Viviana Fafone - Curriculum Vitae

PERSONAL INFORMATION

Viviana Fafone

Physics Department, University of Rome Tor Vergata,

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Date of birth 29/12/1964 | Nationality Italian

POSITIONS

2017 - today

Full Professor (Physics)

University of Rome Tor Vergata, Physics Department

2005 - 2017

Associate Professor (Astronomy and Astrophysics)

University of Rome Tor Vergata, Physics Department

- Courses taught:
  - Academic Year 2016/2017 - today: General Physics – Mechanics and Thermodynamics (Bachelor Degree)
  - Academic Year 2007/2008 - today: Gravitational Waves (Master Degree)
  - Academic Year 2006/2007 - Academic Year 2016/2017: Electromagnetism and Optics (Bachelor Degree)
- Tutor for many Bachelor, Master and Ph.D. students

1994 - 2005

Researcher

INFN, Roma Tor Vergata and Frascati National Laboratories

EDUCATION AND TRAINING

1992-1994

Training experience

Fellowships from CNR, INFN Roma Tor Vergata and INFN Frascati National Laboratories

1991

Laurea Degree in Physics

University of Rome Tor Vergata, Physics Department, 110/110 cum laude

SCIENTIFIC AND COORDINATION RESPONSIBILITIES

Institutional Offices in Universities and Research Institutions

- INFN National Representative of the Virgo Collaboration (2018 - today)
- INFN representative (together with Prof. Marco Pallavicini) in the joint INFN-INGV Committee (2023 – today)
- Member of the Administration Board of the Fondazione Universitaria CEIS – Economics – Tor Vergata (2021 - today)
- Member of the Tor Vergata Physics Department Executive Board (2015 - 2018)
- Member of the Teaching Board of the joint Ph.D. course in Astronomy, Astrophysics and Space Science - University of Rome Tor Vergata, Sapienza University of Rome and National Institute of Astrophysics (INAF) - (2013 - today)
- Delegate of the Faculty of Science in the Tor Vergata University Board for Learning, Orientation and Tutoring (2013 - 2021)
- Local coordinator, Academic Advisor and member of the Selection Committee of the Erasmus Mundus Master Program “AstroMundus, International Master’s Degree in Astronomy and Astrophysics” (2011 - 2019)

Institutional Offices in Research Collaborations

- Co-chair of the Virgo Post-O5 Committee (2021 - 2023) for the definition of the Virgo roadmap in the decade 2025-2035
- Member of the Virgo Organization Committee (2020-2023) for the definition of the new Virgo bylaws
- Member of the Einstein Telescope Collaboration Board (2022 – now)
- Member of the Einstein Telescope Pathfinder Scientific and Technical Advisory Committee (2019 - today)
- Manager of the Advanced Virgo+ Adaptive Optics System (2019 - 2022)
- Member of the Einstein Telescope Steering Committee (2019 - 2022)
- Co-chair of the Virgo Editorial and Speakers Board (2017 - 2023)
- Manager of the Advanced Virgo Adaptive Optics System (2008 - 2016)
- Member of the ET Governing Council. Member of the writing team of the ET Design Study (2008 - 2011)
- Team leader of the Virgo Tor Vergata group and member of the Virgo Steering Committee (2006 - today)
- Local coordinator of the ROG (Ricerca Onde Gravitazionali – Gravitational Wave research) group (2004 - 2006)

Competitive Projects

- Partner Investigator in the project for the "AUSTRALIAN RESEARCH COUNCIL Centre of Excellence for Gravitational Wave Discovery" (P.I. Prof. M. Bailes) (2022 - now)
- P.I. for the Tor Vergata unit of the PNRR project ETIC – Einstein Telescope Infrastructure Consortium (2023 – now)
- Local responsible for the project AHEAD2020 (Integrated Activities for the High Energy Astrophysics Domain) - H2020-INFRAIA-2019-1 (2020 - today)
- Principal Investigator of the project "ENIGMA: ENabling technologies for the upgrades of second generation and for third generation ground-based Interferometric Gravitational wave detectors in the medium- and high-frequency range: the keystone to foster Multimessenger Astronomy" (PRIN Research Program 2017) (2019 - 2023)
- Coordinator of the Tor Vergata University research unit for the project "Studio di problematiche sperimentali degli interferometri per onde gravitazionali criogenici e sotterranei" (PRIN Research Program 2007) (2008 - 2010)
- INFN national contact person for the ET Design Study, European Commission FP7 (Grant Agreement 211743) (2008 - 2011)

RESEARCH FIELDS

- Research interests are in the field of gravitation, with main focus on gravitational wave physics (sources and detectors) and CMB.
- Major involvements:
  - cryogenic gravitational wave detectors Explorer (CERN) and Nautilus (INFN Frascati Labs) (1992-2016). Development of quantum technologies for the reduction of thermal and electronic noise with ^{3}He-^{4}He dilution refrigerators and superconducting electronic devices (dc SQUID); acoustic and seismic noise reduction in gravitational detectors; study of signals from astrophysical sources of gravitational waves in different theories of gravitation (e.g. scalar-tensor theories); study of the properties of spherical gravitational wave detectors; study of correlations of gravitational data with GRB detectors and neutrino detectors; study of the effects of cosmic rays and charged particle beams in acoustic detectors.
  - Interferometric gravitational wave detector Virgo (European Gravitational Observatory - Cascina - Pisa) since 2006. Main scientific activities: development of adaptive optics systems for the Virgo and Advanced Virgo projects. Contributions: studies on quantum noise reduction through the injection of squeezed vacuum states, Multimessenger Astronomy (GW-LEN, GW-GRBs).
  - Next generation gravitational wave detector Einsten Telescope since 2008: participation in the Design Study, contribution to the development of the adaptive optics system
- Collaboration with the Large-Scale Polarization Explorer project for detection of B-modes in CMB (2015-2023).
- Participation in the AdCoat INFN project on new coatings and materials for interferometric detectors in 2014-2015.
- Collaborations with research groups in many international institutions, such as CERN, Leiden

University (Netherlands), California Institute of Technology (USA), Adelaide University (Australia).
- Scientific funds raised/managed: about 8 M€

PUBLICATIONS - CONFERENCES

Publications

Over 350 peer-reviewed publications on international journals. H-index 82 (WOS)
Books:
- "Gravitational Physics: from Quantum to Waves" in Multiple Messengers and Challenges in Astroparticle Physics, Springer International Publishing Switzerland, 2018
- "Thermal Adaptive Optics" in Advanced Interferometric Gravitational Wave Detectors, World Scientific, 2019

Conferences

Invited speaker in national and international conferences and workshops.
Organization of scientific meetings:
- EWASS 2012 (European Week of Astronomy and Space Science) July 1-6, 2012, Rome - Member of the Local Organizing Committee
- 20th International Conference on general Relativity and Gravitation e 10th Amaldi Conference on Gravitational Waves, July 7-13, 2013, Warsaw - Convener of the session "Q&A: Everything you wanted to know about GWs but were afraid to ask".
- GDADW 2015 (Gravitational Wave Advanced Detectors Workshop), May 17-22, 2015, Girdwood (Alaska) - Member of the Scientific Advisory Committee
- TAUP 2015 (International Conference on Topics in Astroparticle and Underground Physics), September 7-11, 2015, Turin (Italy) - Convener of the session "Gravitational Waves"
- RICAP-16 (6th Roma International Conference on AstroParticle Physics) June 21-24, 2016, Rome - Convener of the session "Gravitational Waves"
- LXII Conference of the Italian Astronomical Society, May 2-5, 2018, Teramo (Italy) - Member of the Scientific Organizing Committee
- GDADW 2019 (Gravitational Wave Advanced Detectors Workshop), May 19-25, 2019, Isola d'Elba (Italy) – Convener of the session "Second Generation Interferometer Commissioning"
- 2nd GRAvitational – wave Science&technology Symposium (GRASS 2019), October 17-18, 2019 (Padova, Italy) – Member of the Scientific Advisory Committee
- GDADW 2021 (Gravitational Wave Advanced Detectors Workshop), May 17-21, 2021, remote – Convener of the session "Beyond Second Generation"
- TAUP 2023 (International Conference on Topics in Astroparticle and Underground Physics), August 28 - September 1, 2023, Vienna (Austria) - Convener of the session "Gravitational Waves"

ADDITIONAL INFORMATION

Awards

- 1993: Winner of the Italian Physical Society Prize for young researchers
- 2002: Winner of the Italian Society of General Relativity and Gravitational Physics Prize "for the contribution given to the field of Relativity and Gravitation on the experiments with resonant detectors and to the studies, both experimental and theoretical, on new generation gravitational waves detectors". Selection Committee: C. Bachas (Ecole Normale Superieure, Paris), M. Cerdonio (Università di Padova), G. Ellis (Cape Town, Southafrica), B. Schutz (Albert Einstein Institute, Potsdam), G. Veneziano (CERN)
- 2016: Special Breakthrough Prize in Fundamental Physics, with the LIGO Scientific Collaboration and the Virgo Collaboration
- 2016: Gruber Cosmology Prize, with the LIGO Scientific Collaboration and the Virgo Collaboration
- 2017: Albert Einstein Medal with the LIGO Scientific Collaboration and the Virgo Collaboration

Commissions of Trust

- 2010: Chair of the Selection Committee for the GWIC (Gravitational Wave International Committee) Ph.D. Thesis Prize
- 2019 – now: Member of the GWIC-Braccini Ph.D. Thesis Prize Board
- 2019: Member of the Selection Committee for the "Bruno Rossi" Ph.D. Thesis Prize of INFN
- 2021: Member of the Selection Committee for the "Guido Horn D'Arturo" Ph.D. Thesis Prize of the

Italian Astronomical Society

- Referee for international journals
- Referee for national agencies

Outreach

- Participation in national and international outreach activities, with public talks, theater events, TV broadcasts, interviews for newspapers, social media (e.g.: Genoa Science Festival, European Researchers' Night, National Geographic Festival of Rome, Galassica - Astronomy Festival, St. Petersburg Science Festival, TEDx, RaiPlay - Discovering the Secrets of Space, Rai Scuola – Science Stories, Rai Cultura, Focus TV, Rai3-TG Leonardo, Rai1 – UnoMattina)
- Participation in dissemination and training activities for students of primary and secondary schools, with seminars at schools and social events (e.g.: Campus Party - Fiera Milano, Salone dello Studente in Rome, International Day of Women and Girls in Science, International School on Modern Physics and Research - INFN)
- Training courses for secondary school teachers on Modern Physics topics (e.g.: Incontri di Fisica – INFN Frascati National Laboratories
- Author of the section “Gravitational Waves” of the X Appendice dell’Enciclopedia Italiana, Treccani, 2020

Rome, January 30th, 2023

Viviana Fafone