

MONICA COLPI

Curriculum vitae

Personal Information

Nationality: Italian

Residence: Via V. Monti 41, 20123 Milano, Italy

For more information

<https://en.unimib.it/monica-colpi>

Current Position

Full Professor

University of Milano Bicocca,
Department of Physics G. Occhialini,
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Education

1987 - PhD in Physics: University of Milano
Contributions to the theory of spherical accretion onto black holes
1982 - Master in Physics (110/110 cum Laude): University of Milano
Gamma-rays from accreting black holes

Academic Career

2015 – present: Full Professor, University of Milano Bicocca
2014-2001: Associate Professor, University of Milano Bicocca
2001-1990: Researcher, University of Milano
1990-1988: Post-Doctoral Fellow at the Scuola Internazionale Superiore di Studi Avanzati,
Trieste
1987-1985: Visiting Scientist; Cornell University, USA

Short-Term Visiting Positions

2019: Kavli Institute for Theoretical Physics, Santa Barbara, USA
2017: International Science Institute ISSI at Bern

2014: International Science Institute ISSI at Bern
2013: Kavli Institute for Theoretical Physics, Santa Barbara, USA 2011: Peking University, Beijing, China
2008: Center for Physics, Aspen, USA
2007: Cornell University, USA
2005: Center for Physics, Aspen, USA
2000: Kavli Institute for Theoretical Physics, Santa Barbara, USA 1989: Lebedev Institute, Moscow, USSR
1991: Cornell University, USA

Member of Scientific Institutions

2004 – present: Associated Member of the National Institute of Astrophysics (INAF)
2011 – present: Associate Member of the National Institute of Nuclear Physics (INFN)

National and International Appointments/Acknowledgment

2020 – present: Member of the **Space Science Advisory Committee (SSAC)**
2017 – present: Member of the **ESA LISA SCIENCE STUDY TEAM**
2017 – present: Member of the **Virgo Collaboration**
2012 – present: Member of the **LISA Consortium Board**
2012 – mid 2018: Chair of the eLISA Working Group “*Astrophysical Black holes*”
2016 – 11/2017: Member of the *Scientific and Technical Advisory Committee* of EGO (The European Gravitational Observatory, Cascina, Italy)
2017 – present: Member of the 3G Science Case Committee of The Gravitational Wave International Committee
2016 – 2020: **Vice President of the Consiglio Scientifico dell’Istituto Nazionale di Astrofisica** (INAF Scientific Council)
2016 – present: Member of the **Management Committee of the COST Action CA16104, Gravitational Waves, Black Holes and Fundamental Physics**
2016 – present: Coordinator of the Operating Unit 4 of the funded “premiata” INFN-ASI-INAF FIGARO -- Fostering the Italian Leadership in the Field of Gravitational Waves Astrophysics -
2015 – present: Member of the Advisory Board of the Pauli Center for Theoretical Studies (Zurich)
2015 – present: Membro Corrispondente della Accademia Roveretana degli Agiati
2015 – 2020: Member of the Editorial Board of *The Journal of High Energy Astrophysics (Elsevier)*
2017 -- present: Member of the Editorial Board of **Living Review in Relativity**

Institutional Responsibilities

2012 – 2019: Spokeperson of the Laurea Magistrale in Astrofisica e Fisica dello Spazio, University of Milano- Bicocca

Member of the Doctorate Council of the PhD Course in Physics and Astronomy, University of Milano Bicocca

Teaching activity - University of Milano/Milano Bicocca

Master Course in Astrophysics and Space Physics

2000 – present: Stellar Astrophysics

2020 – present: Radiative Processes in Astrophysics

2015 – 2020: Relativistic Astrophysics

2013 – 2014: Extragalactic Astronomy

1996 – 2004: High Energy Astrophysics (in Milano and after Milano-Bicocca)

2004 – 2012: Galactic Dynamics

1994 – 1996: General Relativity – Master in Physics - University of Insubria, Como

1994 – 2018: *PhD Lectures - Compact Objects (6 lectures) - SISSA, Trieste*

2013 Gravitational Waves in Space: *School "Physik in Weltraum", Wilhelm und Else Heraeus Physikschule, Bonn* 2007 Compact Objects: *National School in Astrophysics*

1998 Gravity in many body systems: *PhD in Physics, Milano*

1993 Radiation, matter and gravity: *PhD in Physics, Milano*

1990 Compact Objects: *PhD in Physics, Milano*

1993 Theory of the accretion: *PhD in Physics, Roma II*

Scientific Activity

Monica Colpi has broad research interests in the areas of high energy astrophysics, theoretical astrophysics, and general relativity theory. She has worked on black holes as accreting sources and on neutron stars as soft X-ray transients, millisecond pulsars, and isolated neutron stars in the Milky Way. Most recently, Colpi has pioneered the field of massive black hole binary formation in gas-rich galaxy mergers, using state-of-the art N-Body SpH simulations to follow their dynamics down to parsec scales. Colpi has also been exploring formation pathways of seed black holes in the high redshift universe, and AGN feeding in isolated and binary black holes at the centre of galaxies. Coalescing massive binary black holes, among the loudest sources of low frequency (mHz) gravitational waves in the universe, pinpoint places where galaxies assemble becoming exquisite probes of the process of clustering of galactic structures, and test-bed of gravity theories in the strong field, dynamical sector. Interested in their future detection as gravitational wave sources, Colpi is now actively working in the development of key aspects of the core science of the Laser Interferometer Space Antenna

(LISA) and of the multi-messenger astronomy with LISA, the LIGO-Virgo Detectors and the III generation interferometers as Einstein Telescope.

Highlights in the research topics

- LISA science and LISA data analysis
- Massive black hole binaries as LISA gravitational wave sources
- Formation mechanisms of seed black holes at cosmic dawn
- Stellar origin black holes as LISA and LIGO-Virgo sources
- Multi-band Gravitational Wave Astrophysics
- Dynamics/fueling of massive black hole binaries in merging galaxies - circum-binary discs
- Multi-messenger astrophysics with LISA and LIGO-Virgo
- Dynamical friction in self-gravitating backgrounds
- Dynamical interactions and morphological transformation of galaxies
- Pulsars at the Galactic Centre
- Ultra-luminous sources: heavy stellar black holes in low metallicity environments
- Isolated neutron stars: accretors, magnetar and coolers
- Neutron stars in Soft X-Ray Transients and Binaries in external galaxies
- (Sub-)Millisecond Pulsars: dynamics in globular clusters and search for middleweight black holes
- Dynamics of blue stragglers in globular clusters
- Black holes and neutron stars: natal kicks.
- Exploding neutron stars near the minimum mass
- Boson Stars
- Accreting black holes - black holes in supernovae

Monica Colpi is author of 165 peer reviewed papers with more than 10000 citations, published in international journals, including 2 reviews, plus 4 contributions to scientific books + 82 proceedings. Hirsch index 57.

<https://orcid.org/0000-0002-3370-6152>

Book Editor

1. *Physics of relativistic objects in compact binaries: from birth to coalescence*
Springer 2009, Colpi M. (Editor in Chief); Casella P.; Gorini V.; Moschella U.; Possenti A.; ISBN978-1-4020-9264-0
2. *Joint evolution of black holes and galaxies*
Francis and Taylor 2006, Colpi M. (Editor in Chief); Gorini V.; Haardt F., Moschella U.; ISBN-10: 0750309997

3. *Dark matter and dark energy*

Springer, 2011, Matarrese S. (Editor in Chief); Colpi M.; Gorini V.; Moschella U.; ISBN 978-90-481-8685-3

4. *Astrophysical Black holes*

Springer 2016, Haardt F. (Editor in Chief); Gorini V.; Moschella U.; Treves A., Colpi M.; ISBN 978-3-319-19416-5