MICHELA MAPELLI - CURRICULUM VITAE

SHORT OVERVIEW:

I am a theoretical/computational astrophysicist, working in the field of gravitational wave astronomy. I obtained my PhD in 2006 from SISSA (Trieste, Italy). For my Thesis, I received both the Gratton and the Tacchini Prizes. I was a postdoc (Forschungskredit fellow) at the University of Zurich and then a senior postdoctoral fellow in Milan. In 2011, I moved to a permanent position at INAF, Padua, where I secured multiple grants and built an independent research group. The European Astronomical Society awarded me the MERAC PRIZE (2015) for the Best Early Career Researcher in Theoretical Astrophysics. In 2017, I became fixed-term full professor at the University of Innsbruck and in 2018 I moved to the University of Padova as an associate professor.

I am PI of an ERC consolidator grant (DEMOBLACK, "The demography of black hole binaries in the era of gravitational wave astronomy"). My current work focuses on the formation channels of binary compact objects. I study the formation of stellar-mass and intermediate-mass black holes, and I investigate the dynamics of binary black holes in star clusters, to understand their contribution to gravitational wave emission. My studies on the mass spectrum of stellar black holes have provided a clue to interpret the first direct detection of gravitational waves by the Advanced LIGO interferometers. I am a member of the Virgo collaboration since 2018 and I am the head of the TEONGRAV group at INFN-Padova. I recently joined the Observation Science Board of the Einstein Telescope as division chair.

CONTACT DETAILS:

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EMPLOYMENT:

2018 – now: Associate professor, Department of Physics and Astronomy "G. Galilei", University of Padova, Italy

2017 – 2018: Full professor ad interim and chair of the extra-galactic group, Institute for Astrophysics and Particle Physics, University of Innsbruck, Austria

2011 – 2018: Permanent research staff at INAF (Italian National Institute for Astrophysics), Osservatorio Astronomico di Padova, Padova, Italy

2009 – 2011: Postdoctoral fellow, Physics Department G. Occhialini, University of Milano Bicocca, Milano, Italy

2007 – 2009: Postdoc (Forschungskredit fellow, since July 2009), Institute for Theoretical Physics, University of Zurich, Zurich, Switzerland

EDUCATION:

2003 – 2006: Ph.D. student, SISSA/ISAS (International School for Advanced Studies), Trieste, Italy. Ph.D. in Astrophysics obtained on October 19th 2006, Thesis on "Relic signatures of reionization sources", supervisor: prof. Andrea Ferrara

1998 – 2003: undergraduate student, Physics Department, University of Milano Bicocca. Master in Physics (Italian university degree) obtained on February 25th 2003, grade: 110/110 cum laude. Thesis on "Four-body interactions in globular clusters: the case of the millisecond pulsar PSR J1911-5958A", supervisor: prof. Monica Colpi

HONORS and AWARDS:

– My former PhD student Nicola Giacobbo was awarded the **Tacchini Prize 2020** and my former PhD student Elisa Bortolas was awarded the **Gratton Prize 2019** for the best Italian PhD thesis in Astronomy & Astrophysics. They both received a honourable mention by the **Braccini Prize** committee for the best international PhD Thesis related to gravitational wave science

– ERC consolidator grant 2017

– MERAC PRIZE 2015 for the Best Early Career Researcher in Theoretical Astrophysics, *awarded by the European Astronomical Society, http://eas.unige.ch/merac_prizes.jsp*
MERAC PRESS RELEASE: http://eas.unige.ch/documents/eas_prizes_2015.pdf
Motivation: the MERAC prize was awarded to me for my theoretical and computational contributions to the dynamics of star clusters and galaxies, the reionization epoch, the Galactic centre, and the formation of massive stellar black holes.

– Mention in "**Women in Italian astronomy**" (2014) by Francesca Matteucci and Raffaele Gratton, http://arxiv.org/abs/1402.1952

– **Forschungskredit Fellowship** at the University of Zurich (2008 – 2009)

– Gratton Prize 2007 for the best Italian Ph.D. Thesis in Astronomy and Astrophysics in 2005-2006.

– Tacchini Prize 2007 of the Italian Astronomical Society (SAIt) for the best Italian Ph.D. thesis in Astronomy and Astrophysics in 2006.

SCIENTIFIC HABILITATIONS:

2018 – now: Awarded the Italian National Scientific Habilitation (Abilitazione Scientifica Nazionale) to become a full professor (http://abilitazione.miur.it/public/index.php?lang=eng). My median bibliometric values are above the threshold for being a member of the habilitation committee (commissario).

2013 – now: Awarded the Italian National Scientific Habilitation (Abilitazione Scientifica Nazionale) to become an associate professor (http://abilitazione.miur.it/public/index.php?lang=eng)

EXTERNAL FUNDING RECORD:

2021 **Scientific supervisor** of the **GRACE-BH Marie Curie European Fellowship**. PI: Manuel Arca Sedda. This grant, funded by the Horizon 2020 Marie Curie program of European Commission, covers the fellowship of Dr Manuel Arca Sedda plus travel and equipment expenses. **~180 k EUR for 2 years**.

2020 **Scientific supervisor** of the **RISING Marie Curie Global Fellowship**. PI: Mario Pasquato. This grant, funded by the Horizon 2020 Marie Curie program of European Commission, covers the fellowship of Dr Mario Pasquato plus travel and equipment expenses. **~255 k EUR for 3 years**.

2020 Coordinator of the **MIAPP proposal** "The Fundamental Role of Stellar Multiplicity in Stellar Dynamics and Evolution", approved in 2020 and scheduled for November 2022; other coordinators: A. Mérand, H. Boffin, S. Ekstrom, JJ Eldridge.

2018 **PI** of the **FWF stand-alone grant FP311540** (PopNeS: Unraveling merging neutron stars and black hole – neutron star binaries with population-synthesis simulations), PI: Mapelli, 0 CO-Is, awarded **320 299,88 EUR** for 3 years (2018 – 2021) by the Austrian National Science Foundation.

2017 **PI** of the **DEMOBLACK** (Demography of Black Hole Binaries in the Era of Gravitational Wave Astronomy) **ERC consolidator grant** (PI: Mapelli, 0 CO-Is), awarded **1 994 764 EUR** for 5 years (2018 – 2023) by the European Research Council.

2017 **co-I** of the "premiale" project "FIGARO – FOSTERING THE ITALIAN LEADERSHIP IN THE FIELD OF GRAVITATIONAL WAVE ASTROPHYSICS" (PI: Gianluca Gemme), awarded **2.144 M EUR for 3 years (2018 – 2020)** by **the Italian Ministry of Education, University and Research (MIUR). >10 co-I.**

2017 **co-I** of the "premiale" project "MITic – Mining the Cosmos: Big Data and Innovative Italian Technology for Frontier Astrophysics and Cosmology" (PI: Bianca Garilli), awarded **1.128 M EUR for 2 years (2018-2019) by the MIUR. >10 co-I.**

2017 **co-I** of the project "The Evolution of Rich Stellar Populations & Black Hole Binaries" (PI: Christian Boily). This grant, funded by the International Space Science Institute – ISSI in Bern, Switzerland, covers the expenses for the organization of three meetings on the proposed subject and aims at consolidating an international collaboration on the study of black hole binaries in star clusters. **11 co-I.**

2017 **Scientific Advisor and co-applicant** of the Astrofit2 Marie Curie Fellowship "ARTIStIC – ARTificial Intelligence Search for Intermediate-mass black holes in star Clusters " (PI: Mario Pasquato, **1 co-I**). This grant, funded by the Horizon 2020 Marie Curie program of European

Commission, covers the fellowship of Dr Mario Pasquato plus travel and equipment expenses Awarded **~170 k EUR for 3 years, from 2017 to 2020**.

2017 **co-I** of the project "Opening a new era in pulsar and compact-object science with MeerKat " (PI: Andrea Possenti), awarded **306k EUR for 2 years (2017-2019) by INAF. >10 co-I.**

2015 **PI** of the project "The physics of gas and protoplanetary discs in the Galactic centre: predictions for SKA and ALMA ", awarded **150k EUR for 3 years (2016-2019) by Fondation MERAC (100 keur) and by INAF (50 keur). 0 CO-Is.**

2015 **PI** of the **INAF PhD project** "Hydrodynamical simulations of clustered star formation and the young star clusters of the Gaia ESO survey", awarded **~70k EUR for 3 years (2015-2018)**. This grant funds a new PhD project.

2014 **PI** of the **PRIN INAF** project "Star formation and evolution in galactic nuclei", awarded **32k EUR for 2 years (2014-2016)**

2012 **CO-PI of the FIRB** (Future in Research, Italian grant for excellent young researchers) project "New perspectives on the violent Universe: unveiling the physics of compact objects with joint observations of gravitational waves and electromagnetic radiation". *NOTE: this is the only astrophysical proposal (PE9) funded in the 2012 FIRB call (success rate <2%).*
National coordinator and head of the Urbino University Research Unit (RU): Marica Branchesi; **head of the INAF RU: Michela Mapelli**; head of the Pisa University RU: Massimiliano Razzano. Awarded **958.49k EUR for 3 years (2013-2016) by the MIUR**

2012 CO-I of the **CONACYT** (Mexican grant) proposal "Nearby and distant spheroids: cutting-edge theoretical tools for the analysis of stellar populations" (PI E. Bertone, INAOE, Puebla, Mexico), awarded **661.3k PESOS for 2 years (2013-2014)**.

2012 CO-I of the **PRIN-INAF** "Challenging Ultraluminous X-ray sources" (PI Zampieri, INAF-OAPd), awarded **41k EUR for 2 years (2012-2013)**.

2009 fellowship at the University of Milano Bicocca (project title: "Understanding galaxy formation"), **PI**: M. Mapelli, 0 CO-Is, awarded **20k EUR/year for 2+2 years**.

2008 **Forschungskredit fellowship** at the University of Zurich, **PI**: M. Mapelli, 0 CO-Is, awarded **60k EUR for 12 months**.

2007 Gratton Prize for the best Italian PhD Thesis in Astrophysics 2005-2006, awarded **7.5k EUR**.

TEACHING EXPERIENCE:

COURSES AS PRIMARY LECTURER, BACHELOR and MASTER:

2020 – now Primary lecturer of the course “Computational Astrophysics”, for Master students in Physics of Data at the University of Padova (48 hours/yr)

2019 – now Primary lecturer of the course “Mathematical and numerical methods”, for Master students in Astrophysics and Cosmology at the University of Padova (48 hours/yr)

2019 – now Primary lecturer of the course “Laboratory of computational physics”, for Master students in Physics of Data at the University of Padova (24 hours/yr)

2018 – 2019 Primary lecturer of the course “General Physics 1”, for Bachelor students in Electronic Engineering at the University of Padova (60 hours/yr)

2017 – 2018 Primary lecturer of the course “Physics of the Interstellar Medium”, for Master students in Physics at the University of Innsbruck (50 hours/yr)

2017 – 2018 Primary lecturer of the course “Gravitational Wave Astrophysics”, for Master students in Physics at the University of Innsbruck (50 hours/yr)

COURSES AS TEACHING ASSISTANT, BACHELOR and MASTER:

2009 – 2011 "Stellar evolution” and "Galactic dynamics” at the University of Milano Bicocca.

2007 – 2009 "Proseminar Theoretical Physics”, University of Zurich.

2008 – 2009 "Theoretical Astrophysics”, University of Zurich.

2007 – 2008 "Introduction to Astrophysics”, University of Zurich.

COURSES AS PRIMARY LECTURER, PHD:

2020 – now Primary lecturer of the course “Gravitational Wave Astrophysics”, for the Ph.D. School in Astronomy at the University of Padova (16 hours/yr)

2015 – now Primary lecturer of the course "N-body techniques for astrophysics", for the Ph.D. School in Astronomy, at the University of Padova (16 hours/yr).

2012 – now Primary lecturer of the course "Collisional dynamics in stellar systems", for the Ph.D. School in Astronomy, at the University of Padova (10 hours/yr).

INVITED LECTURES and LECTURE CYCLES:

2020 – now Invited primary lecturer of the course “Compact Object Formation”, for the Ph.D. School in Physics at the GSSI (10 hours/yr)

2020 Invited lecture at the International School of Physics of the Universe on Multi-Messenger Astrophysics, January 14 – 23 2020, Asiago, Italy

2019 Invited lecture at the ISAPP School on The Dark Side of the Universe, May 28 – June 4 2019, Heidelberg, Germany

2019 Invited lecture at the PHAROS School on Multimessenger Physics and Astrophysics with compact binaries, 11 – 15 March 2019, Jena, Germany

2018 Primary lecturer of the course "Dynamics of Stars and Black Holes in Dense Stellar Systems", for the Ph.D. School in Astrophysics, at SISSA (8 hours/yr).

2017 Invited lectures at the International School of Physics "Enrico Fermi", Course 200 - Gravitational Waves and Cosmology, 2 – 12 July 2017, Varenna, Italy, organizers: Eugenio Coccia, Nicola Vittorio, and Joseph Silk – two lectures on "Black holes physics and astrophysics’

2016 Invited lectures at "Astrophysical Probes of Fundamental Physics, a PhD School at University of Ferrara", Ferrara (Italy), 5 – 9 September 2016, lecture on "Demography of stellar mass black holes", Organizers: Piero Rosati, Cristiano Guidorzi, Paolo Natoli

2016 Invited lecture at the Binational Heraeus Summer School Series for Teacher Students and Teachers "Star and planet formation" (August 23 – 30 2016), at the Arcetri Astronomical Observatory, Firenze, Italy. Tutorial about: "How to make star clusters out of gas".

2016 Invited lecture at "The Gaia course for PhD students", Astronomy PhD School, Bologna, Italy, 6 – 10 June 2016, lecture on "Dynamics of open clusters and star forming regions", organizers: A. Bragaglia, C. Cacciari, G. Clementini (OABO), F. R. Ferraro (University of Bologna)

2015 Invited lecture at the Binational Heraeus Summer School Series for Teacher Students and Teachers "Gravitational Wave Universe" (August 31 - September 4 2015), at the University of Jena, Jena, Germany. Lecture about: "How to be ready for multi-messenger astronomy: a census of gravitational wave sources and electromagnetic counterparts".

2015 Invited lecture at the Binational Heraeus Summer School Series for Teacher Students and Teachers "Gravitational Wave Universe" (June 19 2015), at the University of Padova, Italy. Lecture about: "Gravitational wave sources and electromagnetic counterparts".

2014 Invited lecturer at the Binational Heraeus Summer School Series for Teacher Students and Teachers "Space, Time and Gravitation, The case of Active Galactic Nuclei" (September 1-6 2014), at the University of Padova. Lectures about: "Star formation around super-massive black holes: theory and phenomenology".

2014 Invited lecturer at the PRIN meeting "Challenging ultra-luminous X-ray sources" (January 30-31 2014), at the University of Milano Bicocca. Lectures about: "Dynamics and ultraluminous X-ray sources"

2013 Invited lecturer at the Summer school "HIGH PERFORMANCE SCIENTIFIC COMPUTING " (Strategic Research Project AACSE - Algorithms and Architectures for Computational Science and Engineering, Department of Information Engineering, University of Padova), Padova, Italy, September 16-19, 2013 – Lectures about: "Direct summation N-body codes for astrophysical simulations: from GRAPE to GPU "

RESEARCH ADVISING (since 2008):

Bachelor students: 18. Cedric Huwyler (2008, University of Zurich), Davide Fiacconi (2010, University of Milano-Bicocca), Marcello Gomitoni (2010, University of Milano-Bicocca), Giovanni Bruno (2010, University of Milano-Bicocca), Alessandro A. Trani (2011, University of Milano-Bicocca), Ugo N. Dicarlo (2014-2015, University of Padova), Enrico Montanari (2015-2016, University of Padova) , Giulio Dondi (2016, University of Modena e Reggio Emilia), Erica Greco (2017, University of Padova), Nicola Gaspari (2018, University of Padova), Erik Richter-Alten (2018, University of Innsbruck), Alberto Brentegani (2019, Padova University), Alberto Magaraggia (2019, Padova University), Francesco Spezzati (2019, Padova University), Lorenzo Merli (2019, Padova University), Marianna Zerajic De Giorgio (2020, Padova University), Erika Korb (2020, Padova University), Irma Berviglieri (2021, Padova University)

Master students: 22. Stefano Cotini (2010 – 2011, University of Milano-Bicocca), Mattia Villani (2010 – 2011, University of Pavia), Davide Fiacconi (2011 – 2012, University of Milano-Bicocca), Alessandro A. Trani (2013, University of Milano-Bicocca), Andrea Moretti (2014 – 2015, University of Milano-Bicocca), Alessandra Ferri (2014 – 2015, University of Milano-Bicocca), Matteo Mazzarini (2015 – 2016, University of Padova), Benjamin Czaja (2015 – 2016, Astromundus student, University of Padova), Nicola Giacobbo (2016, University of Padova), Ugo Niccolò Di Carlo (2017, University of Padova), Mattia Toffano (2018, University of Padova), Enrico Montanari (2018 – 2019, University of Padova), Piero Trevisan (2018 – 2019, University of Padova), Filippo Santoliquido (2019, Padova University), Marco Dall'Amico (2019 – 2020, Padova University), Nicola Gaspari (2019 – 2020, Padova University), Erica Greco (2020, Padova University), Riccardo Baldo (2020 – 2021, Padova University), Roberta Rufolo (2020 – 2021, Padova University), Cecilia Sgalletta (2021, Padova University), Emanuele Maria Ventura (2021, Padova University), Jacopo Tissino (2021, Padova University)

PhD students: 8. Brunetto Marco Ziosi (2012 – 2015, University of Padova; now permanent IT staff in a private company), Alessandro Alberto Trani (2013 – 2017, SISSA, external supervisor; now independent JSPS postdoctoral fellow, University of Tokyo), Elisa Bortolas (2015 – 2018, University of Padova; now postdoctoral fellow at University of Zurich), Nicola Giacobbo (2016 – 2019, University of Padova; now postdoctoral fellow at the University of Padova), Ugo Niccolò Di Carlo (2017 – now, University of Insubria) , Filippo Santoliquido (2019 – now, Padova University), Stefano Torniamenti (2019 – now, Padova University), Marco Dall'Amico (2020 – now, Padova University)

Current Postdocs: 6. Dr. Alessandro Ballone (2016 – now, INAF-OAPd, funded by my 2015 MERAC grant and since 2019 by my ERC Consolidator Grant); Dr. Yann Bouffanais (2018 – now, ERC Consolidator grant); Dr. Guglielmo Costa (2019 – now, ERC Consolidator Grant); Dr. Ugo Niccolò Di Carlo (2020 – now, ERC Consolidator Grant); Dr. Giuliano Iorio (2019 – now, ERC Consolidator grant); Dr. Sara Rastello (2019 – now, ERC Consolidator grant)

Former Postdocs: 5. Dr. M. Celeste Artale (2018 – 2019, now FWF stand-alone grant leader at the University of Innsbruck); Dr. Nicola Giacobbo (2019 – 2020, ERC Consolidator grant; now postdoc at Birmingham University); Dr. Mario Pasquato (2017 – 2020, INAF-OAPd, independent Astrofit2 Marie Curie grant; now senior postdoctoral fellow at New York Univesity Abu-Dabhi); Dr. Nadeen Sabha (2018 – 2019, now postdoc at the University of Innsbruck); Dr. Mario Spera (2014 – 2017, INAF-OAPd, funded by my 2012FIRB grant, 2017 – 2018, Innsbruck University; in 2019 – 2020 Marie Curie Global Fellow at University of Padova and Northwestern University; now assistant professor at SISSA).

ERASMUS students: 2. Tom Kimpson (2015, University of Durham, UK; now PhD student at the University College of London), summer project about "Hierarchical triple systems: a gravitational wave factory and a powerful laboratory for general relativity"; Adam Dakroury (2016-2017, University of Surrey, UK), 1-yr project about "SEVN: A new binary evolution code to study gravitational wave events"

SUMMER internships: 2. Alice Doimo (2020, UniPd); Cecilia Sgalletta (2020, UniPd)

COLLOQUIA AND TALKS AT CONFERENCES:

I was invited to give **41 colloquia** at international research institutes and universities. I also gave >60 oral presentations at international conferences, among which **51 invited talks and review talks**. For my additional **13 invited lectures**, see the previous section on Teaching Experience.

List of the invited colloquia/webinars:

41 – Heidelberg Joint Astronomical Colloquium, invited talk about “The riddle of binary black hole formation”, May 18 2021 (it will be done remotely because of the covid emergency)
40 – CCA, Flatiron Institute, New York, US, invited talk at the compact object meeting about “Hierarchical mergers and intermediate-mass black holes”, May 13 2021 (it will be done remotely because of the covid emergency)
39 – La Sapienza University, Rome, Italy, invited ARC colloquium about “Binary black holes”, May 6 2021 (it will be done remotely because of the covid emergency)
38 – Massachusetts Institute of Technology (MIT), US, invited colloquium about “Binary black holes across the Universe”, March 30 2021 (done remotely because of the covid emergency)
37 – APC, Paris, France, invited colloquium about “Binary black holes in the mass gap”, February 26 2021 (this talk will be done remotely because of the covid emergency)
36 – IRAP, Toulouse, France, invited colloquium about “The multifaceted formation of binary black holes”, January 21 2021 (this talk will be done remotely because of the covid emergency)
35 – Lund University, Lund, Sweden, invited colloquium about “Binary black holes”, October 29 2020 (this talk has been done remotely because of the covid emergency)
34 – University of Florida, Gainesville, FL, US, invited colloquium about “Black holes in the pair instability mass gap”, October 28 2020 (this talk has been done remotely because of the covid emergency)
33 – Webinar on “GW190521”, on behalf of the LIGO-Virgo collaboration, September 3 2020, https://www.youtube.com/watch?v=JtpO5S1XhG8&t=5s (this talk has been done remotely because of the covid emergency, >500 participants)
32 – Cardiff University, Cardiff, UK, invited lunch talk about “Stellar Black Hole Formation and Dynamics across Cosmic Time”, June 25 2020 (this talk has been done remotely because of the covid emergency)
31 – INAF, Padova, Italy, invited lunch talk about “Binary compact objects across cosmic time”, May 19 2020 (this talk has been done remotely because of the covid emergency)
30 – Lancaster University, UK, invited Colloquium about “Binary compact objects across cosmic time”, May 5 2020 (this talk has been done remotely because of the covid emergency)
29 – ESO, Garching, Germany, invited Web Lunch Talk about “Binary compact objects across cosmic time”, April 7 2020 (this talk was done remotely because of the covid emergency)
28 – Institute for Theory and Computation, Center for Astrophysics, Harvard & Smithsonian, Boston, US, invited colloquium about “The mass and dynamics of black holes”, October 24 2019
27 – GSSI, L’Aquila, Italy, invited colloquium about “Demography of black holes across cosmic time”, December 5 2018
26 – Albert Einstein Institute, Potsdam, Germany, invited colloquium about “Demography of compact objects in the era of gravitational-wave astronomy”, May 30 2018
25 – University of Wien, Austria, invited colloquium about “The astrophysics of compact object binaries”, June 22 2018
24 – University of Leiden, The Netherlands, invited colloquium about “The demography of black holes in the era of gravitational-wave astronomy”, May 17 2018
23 – Inaugural Lecture for the New Professorship, University of Innsbruck, “The demography of compact objects in the era of gravitational-wave astronomy”, April 10 2018
22 – University of Warsaw, Poland, invited colloquium about “The demography of black holes”, March 14 2018
21 – Cardiff University, UK, invited colloquium about “Formation and evolution of binary black holes”, February 21 2018
20 – University of Trento, invited colloquium about “What are the formation channels of black hole binaries?”, January 11 2018
19 – Bologna Astronomical Observatory, Italy, invited colloquium about "Few good reasons to not get bored of star clusters’, May 4 2017
18 – Munich Joint Astronomy Colloquium, Munich, Germany, invited colloquium about "The dynamics of stellar systems", November 24 2016
17 – Max Planck Institut fuer Radioastronomie (MPIfR), Bonn, Germany, invited colloquium about "The dance of stars in galactic nuclei", January 25, 2016
16 – Osservatorio Astrofisico di Arcetri, Firenze, Italy, "Star formation activity in the Galactic Centre", October 29, 2015
15– ESO, Garching, Germany, Informal discussion (invited black board colloquium) on "Young star clusters: when collisional dynamics meets stellar evolution", July 29, 2015
14– Astronomical Observatory, Rome, Italy, *The nature of the dusty object G2*, May 5, 2015
13– University of Surrey, UK, *The violent life of the Galactic centre*, May 22, 2014

12– SISSA/ISAS, Trieste, Italy, *The sarabande of stars and black holes in dense young star clusters*, February 18, 2014
11– IASF Bologna, Bologna, Italy, *New perspectives on the violent Universe: unveiling the physics of compact objects with joint observations of gravitational waves and electromagnetic radiation*, December 18, 2013
10– University "La Sapienza", Rome, Italy, *Simulating young star clusters with different metallicity: impact on structural evolution and stellar exotica*, May 6, 2013
9– IRAP, Toulouse, France, *Massive stellar black holes and intermediate-mass black holes: formation pathways and observational fingerprints*, March 7, 2013
8– INAF, Brera Observatory (Milano, Italy), *Dynamics of massive stellar black holes*, November 23, 2011
7– Physics and Astronomy Department, University of Padua (Padova, Italy), *Galaxy clashes and perturbed galaxies*, September 8, 2011
6– University of Bologna and INAF-Bologna Observatory (Bologna, Italy), *Massive stellar black holes in low-metallicity environments*, November 18, 2010
5– Institute for Theoretical Physics, University of Zurich (Zurich, Switzerland), *Massive stellar black holes*, September 22, 2010
4 – INAF, Osservatorio Astronomico di Brera-Merate (Milan, Italy), "Dynamics of peculiar galaxies", March 27, 2009
3 – Institute for gravitational physics and geometry, Penn State University (US), Sources and Simulations Seminars, "Dynamical Constraints on Intermediate Mass Black Holes", February 2, 2006
http://www.gravity.psu.edu/events/sss/2006/spring.shtml
2 – Theoretical astrophysics group, Northwestern University (US), "Dynamical Constraints on Intermediate Mass Black Holes", January 29, 2006
http://www.astro.northwestern.edu/Theory/People/visitors_05-06.html
1 – Institute of Astronomy, Cambridge (UK), "Extragalactic meetings", January 9, 2006, "Decaying cold and warm dark matter"

List of invited talks and review talks at conferences

51 – Conference “Nordic Neutron Stars”, May 11 – 15 2022, Aarhus Institute of Advanced Studies (AIAS), Aarhus University, Denmark, invited talk on Binary neutron stars (postponed because of covid19)

50 – Conference “Growing Black Holes: Accretion and mergers”, 19-24 April 2022, Katmandu, Nepal, invited review talk on “The cosmic evolution of compact object binaries” (postponed because of covid19)

49 – Workshop “Source Inference and Parameter Estimation in Gravitational Wave Astronomy”, November 15 – 19 2021, Part of the Long Program Mathematical and Computational Challenges in the Era of Gravitational Wave Astronomy, IPAM, UCLA, Los Angeles, US (forthcoming)

48 – Conference EAS 2021, Syymposium “The Birth, Life and Death of Black Holes”, June 28 – 29 2021, Leiden, The Netherlands, invited review talk on Black hole populations (forthcoming)

47 – Conference “Le Rencontres de Moriond - Gravitation”, March 9 – 11 2021, keynote speaker, invited review talk on “Binary black hole formation”, held remotely because of covid-19

46 – Conference “Miami 2020”, Miami, US, December 10 2020, invited talk on “Black holes in the pair instability mass gap” (the conference moved to an online format because of the covid-19 emergency)

45 – Workshop “Newest results from LIGO – Virgo – KAGRA”, Copenhagen, November 18 2020, invited talk on the Formation channels of GW190521 (the workshop was organized in a dual format because of the covid-19 emergency)

44 – “FERO 10th meeting”, November 17 – 19 2020, Toulouse, France, invited review talk on “Constraints on the intermediate-mass black hole population from GW events” (postponed because of the covid-19 emergency)

43 – “Virtual Iberian Gravitational Wave Meeting”, October 19 – 20 2020, invited talk on “Demography of binary compact objects: from theory to data” (held online because of the covid-19 emergency)

42 – Conference “PASCOS (Particles Strings Cosmology)”, 13 – 17 July 2020, Heidelberg, Germany, invited plenary talk on “Gravitational Wave Astrophysics (canceled because of covid-19 pandemic)”

41 – Conference “EAS 2020”, Symposium on “What have we learned from the observed population of gravitational wave sources?”, 2 – 3 July 2020, Leiden, The Netherlands, invited review talk on “The formation of isolated compact object binaries” – this conference has been held online because of the covid-19 emergency

40 – Conference ”Gravitational Wave Physics and Astronomy: Genesis”, 10 – 12 February 2020, Kobe, Japan, invited review talk on “Formation mechanisms of merging BH binaries”

39 – Workshop “Black Holes and Gravitational Waves”, December 16 – 20 2019, Leiden, The Netherlands, invited talk on the Dynamics of black holes

38 – Workshop “Strong gravitational phenomena and tests of gravity with current and future experiments”, August 28 – 30 2019, Saint Flour, France, invited review talk on “Challenges of modelling the evolution of black hole binaries, and their connection with astrophysical observations”

37 – Conference “Merging Visions: Exploring Compact-Object Binaries with Gravity and Light”, June 24 – 27 2019, Kavli Institute for Theoretical Physics, UC Santa Barbara, California, US, invited talk on “Black hole dynamics”

36 – EWASS 2019, Special Session on “The dynamics of stellar clusters: simulations and observations at low/high redshifts”, Lyon, France, June 24 – 28 2019, invited talk on “Hydrodynamical simulations of star cluster formation”

35 – XVIII International Workshop on Neutrino Telescopes, Venice, Italy, March 18 – 22 2019, invited talk on Lessons learned from GW170817 and what next

34 – Gravitational Waves, Black Holes and Fundamental Physics, EU COST meeting, Athens, Greece, January 21 – 24 2019, invited review talk on black hole dynamics

33 – The Central Arcsecond: Towards Testing General Relativity in the Galactic Center Sunday to Saturday, October 28 — November 3, 2018, Schloss Ringberg, Bavaria, Germany, invited talk

32 – 68th Annual Meeting of the Austrian Physical Society, Graz, Austria, September 11 – 14 2018, Invited plenary talk

31 – Symposium IAU 346: High-mass X-ray binaries: illuminating the passage from massive binaries to merging compact objects, as part of the XXX IAU General Assembly, Wien, Austria, 20 – 31 August 2018, invited talk

30 – Workshop “Star Clusters around the Milky Way and in the Local Group (Observations, Dynamics, Modelling, Supercomputing)”, Collaborative Research Center (SFB881) at the University of Heidelberg, Aug. 15-17, 2018, invited speaker

29 – Second Workshop “Young Stellar Populations, their Evolution & the Statistics of Black Hole Binaries”, ISSI, Bern, Switzerland, July 8 – 12 2017, invited speaker

28 – Meeting “Finding Extreme Relativistic Objects”, Heraklion, Crete, Greece, 23-25 May, 2018, invited talk

27 – APS April meeting, Division of Gravitational Physics, Session on “Gravitational Wave Sources: Compact Binary Formation Scenarios”, Columbus, Ohio, US, 14-17 April 2018, invited talk

26 – Workshop “Young Stellar Populations, their Evolution & the Statistics of Black Hole Binaries”, ISSI, Bern, Switzerland, November 13 – 17 2017, invited speaker

25 – Amaldi 12 conference on Gravitational Waves, Pasadena, CA, USA, July 9 – 14 2017, invited plenary talk on “GW Coalescing Binary detections: impact for Astrophysics, any new results”

24 – ESO workshop “The Impact of Binaries on Stellar Evolution”, Garching, Germany, July 3 – 7 2017, invited review talk on “The Maxwell’s demon of star clusters, aka the impact of binaries on N-body system evolution”

23 – EWASS 2017, Symposium on “The multifrequency gravitational wave universe”, Prague, Czech Republic, June 26 – 30 2017, invited review talk on “Dynamical origin of compact object binaries”

22 – Conference “New Frontiers in Gravitational-Wave Astrophysics”, June 19 – 22 2017, Rome, Italy, invited talk on “The mass spectrum and dynamics of double black hole binaries”

21 – Conference "631. WE-Heraeus-Seminar: Stellar aggregates over mass and spatial scales", Dec. 5-9, 2016, Bad Honnef, Germany, invited talk on “Near the monster: formation and dynamics of stars in galactic nuclei”

20 – Meeting "The transient and variable sky in the era of gravitational wave astronomy" of the Royal Astronomical Society, October 26 – 27 2016, Chicheley Hall, London, UK, invited talk on "Dynamical formation of compact binaries"

19 – Meeting GR100+1 for the inauguration of the Academic Year at University of Milano Bicocca, October 24 2016, Milano, Italy, Invited talk on “Merging black holes: how do they form?”

18 – SIF (Società Italiana Fisica), 102° National Meeting, September 26 – 30 2016, Padova, Italy, invited talk

17 – Star clusters: from Infancy to Teenagehood, August 8-12 2016, Heidelberg, Germany, invited review talk about "The dynamics of young star clusters: a happy marriage between simulations and the Gaia-ESO survey"

16 – What about computing @ INAF?, June 20 – 21 2016, Monte Mario, Rome, Italy, invited talk

15 – ULXs and their environment, June 13-16 2016, Strasbourg, France, invited talk

14 – INAF after GW150914, April 11 2016, Monte Mario, Rome, Italy, invited talk

13 – GES meeting 2015, December 1- 4 2015, Vilnius, Lithuania, invited talk

12 – EWASS 2015, Plenary Talk for the MERAC prize, June 22-26 2015, La Laguna, Tenerife, Canary Islands, Spain, invited talk

11– EWASS 2015, Special Session "3D view on interacting and post-interacting galaxies from clusters to voids", June 22-26 2015, La Laguna, Tenerife, Canary Islands, Spain, invited talk

10– Black holes in dense star clusters, January 17-22 2015, Aspen, US, invited participant, talk on "Life and death of stellar discs around supermassive black holes"

9– Astro-GR@Rome, "Gravitational waves and electromagnetic observations of dense stellar systems", July 14-18 2014, Rome, Italy, invited talk

8– Science Workshop on "ULXs - Implications for our View of the Universe", Lorentz Center, Leiden, The Netherlands, March 31- April 4, 2014, invited review talk

7– Meeting "Challenging ultraluminous X-ray sources", University of Milano Bicocca, Milano, Italy, January 30-31 2014, invited talk

6– High Energy Tidal Disruption Events: Looking at the Future, Favignana, Italy September 23-26, 2013, invited talk

5– 1st Science Workshop of the Gaia Italia Community, Science with Gaia: revising the Italian selection of main themes, Bologna, Italy, December 12-14 2011, invited talk

4– Aspen Summer Meeting, Stellar and Intermediate Mass Black Holes: Gravitational Physics and Radiation Sources Across the Universe", Aspen, CO, US, June 6-26, 2011, invited participant, blackboard talk

3- "LI congresso della Società Astronomica Italiana", Firenze, Italy, April 17-20 2007, invited talk (Tacchini prize)

2- "Eleventh Marcel Grossmann Meeting", Berlin, Germany, July 24-29 2006, invited talk

1- "SNAC 2006" (Sterile Neutrinos in Astrophysics and Cosmology), Crans-Montana, Switzerland, March 25-29 2006, invited talk

ORGANIZATION OF CONFERENCES AND WORKSHOPS:

2022: coordinator of the MIAPP program “The Fundamental Role of Stellar Multiplicity in Stellar Dynamics and Evolution”, MIAPP, Garching, November 2022

2021: member of the SOC of “Where are the BH-NS binaries?”, Special Session at the EAS 2021, Leiden, The Netherlands, Summer 2021

2021: member of the SOC of the “The origin and build-up of angular momentum in stellar systems”, Strasbourg, France, Spring 2021

2020: member of the SOC of the “Multiple Stellar Populations in the next decade”, Padova, Italy, 7-11 September 2020 (to be rescheduled due to covid-19 emergency)

2020: member of the SOC of the “Globular Clusters at the Nexus of Star and Galaxy Formation”, KITP, Santa Barbara, CA, US, March – June 2020 (rescheduled due to covid-19 emergency)

2020: member of the SOC of the “MODEST 20: Dense Star Clusters in the Era of Large Surveys”, TIFR, Mumbai, India, February 2--7 2020

2019: member of the SOC of the “LXIII Conference of the Italian Astronomical Society (SAIt)”, Roma, Italy, May 14 – 17 2019

2019: member of the SOC of the “PHAROS Conference 2019: the multi-messenger physics and astrophysics of neutron stars”, Platja d' Aro, Spain, April 23 – 26 2020

2019: member of the SOC of the IAU Symposium 351: Star Clusters from the Milky Way to the Early Universe, Bologna, Italy, May 27 – 31 2019

2018: member of the SOC of the "MODEST 18: Dense Stellar Systems in the Era of Gaia, LIGO, and LISA", Santorini, Greece, June 25 – 29 2018

2018: member of the SOC of the Workshop "Ultraluminous X-ray pulsars", European Space Astronomy Centre (ESAC), Madrid, Spain, from June 6 – 8 2018

2018: member of the SAC of the Symposium "Gravitational-waves Science & Technology" (GRASS), Padova, Italy, March 1 – 2 2018

2016: member of the SOC of the conference "Multi-spin and interacting galaxies", SAO RAS, at the Special Astrophysical Observatory of RAS located in Nizhnij Arkhyz, Russia, September 26 – 30 2016

COORDINATION of RESEARCH GROUPS, MEMBERSHIPS and COLLABORATIONS:

2021 – now: **co-chair of Division 3** (Population studies) for the **Observation Science Board** of **Einstein Telescope**, the European next-generation ground-based gravitational-wave detector

2019 – now: **head of the TEONGRAV Padova** group (> 15 researchers). The TEONGRAV Padova group is one of the core members of TEONGRAV, a national INFN project bringing together teams with theoretical experience in the field of gravitational waves, national head: L. Gualtieri, https://web.infn.it/CSN4/IS/Linea5/TEONGRAV/index.html

2018 – now: PI and **leader of the DEMOBLACK ERC team**, funded by the 2017-ERC-Co Grant. The group will consist in more than 6 postdoctoral fellows, 2 PhD students and several external collaborators (working at SISSA, University of Innsbruck, Leiden University, Northwestern University, INFN, INAF, GSSI, University of Aarhus,...)

2018 – now: **Work Package leader**, **Pharos COST action** (http://www.pharos.ice.csic.es/wg4)

2018 – now: member of the **3G Science Team**, to explore the scientific impact of third-generation gravitational wave detectors (writing team member of the Compact Binary group). I have significantly contributed to the Science Book of 3G detectors and I am one of the lead co-authors of the Astro2020 GWIC-3G science white paper "Deeper, wider, sharper: next-generation ground-based gravitational-wave observations of binary black holes", arXiv:1903.09220.

2018 – now: **LISA consortium** associate member (since 2019 **co-chair of the WP about stellar-mass binaries**)

2018 – now: member of the **LIGO – Virgo** collaboration (active in the populations & rates team) .

2018 – now: member of the **ENGRAVE** (Electromagnetic counterparts of gravitational wave sources at the Very Large Telescope) collaboration.

2016 – now: member of the **GRAWITA** (GRAvitational Wave Inaf TeAm) collaboration.

2015 – 2017: member of the **MAORY SCIENCE TEAM** for the scientific exploitation of MAORY, the multi-conjugate adaptive optics module of the European Extremely Large Telescope. I am one of the lead co-authors of the MAORY Science Cases White Book, arXiv:1712.04222.

2014 – now: member of the European Astronomical Society (**EAS**).

2014 – now: member of the Italian National Institute of Nuclear Physics (**INFN**).

2013 – 2017: member of the **VMC** survey (The VISTA near-infrared YJKs survey of the Magellanic System).

2012 – now: member of the Gaia–ESO Survey (**GES**).

2012 – now: member of the International Astronomical Union (**IAU**).

REFEREE and EDITORIAL BOARD MEMBERSHIPs:

2021: panel member, Hubble Fellowship 2021

2017 – now: invited member of the Editorial Board of the journal Computational Astrophysics and Cosmology, https://comp-astrophys-cosmol.springeropen.com/

2015 – 2018: invited Review Editor for Frontiers in Astronomy and Space Sciences www.frontiersin.org

2019: External reviewer for the PhD Thesis of Lumen Boco (SISSA, Italy)

2019: External reviewer for the PhD Thesis of Ruggero de Vita (Melbourne University, Australia)

2018: External reviewer for the PhD Thesis of Shubhanshu Tiwari (GSSI and University of Trento, Italy)

2017: External reviewer and member of the International Committee for the final defense of the PhD student Tilman Hartwig (Université Pierre and Marie Curie, Paris)

2014: reviewer, Cycle 16 Chandra Proposal Peer Review

2013 – now: referee for the European Research Council

2013 – now: referee for the Italian Ministry of Education, University and Research (MIUR)

2012 – now: referee for the National Science Foundation organizations of various EU countries

2011 – now: referee for the CINECA (Italian HPC centre)

2006 – now: referee for some of the main astrophysical journals (ApJ, MNRAS, A&A, AN, Nature Astronomy) and multidisciplinary science journals (Nature) on a regular basis

INSTITUTIONAL RESPONSIBILITIES:

2019 – now: Member of the Board of Professors, PhD Course in Astronomy (in Italian: Membro del Collegio dei Docenti del Corso di Dottorato in Astronomia), Padova University

2018 – now: Member of the Board of Professors, Physics and Astronomy Department, Padova University

2017 – 2018: Chair of the Extra-Galactic Group of the Astrophysics and Particle Physics Institute of the University of Innsbruck. The chair organizes the teaching activities of the other members of the group, administrates the group budget, evaluates the annual performance of the members of the team and coordinates the activities and the vision of the Institute in collaboration with the chairs of the other two groups.

2017 – 2018: Member of the Board of full professors (consiglio ristretto dei professori ordinari) of the "Schwerpunkt Physik" (equivalent to a Physics Department) of Innsbruck University

2020 – now: Scientific advisor of Dr Ugo N. Di Carlo (postdoctoral fellow)

2019 – now: Scientific advisor of Dr Nicola Giacobbo (postdoctoral fellow)

2019 – now: Scientific advisor of Dr Giuliano Iorio (postdoctoral fellow)

2019 – now: Scientific advisor of Dr. Guglielmo Costa (postdoctoral fellow)

2018 – now: Scientific advisor of Dr Sara Rastello (postdoctoral fellow)

2018 – now: Scientific advisor of Dr Yann Bouffanais (postdoctoral fellow)

2018: Scientific advisor of Dr. Nadeen Sabha (postdoctoral fellow)

2017 – 2018: Scientific advisor of Dr. Celeste Artale (postdoctoral fellow)

2017 – now: Scientific advisor of Dr. Mario Pasquato (Marie Curie fellow)

2016 – now: Scientific advisor of Dr. Alessandro Ballone (postdoctoral fellow)

2014 – 2018: Scientific advisor of Dr. Mario Spera (postdoctoral fellow)

2014: Member of the Selection Committee for the Admission of PhD students in Physics at the University of Milano Bicocca, Milano, Italy

2014: Member of the Internal Committee for the final defense of the PhD student Ms. Giulia Despali, Padova University, Padova, Italy

2012 – now: Graduate Student Advisor, PhD school in Astronomy, Padova University

2012 – now: Member of several Committees, for the appointment of fellowships (borse di studio) and postdoctoral positions (assegni di ricerca) at the Astronomical Observatory of Padova, at the University of Innsbruck, and at the University of Padova

ACCEPTED OBSERVATIONAL PROPOSALS (last two years only):

- co-I, HST PROPOSAL, Cycle 28, "Compact binary mergers: R-process kilonovae and ultra-relativistic jets", PI: Nial Tanvir, 18 Primary Spacecraft Orbits + 30 ksec XMM Time

- co-I, CHANDRA PROPOSAL (LARGE PROGRAM), Cycle 21, “Star formation in starburst: a deep ACIS-I observation of Westerlund 1”, PI: Mario Guarcello, 1Ms observing time + $ 126’640

- co-I, ESO PROPOSAL (LARGE PROGRAM, PERIODs 102 – 104, ToO) “ENGRAVE: Electromagnetic counterparts of gravitational wave sources at the Very Large Telescope (Part I)”, FORS2 and XSHOOTER, total: 136 hours SM

- co-I, ESO PROPOSAL (PERIOD 102,ToO) “ENGRAVE: Electromagnetic counterparts of gravitational wave sources at the Very Large Telescope (Part II)”, HAWKI (24h), NACO (10h) and XSHOOTER (0.5h), total: 34.5 hours SM

- co-I, ESO PROPOSAL (PERIOD 102,ToO) “ENGRAVE: Electromagnetic counterparts of gravitational wave sources at the Very Large Telescope (Part III)”, MUSE (9h SM)

ACCEPTED COMPUTATIONAL PROPOSALS:

Summary: > 21 M CPU and GPU hours awarded by CINECA (Italy) and other European supercomputing centres (CSCS, Switzerland)

>2017 CO-I in serveral proposals for ISCRA and DECI CPU/GPU time

2017 **CO-I** of the proposal "The impact of stellar dynamics on gravitational wave sources" (PI: M. Spera) at CINECA (Italy), through an agreement with INAF,
5.8M CPU hours awarded for N-body simulations on the MARCONI Tier-0 cluster.

2017 **PI-I** of the proposal "Formation of star clusters: how common is infant rotation?" at CINECA (Italy), through an agreement with INAF,
5.9M CPU hours awarded for N-body simulations on the MARCONI Tier-0 cluster.

2017 **CO-I** of the proposal "The inner parsecs of our Galaxy: star formation and its environment." (PI: A. Ballone) at CINECA (Italy), through an agreement with INAF,
5.7M CPU hours awarded for N-body simulations on the MARCONI Tier-0 cluster.

2016 **PI** of the proposal "The importance of subsonic filaments in star formation" at CINECA (Italy),
198k CPU hours awarded for N-body simulations on the GALILEO IBM cluster.

2016 **CO-I** of the proposal "Evolution of Massive Black Hole Binaries" at CINECA (Italy),
PI: Elisa Bortolas, **198k CPU hours** awarded for N-body simulations on the GALILEO IBM cluster.

2015 **PI** of the proposal "Rejuvenating S0 galaxies through minor mergers" at CINECA (Italy),
198k CPU hours awarded for N-body simulations with GPUs on the GALILEO IBM cluster.

2014 **PI** of the proposal "Young star cluster disruption by tidal fields" at CINECA (Italy),
50k CPU hours awarded for N-body simulations with GPUs on the Eurora cluster.

2014 **CO-I** of the proposal "Blue straggler stars in young star clusters" (PI: Mr A. Moretti) at CINECA (Italy), **50k CPU hours** awarded for N-body simulations with GPUs on the Eurora cluster.

2013 **PI** of the proposal "**Star formation in proximity of a supermassive black hole**" at CINECA (Italy),
2.28M CPU hours awarded for N-body/SPH simulations on the IBM Blue Gene/Q Fermi.

2013 **PI** of the proposal "Making very massive stars through stellar collisions" at CINECA,
50k CPU hours awarded for N-body simulations with GPUs on the Eurora cluster.

2013 **CO-I** of the proposal "Testing and parallelizing the new hybrid Monte Carlo code MYSCE" (PI: Galanti) at CINECA (Italy), **250.0k CPU hours** awarded for N-body/SPH simulations on the IBM Blue Gene/Q Fermi and on the EURORA cluster.

2013 **CO-I** of the proposal "Investigating the statistics and parameter space of double compact object binaries in young star clusters" (PI: Ziosi) at CINECA (Italy), **50.0k CPU hours** awarded for N-body/SPH simulations on the IBM PLX and on the EURORA cluster.

2012 **PI** of the proposal "The violent life of the Galactic Centre", at CINECA (Italy), **281.6k CPU hours** awarded for N-body/SPH simulations on the IBM PLX and on the IBM Blue Gene/Q Fermi cluster.

2012 CO-I of the proposal "Computational Frontiers of Black Hole Dynamics" (PI: Ripamonti), at CINECA, **50k CPU hours** awarded for simulations with GPUs on the IBM PLX cluster.

2011 **PI** of the proposal "The fate of ring galaxies", at CINECA, **216k CPU hours** awarded for N-body/ SPH simulations on the IBM SP6 and on the Fermi cluster.

2011 CO-I of the proposal "Massive black holes in young star clusters" (PI: Ripamonti), at CINECA,

48.8k CPU hours awarded for simulations with GPUs on the IBM PLX cluster.

2011 **PI** of the proposal "The fate of ring galaxies: preliminary tests", at CINECA, **18k CPU hours** awarded for N-body/SPH sim. on the IBM SP6 and BGP clusters.

2011 CO-I of the proposal "Stellar dynamics with GPUs" (PI: Ripamonti), at CINECA, **16k CPU hours** awarded for simulations with GPUs on the IBM PLX cluster.

2008 **PI** of the proposal "Formation of massive stars in the Galactic Centre", at the Swiss National Supercomputing Centre (CSCS) in Lugano (Switzerland), **150k CPU hours** awarded for N-body/SPH simulations on the CRAY XT3 cluster at the CSCS.

IT KNOWLEDGE and CODE DEVELOPMENT:

Operating systems: Linux/Unix (excellent knowledge), Windows, Mac OS.

Programming languages: C and C++ (very good), python (very good), Fortran 77 and 90, perl, sh, HTML.

Codes, developer:

– **SEVN** ("Stellar EVolution for N-body", population synthesis code for N-body simulations, Spera, MM, Bressan 2015; Spera & MM 2017; Spera, MM+ 2018): written in C++, SEVN allows to integrate stellar evolution and binary evolution processes (tides, Roche lobe overflow, wind accretion, gravitational wave decay, etc) through interpolation algorithms. SEVN is used mostly to investigate the formation of compact-object binaries in the field and in star clusters.

– **MOBSE** ("Massive Objects in Binary Stellar Evolution", population synthesis code, upgrade of BSE; MM+ 2017; Giacobbo, MM & Spera 2018; MM & Giacobbo 2018): written in Fortran, MOBSE is an upgrade of the famous population synthesis code BSE (Hurley et al. 2000, 2002). The upgrade included a new model for stellar winds, new prescriptions for core collapse, electron capture and pair instability supernovae, a new treatment of stellar radii and of natal kicks.

– **BEV** ("Binary EVolution", hybrid N-body Monte-Carlo code for binary evolution in a globular cluster, MM+ 2004, 2006, 2009): written in Fortran, BEV allows to investigate the evolution of exotic binaries (e.g. blue straggler stars, compact-object binaries) in a multi-mass King model.

– **MAKECLOUD** (generator of turbulence-supported molecular clouds, MM 2017).

Codes, advanced user: Starlab (software environment for direct N-body simulations, http://www.sns.ias.edu/~starlab/), Nbody6++GPU (direct N-body code, https://github.com/nbodyx/Nbody6ppGPU), HiGPUs (direct N-body code, http://astrowww.phys.uniroma1.it/dolcetta/HPC.html), BSE (population synthesis code, http://astronomy.swin.edu.au/~jhurley/), pkdgrav/gasoline (tree-code with smoothed-particle hydro, http://arxiv.org/abs/astro-ph/0303521), ChaNGa (tree-code with smoothed-particle hydro, http://www-hpcc.astro.washington.edu/tools/changa.html), Gadget (tree-code with smoothed-particle hydro, http://wwwmpa.mpa-garching.mpg.de/~volker/gadget/right.html), RAMSES (adaptive-mesh refinement, http://www.ics.uzh.ch/~teyssier/ramses/RAMSES.html), Recfast (cosmic recombination/reionization calculator, http://www.astro.ubc.ca/people/scott/recfast.html).

Experience in parallel computing (usage of MPI and OpenMP) and in high-performance computing.

Experience in GPU computing *(with CUDA parallel architecture).*

OUTREACH, LECTURES AT HIGH SCHOOLS and PRESS RELEASES:

2020: Galileo Festival, Dalla scoperta dei raggi cosmici alla nascita dell'astrofisica multimessaggera, Padova, October 13 2020 (postponed because of covid-19)

2019: Public lecture for the Gratton Prize 2019 cerimony, September 28 2019, Frascati, Italy

2019: Article for the LIGO magazine ISSUE 14, March 2019 https://ligo.org/magazine/

2018: Public Lecture on "Come nascono le binarie di buchi neri? Dalle stelle massicce alle sorgenti di onde gravitazionali", organized by Fondazione Niels Stensen, Florence, Italy, December 1 2018, http://www.inscenaonlineteam.net/2018/11/13/fondazione-stensen-cultura-limmaginazione-in-laboratorio-il-futuro-delluniverso-raccontato-dalla-fisica/

2018: Open Innovation Days, http://nova.ilsole24ore.com/oid/, Round Table on "Professione scienziato: come si costruisce una carriera di alto livello nella ricerca" ("How to build a successful academic career"), October 27 2018, Padova, Italy

2018: Public Lecture on “Come nasce una coppia di buchi neri?”, I Giovedì dell’Astronomia, Padova, September 20 2018

2018: Lectures on “Come nascono i buchi neri”, Campus Scientifico “Il Futuro Presente 2018 – Onde. Come l’Universo e la materia ci parlano”, Fondazione Banca Alta Toscana, Quarrata, Italy, September 7 2018

2018: Several Press releases for the ERC Consolidator Grant,
https://www.uibk.ac.at/newsroom/erc-grant-fuer-astrophysikerin.html.de
http://www.media.inaf.it/2017/11/29/erc-inaf-mapelli/

2017: Lecture on "La danza dei buchi neri, ovvero come fanno i buchi neri a formare binarie e ad emettere onde gravitazionali" (The dance of black holes: how black holes form binary systems and emit gravitational waves), licei classico Tiziano e scientifico Galilei di Belluno (Belluno’s high schools), "Progetto Fisica delle particelle elementari e moderna" (Project about Modern Physics and Particle Physics), March 17 2017

2016: "Il nostro Universo. Incontro per famiglie e bambini delle scuole primarie" (Our Universe. Meeting for families and primary-school kids), April 30 2016, Sala degli Anziani, Comune di Padova, Padova, Italy, meeting organized by Dr Livia Conti (INFN)

2016: Interview for the special issue about "Globular cluster simulations" to appear on the international journal "Sky & Telescope" (together with the free-lance journalist Mr Ben Skuse and the postdoctoral fellow Dr Mario Spera)

2016: article for "Il Bo" (magazine of Padova University, in Italian) on the detection of massive stellar black holes by Advanced LIGO
http://www.unipd.it/ilbo/non-solo-onde-gravitazionali-buchi-neri-massicci

2016: article for MEDIA INAF on the detection of massive stellar black holes by Advanced LIGO
http://www.media.inaf.it/2016/02/22/buchi-neri-oversize-ligo/

2016: Interviewed as one of the 200 "Women of the year 2015" (among which 10 scientists) by the Italian newspaper "F" (Cairo Editore, January 13 2016)
http://www.cairoeditore.it/index.php?option=com_flippingbook&book_id=3366&Itemid=83

2015: Interviewed by InterviEWASS 2015, on behalf of the Sociedad Espanola Astronomia
http://www.iac.es/divulgacion.php?op1=16&op2=402&id=79&lang=en
https://www.youtube.com/watch?v=lAPLYgGCbr8

2015: EAS PRESS RELEASE for the MERAC PRIZES 2015:
http://eas.unige.ch/documents/eas_prizes_2015.pdf

2015: INAF PRESS RELEASE for the MERAC PRIZES 2015:
http://www.media.inaf.it/2015/03/23/teorica-aggettivo-femminile-singolare-eccellente/

2011 – now: Notte dei Ricercatori (The night of researchers), public conferences at the Osservatorio Astronomico di Padova, Padova, Italy (http://www.venetonight.it/)

2009: Messaggere di Urania, Milano, Italy, public conferences at the Planetarium of Milano (http://www.brera.inaf.it/annoAstronomia/conferenzePlanetario.html)

2008: interview by the Earth & Sky broadcast network, based in Austin, Texas, US (http://earthsky.org/space/do-ring-galaxies-spread-out-as-they-evolve)

LANGUAGE KNOWLEDGE:

Italian (mother tongue), English (fluent), French (good), German (basic)

PUBLICATION SUMMARY:

ORCID ID: orcid.org/0000-0001-8799-2548

Total Publications: **222**	Publications as advisor: **>60**
Total Publications as 1st author: **68**	Publications without PhD supervisor: **>210**
Refereed Publications [a] (total): **154**	Citations [b] (total, 1st author): **9796, 1948**
Refereed Pub. as 1st author: **44**	Normalized citations [b] (total, 1st author): **1353, 700**

Invited review book chapters: **3**	H-index [b] (total, 1st author): **46, 24**

[a]My refereed publications are published in Nature (2 papers), Astrophysical Journal (>10), Monthly Notices of the Royal Astronomical Society (>60), Astronomy & Astrophysics (>10), New Astronomy (1), Physical Review (>5) and Astronomische Nachrichten (4).
[b]Data for citations, normalized citations and H-index come from ADS: http://adsabs.harvard.edu, as of April 1, 2021. "Normalized citations" are normalized to the number of co-authors.

Full list of publications available at: http://web.pd.astro.it/mapelli/

THREE REPRESENTATIVE PUBLICATIONS:

(1) **Mapelli Michela**, Giacobbo Nicola, "The cosmic merger rate of neutron stars and black holes", 2018, MNRAS, 479, 4391,
http://adsabs.harvard.edu/abs/2018MNRAS.479.4391M
We study the cosmic evolution of the merger rate density of compact binaries with a novel theoretical approach. This study is part of a scientific case study for third-generation ground-based gravitational wave detectors.

(2) **Mapelli Michela,** "Massive black hole binaries from runaway collisions: the impact of metallicity", 2016, MNRAS, 459, 3432,
http://adsabs.harvard.edu/abs/2016MNRAS.459.3432M
The scenario of runaway collisions for the formation of intermediate-mass black holes is revised with up-to-date stellar wind models

(3) Spera M., **Mapelli M.**, Bressan A., "The mass spectrum of compact remnants from the PARSEC stellar evolution tracks", 2015, MNRAS, 451, 4086,
http://adsabs.harvard.edu/abs/2015MNRAS.451.4086S
The most up-to-date spectrum of mass of compact remnants, used by the LIGO-Virgo collaboration to constrain the metallicity of the progenitors of GW150914

MICHELA MAPELLI – LIST OF PUBLICATIONS:

[Symbol # marks publications in collaboration with students and postdocs I supervised or co-supervised.]

SUBMITTED PUBLICATIONS, SHORT AUTHOR LIST ONLY:

– Santoliquido Filippo, Mapelli Michela, Giacobbo Nicola, Bouffanais Yann, Artale M. Celeste, The cosmic merger rate density of compact objects: impact of star formation, metallicity, initial mass function and binary evolution, MNRAS, submitted, https://ui.adsabs.harvard.edu/abs/2020arXiv200903911S/abstract

– Bouffanais Yann, Mapelli Michela, Santoliquido Filippo, Giacobbo Nicola, Iorio Giuliano, Costa Guglielmo, Constraining accretion efficiency in massive binary stars with LIGO-Virgo black holes, MNRAS, submitted, https://ui.adsabs.harvard.edu/abs/2020arXiv201011220B/abstract

– Mapelli Michela, Santoliquido Filippo, Bouffanais Yann, Arca Sedda Manuel, Giacobbo Nicola, Artale M. Celeste, Ballone Alessandro, Hierarchical mergers in young, globular and nuclear star clusters: black hole masses and merger rates, https://ui.adsabs.harvard.edu/abs/2020arXiv200715022M/abstract

– Libanore Sara, Artale M. Celeste, Karagiannis D., Liguori M., Bartolo N., Bouffanais Y., Giacobbo N., Mapelli M., Matarrese S., https://ui.adsabs.harvard.edu/abs/2020arXiv200706905L/abstract

PEER-REVIEWED PUBLICATIONS, SHORT AUTHOR LIST ONLY:

2020

– Ballone Alessandro, Torniamenti Stefano, Mapelli Michela, Di Carlo Ugo N., Spera Mario, Rastello Sara, Gaspari Nicola, Iorio Giuliano, From hydrodynamics to N-body simulations of star clusters: mergers and rotation, MNRAS, in press, https://ui.adsabs.harvard.edu/abs/2020MNRAS.tmp.3552B/abstract

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