

Curriculum Vitae – Marco Muccino

SUMMARY OF THE PROFESSIONAL ACTIVITY

Marco Muccino is currently a Technologist employee (level B1) at *aeroTecnica* s.r.l. and has assignments at the National Institute of Nuclear Physics – National Laboratories of Frascati (INFN-LNF) which consist in the characterization of laser and radar detectors, technical support for technological, administrative-managerial activities and product assurance (PA) of space-based experiments employing laser retroreflectors. He is also the scientific principal investigator (PI) of ESA-INFN project *MPAc* for tests of general relativity (GR) with the new-generation lunar laser retroreflector *MoonLIGHT* (Moon Laser Instrumentation for General relativity/geophysics High-accuracy Tests), experiment *MoonLIGHT-2* funded by National Scientific Committee-2 (CSN2).

Muccino also carries out extensive research activities in the fields of relativistic astrophysics, astroparticles and cosmology with several collaborators from national/international institutes/universities.

- Effective unification theories, cosmological standard model reformulation, dark matter and baryonic matter genesis, and cosmic inflation with Drs. O. Luongo and R. D'Agostino.
- Application of gamma-ray bursts (GRBs) in cosmology, alone or in conjunction with other well-consolidated distance indicators, with Profs. B. Ratra, E. O' Colgain and M. Della Valle, and Drs. L. Amati, L. Izzo and O. Luongo.
- Data analysis, theoretical interpretation and progenitors of GRBs with Prof. R. Ruffini.
- Theoretical and experimental applications of GR in astrophysics and astroparticles with Profs. H. Quevedo and K. Boshkayev, and Dr. O. Luongo.
- Data analysis in the context of the *non-minimally coupled gravity* theory applied to the Moon, Mars and Mercury with Prof. O. Bertolami and Dr. R. March.
- Numerical tests of GR with the Planetary Ephemeris Program (PEP) software, applied to lunar laser ranging (LLR) data with Drs. S. Dell'Agnello and L. Porcelli

As temporary position Technologist, at the Satellite/lunar/GNSS laser ranging/altimetry and cube/microsat Characterization Facilities Laboratory (SCF_Lab) of INFN-LNF, Muccino holds/held the following assignments:

- PA Manager of *LARES-2* (Laser Relativity Satellite-2), ASI-INFN contract;
- Scientific PI (ongoing assignment) of *MPAc* (*MoonLIGHT* Pointing Actuator), ESA-INFN contract;
- Program Manager of *COsmo-SkyMed Second Generation (CSG)*, of Defence-ASI, and High Priority Candidate Mission-Copernicus Polar Ice and Snow Topography Altimeter (*HPCM-CRISTAL*), of ESA-Airbus Defence & Space;
- Coordinator of optical tests, data acquisition and analysis of space-qualified (single or array of) retroreflectors, for commercial applications or GR tests on-board space laboratories in several projects:
 - ASI-INFN agreement *Advanced Laser Systems for Space Applications: Joint Activities at INFN-LNF* (joint laboratory between SCF_Lab and ASI-Matera Geodesy Space Center);
 - *MoonLIGHT-2*, a lunar laser ranging (LLR) experiment of INFN-CSN2;
 - *Milani Laser Retroreflectors for Hera (MLRH)*, ESA approved project;
 - *Martian Moons eXploration (MMX)* of JAXA and ASI;
 - Commercial contracts with *Tales Alenia Space Italia-INFN* and *Airbus Defence & Space-INFN*, for supplying laser retroreflector arrays for 6+6 satellites of *Galileo 2nd Generation (G2G)*.

Muccino has several teaching experiences, delivering lectures and seminars:

- Lecturer for the University of Camerino, Astro & Particle Physics course, FIS/04, Physics 2 (2023);
- For the Ph.D. Erasmus Mundus schools, at the University of Nice, Sophie-Antipolis (France) in September 2011 and 2012, May and September 2013, February and September 2014 and June 2016;
- At the Kazakh National University of Almaty (Kazakhstan): December 2014.

WORKING EXPERIENCE

- **Tecnologist employee (Level B1)** [02/07/2021 – currently] **aeroTecnico s.r.l. & INFN-LNF**
- **Tecnologist (Level III)** [03/12/2018 – 02/05/2021] **INFN-LNF**
- **Post-Doc (Tecnologist profile)** [01/12/2017 – 30/11/2018] **INFN-LNF**
- **Post-Doc** [01/03/2015 – 30/11/2017] **Physics Department, University of Rome Sapienza**

EDUCATION AND RESEARCH INFORMATION

- **International Relativistic Astrophysics PhD (IRAP) cycle IX/Physics cycle XXVI** [01/10/2010 – 26/11/2014]
Physics Department, University of Rome Sapienza
Supervisor: Prof. R. Ruffini
Thesis title: “The role of binary systems as progenitors of short GRBs and long GRBs associated to SNe”
- **Master Degree in Astronomy and Astrophysics** [26/02/2007 – 22/01/2010]
Physics Department, University of Rome Sapienza
Advisor: Prof. G. Montani; Co-advisor: Dr. F. Cianfrani
Thesis title: “Studio del comportamento semiclassico di un universo anisotropo in gravità quantistica”
- **Bachelor Degree in Physics and Astrophysics** [01/10/2003 – 26/02/2007]
Physics Department, University of Rome Sapienza
Advisor: Prof. P. De Bernardis
Thesis title: “Studio di tematiche in cosmologia e dell’effetto Sunyaev-Zel’dovich”

PERSONAL SKILLS

Native language

Italian

Other languages

COMPREHENSION		SPEAKING		WRITING
Listening	Reading	Interaction	Production	
English	C1	C1	C1	C1
Spanish	B1	B1	A1	A1

Organization skills

- Excellent coordination and teamwork capabilities
- Good project management and planning capabilities
- Good decisional capabilities

Communication and Relational skills

- Excellent communication, mentoring and teaching capabilities
- Excellent learning and information exchanging capabilities
- Excellent relational capabilities with colleagues and collaborators

Working skills

- Excellent knowledge and background of Physics and Astrophysics
- Good data analysis technique knowledge
- Excellent theoretical and speculative capabilities

Computer skills

Processamento	Comunicazione	Creazione contenuti	Sicurezza	Problem Solving
Utente indipendente			Utente base	
<ul style="list-style-type: none"> ▪ Operating system: Windows. ▪ Typesetting: Latex, Open Office and Office packages. ▪ Analysis softwares: Wolfram Mathematica, XSPEC, RMFit, HeaSoft package (FTOOLS), LBA-FW, LBA-USB, MATLAB, CodeV, GNU PLOT, Origin. 				

ADDITIONAL INFORMATION

- Editorial activities** Referee for the International Journal of Geometrical Methods in Modern Physics
Coautor of the book: "Gamma-ray Bursts: origin and applications to cosmology" in collaboration with Dr. Orlando Luongo, Lambert, first issue at the end of 2023
- Research duties** Co-supervisor of N. 3 PhD students, and N. 3 Post-Docs
- Projects**
- Grant: "Astrophysical implications of white dwarf stars", IRN AP08052311 of the Ministry of Education and Science of the Republic of Kazakhstan
 - Project N. 3101/GF4 IPC-11 of the Education and Science Minister of the Republic of Kazakhstan
 - Project N. F.0679 0073/PTsF of the Education and Science Minister of the Republic of Kazakhstan
- Achievements** Price from Alferov Foundation, received during the *Zeldovich-100 Meeting*, March 10-14, 2014, Minsk, Belarussia: *to Marco Muccino for the best talk "The Binary Driven Hypenovae and the nested properties of their X-ray afterglows"*
- Membership** Planetary Defence Office Near-Earth Object Coordination Centre (NEOCC)
- Certificates** Examiner of the PhD defence of Dr. Toktarbay Sacken, title of the PhD thesis "*The metric of real bodies with internal structure and rotation in general relativity*", category "6D060400 - Physics", on December 14, 2014, at the Department of Theoretical and Nuclear Physics of the Al-Farabi Kazakh National University, 050040, Almaty city, al-Farabi avenue, 71, Faculty of Physics and Technology, room 330. Website: www.kaznu.kz
- Publications** 92
- Citations** 793
- h-index** 15

SCIENTIFIC PRODUCTION

Publications

- O. Luongo, N. Marcantognini, **M. Muccino**, "Unifying baryogenesis with dark matter production", *General Relativity and Gravitation*, 55, 2, 33 (2023)
- O. Luongo, **M. Muccino**, "Intermediate redshift calibration of gamma-ray bursts and cosmic constraints in non-flat cosmology", *MNRAS*, 518, 2247 (2022), [arXiv:2207.00440](https://arxiv.org/abs/2207.00440)
- R. D'Agostino, O. Luongo, **M. Muccino**, "Healing the cosmological constant problem during inflation through a unified quasi-quintessence matter field", *Classical and Quantum Gravity*, 39, 19, 195014 (2022), [arXiv:2204.02190](https://arxiv.org/abs/2204.02190)
- O. Luongo, **M. Muccino**, E. O' Colgain, M.M. Sheikh-Jabbari, L. Yin, "Larger H_0 values in the CMB dipole direction", *PRD*, 105, 10, 103510 (2022), [arXiv:2108.13228](https://arxiv.org/abs/2108.13228)
- R. March, O. Bertolami, **M. Muccino**, C. Gomes, S. Dell'Agnello, "Cassini and extra force constraints to nonminimally coupled gravity with a screening mechanism", *PRD*, 105, 044048 (2022), [arXiv :2111.13270](https://arxiv.org/abs/2111.13270)
- O. Luongo, **M. Muccino**, "A Roadmap to Gamma-Ray Bursts: New Developments and Applications to Cosmology", *Galaxies*, 9, 4, 77 (2021), [arXiv:2110.14408](https://arxiv.org/abs/2110.14408)

- N. Khadka, O. Luongo, **M. Muccino**, B. Ratra, "Do gamma-ray burst measurements provide a useful test of cosmological models?", JCAP, 9, 042 (2021), arXiv:2105.12692
- K. Boshkayev, T. Konysbayev, O. Luongo, **M. Muccino**, F. Pace, "Testing generalized logotropic models with cosmic growth", PRD, 104, 023520 (2021), arXiv:2103.07252
- R. Ruffini, R. Moradi, J.A. Rueda, L. Li, N. Sahakyan, Y.C. Chen, Y. Wang, Y. Aimuratov, L. Becerra, C.L. Bianco, C. Cherubini, S. Filippi, M. Karlica, G.J. Mathews, **M. Muccino**, G.B. Pisani, S.S. Xue, "The morphology of the X-ray afterglows and of the jetted GeV emission in long GRBs", MNRAS, 504, 5301 (2021), arXiv:2103.09142
- O. Luongo, **M. Muccino**, "Model-independent calibrations of gamma-ray bursts using machine learning", MNRAS, 503, 4581, (2021), arXiv:2011.13590
- **M. Muccino**, L. Izzo, O. Luongo, K. Boshkayev, L. Amati, M. Della Valle, G.B. Pisani, E. Zaninoni, "Tracing Dark Energy History with Gamma-Ray Bursts", ApJ, 908, 181 (2021), arXiv:2012.03392
- K. Boshkayev, T. Konysbayev, E. Kurmanov, O. Luongo, **M. Muccino**, "Imprint of Pressure on Characteristic Dark Matter Profiles: The Case of ESO0140040", Galaxies, 8, 74 (2020)
- K. Boshkayev, O. Luongo, **M. Muccino**, "Neutrino oscillation in the q-metric", European Physical Journal C, 80, 964 (2020), arXiv:2010.08254
- O. Luongo, **M. Muccino**, "Kinematic constraints beyond $z \simeq 0$ using calibrated GRB correlations", A&A, 641, 174 (2020), arXiv:2010.05218
- **M. Muccino**, "A Confront between Amati and Combo Correlations at Intermediate and Early Redshifts", Symmetry, 12, 7, 1118 (2020).
- O. Luongo, **M. Muccino**, H. Quevedo, "Kinematic and statistical inconsistencies of Horava-Lifshitz cosmology", Physics of the Dark Universe, 25, 100313 (2019), arXiv:1811.05227
- L. Amati, R. D'Agostino, O. Luongo, **M. Muccino**, M. Tantalò, "Addressing the circularity problem in the E_p - E_{50} correlation of gamma-ray bursts", MNRAS, 486, L46-L51 (2018), arXiv:1811.08934
- R. March, O. Bertolami, **M. Muccino**, R. Baptista, S. Dell'Agnello, "Constraining a nonminimally coupled curvature-matter gravity model with ocean experiments", PRD, 100, 042002 (2019), arXiv:1904.12789
- Dell'Agnello, G.O. Delle Monache, L. Porcelli, M. Tibuzzi, L. Salvatori, C. Mondaini, **M. Muccino**, et al., "Laser Retroreflectors for InSight and an International Mars Geophysical Network (MGN)", Lunar and Planetary Science Conference, LPI contribution 2132 (2019)
- L. Porcelli, M. Tibuzzi, C. Mondaini, L. Salvatori, **M. Muccino**, et al., "Optical-Performance Testing of the Laser RetroReflector for InSight", Space Science Reviews, 215, 1 (2019)
- R. Ruffini, L. Becerra, C.L. Bianco, Y.C. Chen, M. Karlica, M. Kovačević, J.D. Melon Fuksman, R. Moradi, **M. Muccino**, G.B. Pisani, D. Primorac, J.A. Rueda, G.V. Vereshchagin, Y. Wang, S.-S. Xue, "On the Ultra-relativistic Prompt Emission, the Hard and Soft X-Ray Flares, and the Extended Thermal Emission in GRB 151027A", ApJ, 869, 151 (2018); arXiv:1712.05001
- R. Ruffini, M. Karlica, N. Sahakyan, J.A. Rueda, Y. Wang, G.J. Mathews, C.L. Bianco, **M. Muccino**, "A GRB Afterglow Model Consistent with Supernova Observations", ApJ, 869, 101 (2018); arXiv:1712.05000
- O. Luongo, **M. Muccino**, "Speeding up the Universe using dust with pressure", PRD, 98, 103520 (2018), arXiv:1807.00180
- R. Ruffini, J. Rodriguez, **M. Muccino**, J.A. Rueda, et al., "On the Rate and on the Gravitational Wave Emission of Short and Long GRBs", ApJ, 859, 30 (2018)
- R. Ruffini, Y. Wang, Y. Aimuratov, U. Barres de Almeida, L. Becerra, C.L. Bianco, Y.C. Chen, M. Karlica, M. Kovacevic, L. Li, J.D. Melon Fuksman, R. Moradi, **M. Muccino**, et al., "Early X-Ray Flares in GRBs", ApJ, 852, 53 (2018), arXiv:1704.03821

- Y. Aimuratov, R. Ruffini, **M. Muccino**, C.L. Bianco, et al., "GRB 081024B and GRB 140402A: Two Additional Short GRBs from Binary Neutron Star Mergers", *ApJ*, 844, 83 (2017), arXiv:1704.08179
- **M. Muccino**, K. Boshkayev, "Physical insight into the Combo-relation", *MNRAS*, 468, 570 (2017)
- G.B. Pisani, R. Ruffini, Y. Aimuratov, C.L. Bianco, M. Kovacevic, R. Moradi, **M. Muccino**, et al., "On the Universal Late X-Ray Emission of Binary-driven Hypernovae and Its Possible Collimation", *ApJ*, 833, 159 (2016), arXiv:1610.05619
- R. Ruffini, J.A. Rueda, **M. Muccino**, Y. Aimuratov, et al., "On the Classification of GRBs and Their Occurrence Rates", *ApJ*, 832, 136 (2016), arXiv:1602.02732
- R. Ruffini, **M. Muccino**, Y. Aimuratov, C.L. Bianco, et al., "GRB 090510: a genuine short-GRB from a binary neutron star coalescing into a Kerr-Newman black hole", *ApJ*, 831, 178 (2016), arXiv:1607.02400
- L. Izzo, **M. Muccino**, E. Zaninoni, L. Amati, M. Della Valle, "New measurements of α_m from gamma-ray bursts", *A&A*, 582, A115 (2015), arXiv:1508.05898
- R. Ruffini, **M. Muccino**, M. Kovacevic, F.G. Oliveira, et al., "GRB 140619B: a short GRB from a binary neutron star merger leading to black hole formation", *ApJ*, 808, 190 (2015), arXiv:1412.1018
- Y. Wang, R. Ruffini, K. Kovacevic, C.L. Bianco, M. Enderli, **M. Muccino**, et al., "Predicting supernova associated to gamma-ray burst 130427a", *Astronomy Reports*, 59, 667 (2015)
- R. Ruffini, L. Izzo, C.L. Bianco, J.A. Rueda, C. Barbarino, H. Dereli, M. Enderli, **M. Muccino**, et al., "Induced gravitational collapse in the BATSE era: The case of GRB 970828", *Astronomy Reports*, 59, 626 (2015)
- **M. Muccino**, R. Ruffini, C.L. Bianco, M. Enderli, et al., "On binary driven hypernovae and their nested late X-ray emission", *Astronomy Reports*, 59, 581 (2015)
- K. Boshkayev, J.A. Rueda, **M. Muccino**, "Extracting multipole moments of neutron stars from quasi-periodic oscillations in low mass X-ray binaries", *Astronomy Reports*, 59, 441 (2015)
- R. Ruffini, Y. Wang, M. Kovacevic, C.L. Bianco, M. Enderli, **M. Muccino**, et al., "GRB 130427A and SN 2013cq: A Multi-wavelength Analysis of An Induced Gravitational Collapse Event", *ApJ*, 798, 10 (2015), arXiv:1405.5723
- M. Kovacevic, L. Izzo, Y. Wang, **M. Muccino**, et al., "A search for Fermi bursts associated with supernovae and their frequency of occurrence", *A&A*, 569, A108 (2014), arXiv:1408.6227
- R. Ruffini, L. Izzo, **M. Muccino**, G.B. Pisani, et al., "Induced gravitational collapse at extreme cosmological distances: the case of GRB 090423", *A&A*, 569, A39, (2014), arXiv:1404.1840
- R. Ruffini, **M. Muccino**, C.L. Bianco, M. Enderli, et al., "On binary-driven hypernovae and their nested late X-ray emission", *A&A*, 565, L10 (2014), arXiv:1404.3946
- **M. Muccino**, R. Ruffini, C.L. Bianco, L. Izzo, et al., "GRB 090510: A Disguised Short Gamma-Ray Burst with the Highest Lorentz Factor and Circumburst Medium", *ApJ*, 772, 62 (2013), arXiv:1306.3467
- G.B. Pisani, L. Izzo, R. Ruffini, C.L. Bianco, **M. Muccino**, et al., "On a novel distance indicator for Gamma-Ray Bursts associated with Supernovae", *A&A*, 552, L5 (2013), arXiv:1304.1764
- A.V. Penacchioni, R. Ruffini, C.L. Bianco, L. Izzo, **M. Muccino**, et al., "GRB 110709B in the induced gravitational collapse (IGC) paradigm", *A&A*, 551, A133 (2013), arXiv:1301.6014
- **M. Muccino**, R. Ruffini, C. L. Bianco, L. Izzo, et al., "GRB 090227B: the missing link between the genuine short and long GRBs", *ApJ*, 763, 125 (2013), arXiv:1205.6600
- A. V. Penacchioni, R. Ruffini, L. Izzo, **M. Muccino**, et al., "Evidence for a proto-black hole and a double astrophysical component in GRB 101023", *A&A*, 538, A58, (2012), arXiv:1112.2970
- F. Cianfrani, G. Montani, **M. Muccino**, "Semiclassical isotropization of the Universe during a de Sitter phase", *PRD*, 82, 10 (2010)

Proceedings

- O. Luongo, **M. Muccino**, "Dark matter with pressure as an alternative to dark energy", proceeding of The Fifteenth Marcel Grossmann Meeting on General Relativity, editors E. S. Battistelli, R.T. Jantzen, R. Ruffini., *World Scientific Publishing Co. Pte. Ltd.*, 774-779 (2022).
- C. Rossi, **M. Muccino**, N. Gallegos, L. Filomena, S. Malhotra, et a., "First Observation of Apollo Laser Retroreflectors with the Lunar Reconnaissance Orbiter Camera and NASA's Moon Trek Software", Lunar and Planetary Science Conference, 1924 (2021).
- R.J. Ruffini, R. Moradi, J.A. Rueda Hernandez, L. Li, N. Sahakyan, Y.-C. Chen, Y. Wang, Y. Aimuratov, L. Becerra, C.L. Bianco, C. Cherubini, S. Filippi, M. Karlica, G. Mathews, **M. Muccino**, G.B. Pisani, D. Primorac, S.-S. Xue, "The conical morphology, jetted GeV emission, and X-ray afterglows of long GRBs", proceeding of the APS March Meeting, abstract id. U71.23 (2021).
- S. Dell'Agnello, G. Delle Monache, L. Porcelli, L. Salvatori, M. Tibuzzi, C. Mondaini, R. Vittori, R. March, **M. Muccino**, et al., Testing Gravity with the Moon and Mars, *Frontier Objects in Astrophysics and Particle Physics, Frascati Physics Series Vol. 66* (2018), ISBN 978-88-86409-67-4
- S. Dell'Agnello, G.O. Delle Monache, L. Porcelli, M. Tibuzzi, L. Salvatori, C. Mondaini, **M. Muccino**, L. Ioppi, O. Luongo, M. Petrassi, G. Bianco, R. Vittori, W.B. Banerdt, J.F. Grinblat, C. Benedetto, F. Pasquali, R. Mugnuolo, D.C. Gruel, J.L. Vago, P. Baglioni, "Laser Retroreflectors for InSight and an International Mars Geophysical Network (MGN)", proceeding of the 50th Lunar and Planetary Science Conference, held 18-22 March, 2019 at The Woodlands, Texas. LPI Contribution No. 2132,1492 (2019).
- D. Primorac, **M. Muccino**, R. Moradi, Y. Wang, J.D. Melon Fuksman, R. Ruffini, C.L. Bianco, J.A. Rueda, "Structure of the Prompt Emission of GRB 151027A Within the Fireshell Model", *Astronomy Reports*, 62, 12, 933-939 (2018).
- K. Boshkayev, J.A. Rueda, **M. Muccino**, "Main parameters of neutron stars from quasi-periodic oscillations in low mass X-ray binaries", proceeding of the MG14 Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics, and Relativistic Field Theories, editors M. Bianchi, R.T. Jansen, R. Ruffini, *World Scientific Publishing Co. Pte. Ltd.*, 3433-3440 (2018).
- Y. Aimuratov, R. Ruffini, C.L. Bianco, M. Enderli, L. Izzo, M. Kovacevic, R. Moradi, **M. Muccino**, Marco A.V. Penacchioni, G.B. Pisani, J.A. Rueda, Y. Wang, E. Zaninoni, "Analysis of the GRB 081024B", proceeding of the MG14 Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics, and Relativistic Field Theories, editors M. Bianchi, R.T. Jansen, R. Ruffini, *World Scientific Publishing Co. Pte. Ltd.*, 2975-2980 (2018).
- **M. Muccino**, R. Ruffini, M. Kovacevic, F.G. Oliveira, J.A. Rueda, Y. Aimuratov, C.L. Bianco, M. Enderli, R. Moradi, A.V. Penacchioni, G.B. Pisani, Y. Wang, E. Zaninoni, "GRB 140619B: A short GRB from a binary neutron star merger leading to black hole formation", proceeding of the MG14 Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics, and Relativistic Field Theories, editors M. Bianchi, R.T. Jansen, R. Ruffini, *World Scientific Publishing Co. Pte. Ltd.*, 2969-2974 (2018).
- J.A. Rueda, Y. Aimuratov, U. Barres de Almeida, L. Becerra, C.L. Bianco, C. Cherubini, S. Filippi, M. Karlica, M. Kovacevic, J. D. Melon Fuksman,, R. Moradi, **M. Muccino**, A.V. Penacchioni, G.B. Pisani, D. Primorac, R. Ruffini, N. Sahakyan, S. Shakeri, Y. Wang, "The binary systems associated with short and long gamma-ray bursts and their detectability", proceeding of the MG14 Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics, and Relativistic Field Theories, editors M. Bianchi, R.T. Jansen, R. Ruffini, *World Scientific Publishing Co. Pte. Ltd.*, 306-324 (2018).
- R. Ruffini, Y. Aimuratov, L. Becerra, C.L. Bianco, M. Karlica, M. Kovacevic, J.D. Melon Fuksman, R. Moradi, **M. Muccino**, A.V. Penacchioni, G.B. Pisani, D. Primorac, J.A. Rueda, S. Shakeri, G.V. Vereshchagin, Y. Wang, S.-S. Xue, "The cosmic matrix in the 50th anniversary of relativistic astrophysics", proceeding of the MG14 Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics, and Relativistic Field Theories, editors M. Bianchi, R.T. Jansen, R. Ruffini, *World Scientific Publishing Co. Pte. Ltd.*, 258-305 (2018).
- L. Izzo, **M. Muccino**, M. Della Valle, "GRB cosmography with THESEUS", *Memorie della Società Astronomica*

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- J.D. Melon Fuksman, L. Becerra, C.L. Bianco, M. Karlica, M. Kovacevic, J.D. Melon Fuksman, R. Moradi, **M. Muccino**, G.B. Pisani, D. Primorac, J.A. Rueda, R. Ruffini, G.V. Vereshchagin, S.-S. Xue, Y. Wang, “Evolution of an electron-positron plasma produced by induced gravitational collapse in binary-driven hypernovae”, *European Physical Journal Web of Conferences*, 168, 4009 (2018).
- D. Primorac, R. Ruffini, G.B. Pisani, Y. Aimuratov, C.L. Bianco, M. Karlica, J.D. Melon Fuksman, R. Moradi, **M. Muccino**, A.V. Penacchioni, J.A. Rueda, Y. Wang, “GRB 110731A within the IGC paradigm”, *European Physical Journal Web of Conferences*, 168, 4008 (2018).
- G.B. Pisani, R. Ruffini, Y. Aimuratov, C.L. Bianco, M. Karlica, M. Kovacevic, R. Moradi, **M. Muccino**, A.V. Penacchioni, D. Primorac, J.A. Rueda, Y. Wang, “The first ICRANet catalog of binary-driven hypernovae”, *European Physical Journal Web of Conferences*, 168, 4002 (2018).
- **M. Muccino**, R. Ruffini, Y. Aimuratov, L. Becerra, C.L. Bianco, M. Karlica, M. Kovacevic, J.D. Melon Fuksman, R. Moradi, A.V. Penacchioni, G.B. Pisani, D. Primorac, J.A. Rueda, S. Shakeri S., G.V. Vereshchagin, S.-S. Xue, Y. Wang, “What can we learn from GRBs?”, *European Physical Journal Web of Conferences*, 168, 1015 (2018).
- J.A. Rueda, R. Ruffini, J.F. Rodriguez, **M. Muccino**, Y. Aimuratov, U. Barres de Almeida, L. Becerra, C.L. Bianco, C. Cherubini, S. Filippi, M. Kovacevic, R. Moradi, G.B. Pisani, Y. Wang, “The binary progenitors of short and long GRBs and their gravitational-wave emission”, *European Physical Journal Web of Conferences*, 168, 1006 (2018).
- R. Ruffini, C. Fryer, **M. Muccino**, J. Rueda Hernandez, “On the nature of short and long gamma-ray bursts”, *APS Meeting Abstracts* (2016).
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Meetings e Workshops

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- “High Energy Phenomena in Relativistic Outflows III”, Barcelona (Spain), 27/06/-01/07/2011.
- “12th Italian-Korean Symposium on Relativistic Astrophysics”, Pescara (Italy), 04-08/07/2011.
- “IRAP Ph.D. Erasmus Mundus Workshop - Gamma Ray Bursts, their progenitors and the role of thermal emission”, Les Houches (France), 02-07/10/2011.
- “3rd Galileo/Xu Guangqi meeting - THE SUN, THE STARS, THE UNIVERSE and GENERAL RELATIVITY”, Beijing (China), 11-15/10/2011.
- “9th AGILE Science Workshop - Astrophysics with AGILE: Five Years of Surprises”, ESA-ESRIN, Frascati (Italy), 16-17/04/2012.
- “XIII Marcel Grossmann Meeting - On Recent Developments on Theoretical and Experimental General Relativity, Astrophysics and Relativistic Field Theories”, Stockholm (Sweden), 01-07/12/2012.
- “The 2013 yearly ICRANet Scientific Meeting on Relativistic Astrophysics”, Pescara (Italy), 03-21/06/2013.
- “13th Italian-Korean Meeting Symposium on Relativistic Astrophysics”, Seoul (South Korea), 15-19/07/2013.
- “11th International Conference on Gravitation, Astrophysics and Cosmology of Asia-Pacific Countries”, Almaty (Kazakhstan), 01-05/10/2013.
- “27th TEXAS Symposium on Relativistic Astrophysics”, Dallas, Texas (USA), 08-13/12/2013.

- “Zeldovich-100 Meeting, Subatomic particles, Nucleons, Atoms, Universe: Processes and Structure”, Minsk (Belarus), 10-14/03/2014.
- “IRAP Ph.D. Erasmus Mundus Workshop, Supernovae, Gamma-ray bursts and the induced gravitational collapse”, Les Houches (France), 11-16/05/2014.
- “1st Scientific ICRANet Meeting in Armenia, Black Holes: the largest energy sources in the Universe”, Yerevan (Armenia), 30/06/-04/07/2014.
- “The Second ICRANet Cesar Lattes Meeting”, Niteroi--Rio De Janeiro (Brazil), 13-18/04/2015.
- “Fourteenth Marcel Grossmann Meeting - MG14”, Rome (Italy), 12-18/07/2015.
- “14th Italian-Korean Symposium on Relativistic Astrophysics”, Pescara (Italy), 20-24/07/2015.
- “Supernovae, Hypernovae and Binary Driven Hypernovae, an Adriatic Workshop”, Pescara (Italy), 20-30/06/2016.
- “1st International Symposium “Integration of Belarusian scientists in the research programs of the world's leading nuclear physics centers” ICRANet-Minsk Workshop”, Minsk (Belarus), 26-28/04/2017.
- “The 2017 Annual meeting of the Division of Gravitation and Relativistic Astrophysics of the Chinese Physical Society / The Fifth Galileo-Xu Guangqi Meeting”, Chengdu (China), 25-30/06/2017.
- “XIII International Conference on Gravitation, Astrophysics and Cosmology 15th Italian-Korean Symposium on Relativistic Astrophysics A joint meeting”, Seoul (South Korea), 03-07/07/2017.
- “6th European Lunar Symposium”, Tolosa (Francia), 14-16/05/2018.
- “21st International Workshop on Laser Ranging”, Canberra (Australia), 05-09/11/2018.
- “Hera Community Workshop”, Berlino (Germania), 15-16/11/2018.
- “AIDA International Workshop”, Roma (Italia), 11-13/09/2019.
- “2nd European Physical Society Conference on Gravitation: measuring gravity”, Virtual meeting, 05-07/07/2021.
- “Join 2021 NASA Exploration Science Forum & European Lunar Symposium, Virtual meeting, 20-23/07/2021.

Contributed Talks

- “12th Italian-Korean Symposium on Relativistic Astrophysics”, Pescara (Italy), 04-08/07/2011
Talk: “High energy emission in GRBs: the case of GRB 090902B”.
- “IRAP Ph.D. Erasmus Mundus Workshop - Gamma Ray Bursts, their progenitors and the role of thermal emission”, Les Houches (France), 02-07/10/2011
Talk: “Genuine short GRBs”.
- “3rd Galileo/Xu Guangqi meeting - THE SUN, THE STARS, THE UNIVERSE and GENERAL RELATIVITY”, Beijing (China), 11-15/10/2011
Talk: “Genuine short GRBs”.
- “9th AGILE Science Workshop - Astrophysics with AGILE: Five Years of Surprises”, ESA-ESRIN, Frascati (Italy), 16-17/04/2012
Talk: “Theoretical models of GRB 090227B and GRB 090510”.
- “XIII Marcel Grossmann Meeting - On Recent Developments on Theoretical and Experimental General Relativity, Astrophysics and Relativistic Field Theories”, Stockholm (Sweden), 01-07/07/2012
Talk: “GRB 090227B: the first example of a genuine short GRB”.
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- “The 2013 yearly ICRANet Scientific Meeting on Relativistic Astrophysics”, Pescara (Italy), 03-21/06/2013
Talk: “The genuine short GRB 090227B and the disguised short “by excess” GRB 090510”.

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Talk: “The genuine short GRB 090227B and the disguised short “by excess” GRB 090510”.
- “11th International Conference on Gravitation, Astrophysics and Cosmology of Asia-Pacific Countries”, Almaty (Kazakhstan), 01-05/10/2013.
Talk: “GRB 090227B, a genuine short burst, and GRB 090510, a disguised short burst in the Highest Circumburst Medium Ever Inferred”.
- “Zeldovich-100 Meeting, Subatomic particles, Nucleons, Atoms, Universe: Processes and Structure”, Minsk (Belarus), 10-14/03/2014.
Talk: “On Binary Driven Hypernovae and their nested late X-ray emission”.
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- “1st Scientific ICRANet Meeting in Armenia, Black Holes: the largest energy sources in the Universe”, Yerevan (Armenia), 30/06-04/7/2014
Talk: “Binary Driven Hypernovae and short GRBs”.
- “The Second ICRANet Cesar Lattes Meeting”, Niteroi–Rio De Janeiro (Brazil), 13-18/04/2015
Talk: “GRB 140619B: a genuine short GRB from a binary neutron star merger leading to the black hole formation”.
- “Fourteenth Marcel Grossmann Meeting - MG14”, Rome (Italy) 12-18/06/2015
Talk: “Short GRBs in the fireshell model: family-1 and family-2 short bursts and the case of GRB 140619B”.
- “14th Italian-Korean Symposium on Relativistic Astrophysics”, Pescara (Italy) 20-24/07/2015.
Talk: “Short GRBs in the fireshell model: family-1 and family-2 short bursts and the case of GRB 140619B”.
- “Supernovae, Hypernovae and Binary Driven Hypernovae, an Adriatic Workshop”, Pescara (Italy), 20-30/06/2016.
Talk: “Classification of long and short bursts and their rate of occurrence”
Talk: “GRB 090510: a S-GRB from a binary neutron star coalescing into a Kerr black hole”.
- “1st International Symposium “Integration of Belarusian scientists in the research programs of the world's leading nuclear physics centers” ICRANet-Minsk Workshop”, Minsk (Belarus), 26-28/04/2017
Talk: “What can we learn from gamma-ray bursts?”
- “The 2017 Annual meeting of the Division of Gravitation and Relativistic Astrophysics of the Chinese Physical Society / The Fifth Galileo-Xu Guangqi Meeting”, Chengdu (China), 25-30/06/2017.
Talk: “Short GRBs”
- “XIII International Conference on Gravitation, Astrophysics and Cosmology 15th Italian-Korean Symposium on Relativistic Astrophysics A joint meeting”, Seoul (South Korea), 03-07/07/2017
Plenary talk: “What can we learn from gamma-ray bursts?”.
- “21st International Workshop on Laser Ranging”, Canberra (Australia), 05-09/11/2018
Talk: “Microreflectors for Mars, Phobos/Deimos and Asteroids/Comets”
- “Hera Community Workshop”, Berlino (Germany), 15-16/11/2018
Talk: “Microreflectors for Asteroids and Comets: options for Hera”
- “AIDA International Workshop”, Roma (Italy), 11-13/09/2019
Talk: “Microreflectors for the Hera mission”
- “2nd European Physical Society Conference on Gravitation: measuring gravity, Virtual meeting, 05-07/07/2021
Plenary talk: “Lunar and Interplanetary Laser Ranging”
- “Join 2021 NASA Exploration Science Forum & European Lunar Symposium”, Virtual meeting 20-23/07/2021
Talk: “The MPAC Project: Overview and Scientific Objectives”.

Posters

- “Gamma-Ray Bursts 2012 Conference”, Munich (Germany), 07-11/05/2012.
Poster: “GRB 090227B: the missing link between the genuinely short and disguised short GRBs”.
- “Huntsville Gamma Ray Burst Symposium”, Nashville, Tennessee (USA), 14-18/04/2013.
Poster: “GRB 090227B, a genuine short burst, and GRB 090510, a disguised short burst “by excess””.
- “Swift: 10 Years of Discovery”, Rome, (Italy), 02-05/12/2014.
Poster: “GRB 140619B: a short GRB from a neutron star merger leading to the black hole formation”.