Curriculum vitae

Personal Information
Family name - First name: **COLPI MONICA**
Nationality: Italian
Date of Birth: August 19th 1957
Residence: Via V. Monti 41, 20123 Milano, Italy

For more information
http://fisica.mib.infn.it/media/homepages/astrofisica/colpi/

Current Position
2015 – present: *Professore Ordinario* (settore disciplinare FIS/05)
Full Professor
Settore Concorsuale 02/C1 (SSD FIS/05)
University of Milano Bicocca, Department of Physics G. Occhialini
Piazza della Scienza 3, 2016 Milano, Italy
+39 3487096568

Scientific Papers (May 2021)
168 Peer reviewed publications
H Index: 57 (SAO NASA Astrophysics Data System - ADS)
Total number of citations: 10664 (NASA/ADS)

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 for accretion onto 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, Beijin, China
2008: Center for Physics, Aspen, USA
2007: Cornell University, USA
2005: Center for Physics, Aspen, USA
2000: Kavli Institute for Thoeretical Physics, Santa Barbara, USA
1989: Lebedev Institute, Moscow, USSR
1991: Cornell University, USA

Member of Scientific Institutions
2017 – present: Member of *PROMETEO-VIRGO* - Gruppo II, Istituto Nazionale di Fisica Nucleare INFN
2011 – 2019*:* Local coordinator of *TEONGRAV* - Gruppo IV-
Istituto Nazionale di Fisica Nucleare (INFN)
2019 – present*:* Member *TEONGRAV* - Gruppo IV-
Istituto Nazionale di Fisica Nucleare (INFN)
2004 – present: Associated Member- Istituto Nazionale di Astrofisica (INAF)

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**

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 Gravitaional Observatory, Cascina, Italy)
2017 – present: Member of the *3G Science Case Committee of The Gravitational Wave International Committee*
11/2017 – present: Member of the Virgo Scientific Collaboration
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 "premiale" INFN-ASI-INAF FIGARO -- *Fostering the Italian Leadership in the Field of Gravitational Waves Astrophysics* - Modeling gravitational wave signals: interpretation of data and definition of future detector requirements
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 -- present: Member of the Editorial Board of *The Journal of High Energy Astrophysics (Elsevir)*
2017 -- present: Member of the Editorial Board of *Living Review in Relativity*

Institutional Responsibilities
2012 – 2018: Spoekperson 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
2015 – present: Relativistic Astrophysics
2013 – 2014: Extragalactic Astronomy
1996 – 2004: High Energy Astrophysics (in Milano and after Milano-Bicocca)
2004 – 2012: Celestial Dynamics
1990 – 1996: Electromagnetism - teaching assistant - Bachelor in Scienze dell'Informazione
1996 – 1994: General Relativity – Master in Physics - University of Insubria, Como

PhD Courses
1994 – present*: 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*

(co-)Supervisor of PhD students engaged in permanent roles
Andrea Possenti (former Director of the Observatory of Cagliari, INAF)
Alberto Vecchio (Professor - University of Birmingham)
Lucio Mayer (Professor - Institute for Theoretical Physics, Zurich
Massimo Dotti (Associate- University of Milano Bicocca)
Alessia Gualandris (Lecturer - Surrey University, England)

Supervisor of PhD Students
Emanuele Ripamonti
Giorgio Calderone (Post-Doc Trieste)
Carmen Montuori
Bernadetta Devecchi
Giorgio Galanti
Juan Manuel Carmona
Alessandro Lupi (Post-Doc, Paris)
Deborah Mainetti
Om Sharam Salafia (Prometeo-Virgo)
Abbate Federico
Barbieri Claudio (Prometeo-Virgo)
Mangiagli Alberto
Messina Francesco (Prometeo-Virgo)

Master students currently active in science
Michela Mapelli (Professor at the University of Padova)
Alessandro Patruno (Post-Doc - Amsterdam)
Albino Perego (RTDB University of Trento)
Alessandro Lupi (Post-Doc, IAP, Paris)

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 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 science of the Laser Interferometer Space Antenna (LISA) and of the multi-messenger astronomy with LISA and the LIGO-Virgo Detectors. LISA will be the first ever space-mission for the direct detection of low frequency gravitational waves between 0.1 mHz and 100 mHz. Selected to be ESA as third large-class mission, LISA will address the science theme of *The Gravitational Universe (arXiv:1702.00786).*

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 about 1000 citations, published in international journals, including 2 reviews, plus 4 contributions to scientific books + 82 proceedings. Hirsch index 55.

Major on going collaborations
Dr. Giancarlo Ghirlanda-EM counterparts of LIGO-Virgo CBCs (INAF Brera, Prometeo - Virgo)
Prof. Marta Volonteri-Seed black holes (IAP, Paris)
Prof. Lucio Mayer-Dynamics of black holes in merging galaxies (Univ. Zuirch)
Dr. Enirco Barausse-Lisa Science on fundamental physis (IAP, Paris)
Prof. Alberto Sesana-Lisa Science (Univ. Milano Bicocca)

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

Referee
The Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Astronomy & Astrophysics, Physical Review D

Selected seminars, invited talks and invited reviews: 2008-2021

35. Remote (2022): “The multi-messenger view of coalescing massive black holes”, invited review -- XIV LISA Symposium
34. CERN: “LISA to explore the inivisible Univer” Colloquium
33. Goddard Space Flight Center 2021 (US): “LISA: The Gravitational Universe” Colloquium
32. Harvard 2018 (US): “ LISA black hole coalescences: on clock?”-invited review – Sackler Conference – Gravitational Wave Astrophysics
31. Malta 2018: “*The black holes of the gravitational universe: genesis and growth*”- invited review at the First Global Meeting of the COST Action CA16104 – Gravitational waves, black holes and fundamental physics
30. Roma 2018: ”*The gravitational universe from ground to space*” - invited talk at the Accademia dei Lincei to celebrate a Decade of Agile
29. Roma 2017: ”*Extending the multi-messenger astrophysics to the high redshift universe”* - invited talk at ASI to celebrate the birth of the Multi-messenger Astronomy
28. Prague 2017:” *The LISA mission: to explore the deep universe with low frequency gravitational waves*” - invited talk at EWASS – European Weak of Astronomy and Space Sciences
27. Avignon 2017: “*Black holes in the gravitational wave cosmic landscape*”-i nvited review at the conference Progress on old and new themes in cosmology
26. Athens 2016: “*The journey of massive black holes in merging galaxies in the upcoming era of gravitational wave astrophysics*” - invited talk at EWASS – European Weak of Astronomy and Space Sciences
25. Roma 2016: “*The Gravitational Universe*” - invited talk at ASI on behalf of the eLISA Consortium
24. Paris 2016: “B*lack holes in the era of gravitational wave astronomy*”, IAP, colloquium
23. Pisa 2016:”*Black hole dynamics in merging galaxies*”, Pisa, Department of Physics
22. Madrid 2015: "T*he electromagnetic counterparts to gravitational wave sources from ground to space based facilities"* - invited talk at the First conference dedicated to the Athena X-ray Observatory
21. Irsee 2015: "*The Gravitational Universe*" - invited review at the conference Symmetries and phases in the universe
19. Gainesville,2014: "*Revealing a hidden universe with gravitational waves*" - invited review at the Xth International LISA Symposium
18. Kavli, Santa Barbara, August 2013: ”*Massive black hole binaries in galactic nuclei”* - invited review at the Kavli Program and associated Conference: Massive black holes: birth, growth, impact
17. Roma, April 2013: ”*The Gravitational Universe for the definition of the L2-L3 ESA mis-sions*” - on behalf of the Science Team of the eLISA Consortium: ASI workshop
16. Bern 2012: ”Black hole merging and the last parsec problem” - *invited review* - International Space Science Institute: workshop on The Physcis of Accretion
15. Stockholm, July, 2012: ”Coalescing binary black holes in merging galaxies” - i*nvited talk* - 13-th Marcel Grossmann Meeting
14. Paris 2012: ”*Binary black holes through the cosmic web*” - invited review *at the IX*th International LISA Symposium
13. Trieste 2012: ”*Coalescing binary black holes: the loudest sources of gravitational waves in the universe*” - invited talk - Workshop on Interacting Galaxies and Binary Quasars: a Cosmic Rendezvous
12. Rome 2012: ”*Science with the New Gravitational wave Observatory”* - presentation of the ESA New Gravitational wave Observatory (NGO) mission to ASI
11. Palma de Mallorca 2011: ”*Black hole dynamics in galactic mergers*” - *invited talk at the* LISA Astro-GR workshop
10. Lijiang 2011: ”*Binary black holes: dynamics and fueling in gas-rich mergers*” - *invited review* - Conference on Gravitational Wave Astrophysics, Binary Supermassive Black Holes and Galaxy Mergers
9. Cardiff 2011: ”*Dual, Binary and Recoiling Black Holes in the cosmic landscape*” - *invited review* - 9th Amaldi Conference
8. Bologna 2011: ”*Growing Binary Black Holes through Galactic Mergers*” - invited talk at the COST Action MP0905- Black Holes in the Violent Universe
7. Granada 2010: ”*Massive Binary Black Holes in the cosmic landscape*” - invited review at the Spanish Relativity Meeting
6. Paris 2010: ”*Growing black hole pairs in minor merger of disc galaxies*” - invited talk - LISA Astro-GR@PARIS
5. Beijin 2010: ”*Binary and Recoiling black holes in the cosmic landscape*” - seminar - Kavli Institute
4. Zurich 2010: ”The journey of massive black holes in gas-rich galaxies” - invited talk - LISA Astro-GR@Zurich
3. Tel Aviv 2009: ”*Binary black holes: spin evolution and gravitational recoil in gas rich galaxy mergers*” - invited talk - Workshop on Stars and Singularities, Weizmann Institute of Science
2. Barcelona 2009: ”*Binary black holes in gas-rich mergers*” invited talk- LISA Astro-GR@Barcelona

1. Como 2009: ”*Binary black holes in gas-rich mergers: linking accretion to dynamics*” - Workshop on accretion and ejection in AGN