewards for our scientific visitors, preparing orders for the bank, executing and verifying on-line payments, meeting our bank referents for particular payment operations, cash holding, using ICRANet cost-accounting system.

• Date	01/12/2006 – 20/01/2008
• Name of employer	DelVerde Industrie Alimentari S.p.A.
• Firm or Sector	Pasta Factory
• Kind of Employment	Trainee
• Main Tasks	Study and analysis of annual financial statements of ten competitor pasta factories for the financial years from 2002 to 2006, as well as reclassification of balance sheets and profit and loss accounts and calculation of the main income and financial indexes. Analysis of export strategies of DelVerde and other Italian pasta factories.

EDUCATION

• Date	11/2005 – 12/2007
• Institution	Università degli Studi "G. D'Annunzio" Pescara
• Main Subjects	Marketing, commercial law, innovation management and economics, business statistics, quality technique and theory
• Achieved Qualification	Degree in Economics and Administration of the enterprises. Final thesis in analysis of balance sheet: "*La leva finanziaria e la leva operative nel settore pastario*" (supervisor Prof. Michele A. Rea)
• Mark	110/110 *cum laude*

• Date	09/2001 – 11/2005
• Institution	Università degli Studi "G. D'Annunzio" Pescara
• Main Subjects	Financial Mathematics, bank technique, business economics, accountancy, microeconomics, macroeconomics, private and public law, work law, analysis of balance sheet, business strategy and politics
• Achieved Qualification	Business Economics Degree. Final thesis in business strategy and politics: "*Gli strumenti di analisi strategica: l'analisi SWOT"* (supervisor Prof. Michele A. Rea)
• Mark	106/110

• 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 INFORMATION	I like travelling, cooking, cinema, listening music, playing the piano. I have a determined, dynamic and flexible personality. I like staying and working with people.

INFORMAZIONI PERSONALI

Elisabetta Natale

Via Cesare Battisti 12, 65029, Torre de' Passeri (PE)

Data di nascita 07/11/1991 | Nazionalità Italiana

ESPERIENZA PROFESSIONALE

Da 01/2018 →

ICRANet Secretariat

International Center for Relativistic Astrophysics Network (ICRANet), Pescara

Da 09/2017 a 12/2017 →

Europe and North America Desk Assistant

UNESCO, Parigi

Relazione con Stati membri e Partner istituzionali (MSP), settore Relazioni estere e Public information and communication (ERI)

Da 03/2017 a 09/2017

HR & Project Assistant Intern

INTERSOS, Roma

Da 08/2016 a 02/2017

Intern – Delegazione dell'Unione Europrea presso Agenzie delle Nazioni Unite (FAO, IFAD, WFP), Santa Sede, Ordine di Malta e Repubblica di San Marino

EEAS (European External Action Service), Roma

- Sezione rapporti Unione Europea – ONU, in particolare responsabile delle relazioni UE - FAO
- Partecipazione ai principali meeting FAO in qualità di delegata UE
- Organizzazione e coordinamento dei meeting tra i 28 stati membri, analisi e preparazione di documenti e statement per i meeting
- Assistente sezione stampa e comunicazione, cura del sito web della Delegazione
- Stesura di comunicati stampa e report per gli uffici UE a Bruxelles, in particolare per la Commissione Europea e le DG pertinenti

Da 06/2016 a 08/2016

Marketing assistant

General Communication Srl Bologna, Bologna

- Ricerca e fidelizzazione di nuovi clienti per conto di ONGs e INGOs (AMNESTY INTERNATIONAL, UNICEF, AISM Onlus)
- Project Assistant

06/2016

Exit poll e proiezioni elettorali per elezioni amministrative Bologna 2016

IPR marketing per conto di RAI radiotelevisione italiana spa, Bologna

- Raccolta dati, monitoraggio, analisi e statistiche per proiezioni elettorali
- Trasmissione dei dati a RAI radiotelevisione italiana per immediata diffusione in tempo reale

04/2016

Scrutatrice per il referendum popolare italiano del 17 aprile 2016

Comune di Torre de' Passeri (PE)

Da 09/2015 a 11/2015

Administrative assistant Intern

Centro linguistico d'ateneo (CLA) Ravenna - Alma Mater Studiorum università di Bologna

- Attività di front/ back office, traduttrice per gli studenti stranieri in arrivo
- Preparazione e correzione dei test di livello linguistici (inglese, francese, tedesco e spagnolo)
- Assistente all'insegnamento per il progetto "ALMA ENGLISH" e per le certificazioni linguistiche
- Assistente all'insegnamento della lingua italiana per studenti stranieri
- Assistente sezione comunicazione

Da 11/2013 a 04/2014

Administrative assistant Intern

Ufficio orientamento e career service Forlì, Alma Mater Studiorum università di Bologna,Campus di Forlì (FC)

- Creazione e aggiornamento dei database
- Attività di front/ back office
- Colloqui con gli studenti per l'orientamento in entrata ed in uscita
- Promozione dell'attività formativa dell' Alma Mater Studiorum
- Assistente sezione comunicazione

Da 20/03/2014

Co-founder associazione IAPSS sezione di Forlì

IAPSS (International Association for Political Science Students), Forlì (FC)

- Cofondatrice dell'associazione
- Presentazione di IAPSS a istituzioni accademiche e amministrative (Alma Mater Studiorum - UniBo, comune di Forlí,…)
- Organizzazione di conferenze a livello locale / nazionale e internazionale
- Organizzazione di conferenze, eventi, round-tables, workshops, viaggi studio e di approfondimento
- Assistente sezione stampa e comunicazione

03/ 2010

Traduttrice DE> IT del materiale informativo relativo al XXXVII Congresso nazionale su "KANT E L'AUFKLÄRUNG"

Società filosofica italiana, Sulmona (L'AQ)

Traduzione di discorsi, flyer, documenti e materiale informativo relativo al XXXVII Congresso nazionale della "KANT E L'AUFKLÄRUNG"

ISTRUZIONE E FORMAZIONE

02/ 2017

Workshop in International Journalism and Communication

The Post Internazionale and Limes, Roma (RM)

Panelists: Enrico Mentana, Curzio Maltese, Marco Damilano, Amedeo Ricucci, Emiliano Fittipardi, Stefano Mentana, Giulio Gambino, Alessio Romenzi, Francesca Mannocchi, Nancy Porsia, Eva Giovannini, Sabika Shaha Povia, Laura Silvia Battaglia.

Da 04/2016 a 08/2016

Executive master in International Business Development (percorso Export management e internazionalizzazione d'impresa)

Sida group Management Academy, Bologna (BO)

Principali tematiche trattate: Strategie per l'internazionalizzazione d'impresa; marketing analitico e operativo; web marketing; social media marketing; project management; supply chain management e disciplina doganale; bilancio aziendale; controllo di gestione, pianificazione e strategia aziendale; business plan e finanziamenti; fiscalità e contrattualistica internazionale; tutela di marchi e brevetti; pagamenti internazionali e gestione del credito; analisi di mercato.

06/2016

Diploma congiunto NATO Allied commander transformation-UNIBO

NATO summer workshop and NATO Model event, Forlì (FC)

"NATO and Security Challenges: Institutions and Policies, Key Trends and Best Practices"

Ruolo ricoperto: giornalista NATO

Principali tematiche: Changing balances and the role of NATO in international politics: current challenges and

future opportunities; NATO in the future; Cooperative Security: Nato Partnerships in Perspective; Collective Defence and Crisis Management – Art.5 and Beyond; NATO and Other Actors in the New Security Environment: NATO and the UN'; NATO and the EU; Cybersecurity: Myth and Reality; The changing global security environment: Exploring new challenges and opportunities.

Da 09/2014 a 06/2015

Erasmus +

Institut d'études politiques (SCIENCES PO), Lione, Francia

Specializzazione nel percorso Affari internazionali e commerciali

Principali tematiche: Politique commerciale européenne et comparée; Pratiques du commerce international; Médias, pouvoir et construction du consensus politique ; Communication politique et publique; Théorie et pratiques de la diplomatie; Violence internationale et gestion des conflits; Politiques publiques; Histoire internationale.

Da 09/2013 a 03/2016

Laurea magistrale in scienze internazionali e diplomatiche
Curriculum: politica e sicurezza internazionale

Votazione: 110 con lode /110

Alma Mater Studiorum università di Bologna, Campus di Forlì

Redazione della tesi sperimentale in lingua francese, dal titolo «*L'outrecuidance «à la française»: paradoxes stratégiques et ambigüités historiques de la politique européenne et de défense de la France* ».

Attività extracurriculari:

- Co-fondatrice dell'associazione IAPSS (International Association For Political Science Students)
- 07/05/2014: SEMINAR "The Ukrainian Warfare: historical path and future implications to the International System" (organizzatrice)
- 11/04/2014: Incontro "Percorsi verso le carriere internazionali-da scienze politche al mondo globale", Campus di Forlì
- 06/03/2014: simulazione del Consiglio dell'UE nella formazione Occupazione e Affari Sociali (Forlì) – Ruolo: Germania

Da 09/2010 a 07/2013

Laurea in scienze internazionali e diplomatiche

Alma Mater Studiorum università di Bologna, Campus di Forlì

Attività extracurriculari:

- 05/2013: NATO Model Event (Forlì) - Ruolo: Ambasciatrice della Lituania
- 10/05/2013: "Croatian Membership in the New Europe", conferenza con l'Ambasciatore croato in Italia, Damir Grubiša, Punto Europa (Forlì)
- 12/04/2013: incontro ISPI "GLOBE, orientamento alle carriere internazionali", Campus di Forlì
- 07/03/2013: "L'Emilia nel cuore dell'Europa. Emigrazione in Belgio. Storia e memorie di molte partenze e di qualche ritorno", presentazione del libro del professor Lorenzo Bertuccelli, Punto Europa (Forlì)
- 02/2013: Prague Model United Nations Conference (Praga) - Ruolo: delegata della Mongolia nel Consiglio economico sociale Onu (ECOSOC)
- 13/03/2012: Cerimonia di consegna del Sigillum Magnum a Jean-Claude Juncker, Romano Prodi e Helmut Kohl, Bologna

Da 09/2005 a 07/2010

Maturità linguistica

Liceo linguistico Gian Battista Vico, Sulmona (L'AQ)

Lingue di studio: inglese, francese e tedesco

Scambi culturali:

- 10/2008: scambio culturale in Germania, liceo "Kurfurst Maximilian Gymnasium" Burghausen (Salzach)
- 03/2008: scambio culturale in Francia, liceo "Jean Zay", Jarny (Lorraine)

COMPETENZE PERSONALI

Lingua madre: Italiano

Altre lingue

	COMPRENSIONE		PARLATO		PRODUZIONE SCRITTA
	Ascolto	Lettura	Interazione	Produzione orale	
Inglese	C1/C2	C1/C2	C1/C2	C1/C2	C1/C2
Francese	C1/C2	C1/C2	C1/C2	C1/C2	C1/C2
Tedesco	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2
Russo	B1	B1	B1	B1	B1
Spagnolo	A2	A2	A2	A2	A2

Competenza digitale

AUTOVALUTAZIONE				
Elaborazione delle informazioni	Comunicazione	Creazione di Contenuti	Sicurezza	Risoluzione di problemi
Utente intermedio	Utente intermedio	Utente intermedio	Utente intermedio	Utente intermedio

Altre competenze

- Corsi CRI (Pioniere e Volontaria del soccorso della Croce Rossa Italiana, corso BLSD e abilitazione all'utilizzo del defibrillatore semi automatico esterno)
- Attività sportiva agonistica (Federazione italiana Pentathlon moderno_ società sportiva Valpescara srl)
- Educatrice in Azione Cattolica e accompagnatrice/organizzatrice di campi estivi parrocchiali
- Aiuto nel doposcuola parrocchiale e ripetizioni private (saltuariamente).
- Conoscenza del sistema di scrittura e di lettura Braille

Patente di guida

B

ULTERIORI INFORMAZIONI

Progetti

GENERAZIONE ITALIA - Progetto di formazione istituzionale e innovazione legislativa organizzato dalla FONDAZIONE CULTURA DEMOCRATICA e dal GOVERNO ITALIANO
Roma, 04 -08/ 2017

Riconoscimenti e premi

- Luglio 2015: attestato di merito per studenti meritevoli, Alma Mater Studiorum Università di Bologna
- 11/12/2010: Borsa di studio per conseguimento del diploma con esito eccellente, elargita dal "Centro studi Mac 47, Carmine Mastrogiuseppe no profit", Sulmona (L'AQ)
- 08/2010: Segnalazione da parte del Dirigente Scolastico del liceo G.B.Vico (Sulmona-L'AQ) per rappresentare la scuola e partecipare al Premio "Alfieri del Lavoro" e alle prove di ammissione nel Collegio Universitario Lamaro Pozzani di Roma, realizzate dalla Federazione Nazionale dei Cavalieri del Lavoro
- 05/2001: Riconoscimento ed elezione alla carica di Consigliere nel Consiglio comunale dei bambini di Torre de' Passeri (PE)

Certificazioni

- Luglio 2016: CORSO DI FORMAZIONE GENERALE PER I LAVORATORI secondo il D.Lgs. 81/2008 e l'accordo Stato Regioni del 21/12/2011

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".

Pescara, 10/11/2021

Elisabetta Natale