



Maria Paola Vaccaro

Born on July 11th, 1997
in Larino (CB), Italy

Currently in Heidelberg, Germany

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Scientific interests

- Computational astrophysics
- Compact objects
- Stellar evolution
- Gravitational waves sources
- Black holes dynamics
- Stellar clusters

Numerical tools

Python ●●●●

C ●●●○

Matlab ●●●○

Operating systems

Linux/Unix ●●●○

Windows ●●●○

Languages

Italian (mother tongue)

English (fluent, level C1)

Spanish (basic, level A2)

Education

Sep. 2023 – 2026 PhD in Astronomy and Cosmic Physics

At Institute for Theoretical Astrophysics (ITA), ZAH,
Heidelberg University in Heidelberg, Germany

Supervisor: Prof. Michela Mapelli - Thesis title: "Binary Black
Hole population in the Local Universe"

Oct. 2020 – Sep. 2022 Master degree in Astrophysics

At Università degli Studi di Padova in Padua (PD), Italy

Final grade: 110/110 *cum laude*, GPA: 29.4/30

Supervisor: Prof. Michela Mapelli - Thesis title: "Hierarchical
Black Holes Mergers in Active Galactic Nuclei"

Sep. 2019 – Jul. 2020 Master course in Matter Physics

At Università di Pisa in Pisa (PI), Italy - GPA: 28.8/30

Sep. 2016 – Sep. 2019 Bachelor degree in Physics

At Università di Pisa in Pisa (PI), Italy

Final grade: 110/110 *cum laude*, GPA: 28.6/30

Supervisor: Prof. Pier Giorgio Prada Moroni - Thesis title:

"Evoluzione di raffreddamento delle nane bianche e
cosmocronologia" (i.e. "Cooling evolution of white dwarfs and
cosmochronology")

Sep. 2011 – Jul. 2016 High school diploma

At Liceo Scientifico Alfano da Termoli in Termoli (CB), Italy

Final grade: 100/100 *cum laude*

Aug. 2014 – Jul. 2015 High school exchange year

At Mead High School in Mead, Colorado, USA

GPA: 4.0/4 - ACT score: 33/36

Current activity

I am a computational astrophysicist, working in the field of
gravitational-wave astronomy and black hole dynamics.

I have developed a semi-analytical model of the active galactic nucleus
(AGN) disk scenario for hierarchical black hole mergers.

Funding

February 1st – August 31st, 2023 Pre-doctoral fellowship, DEMOBLACK ERC Team

For the research project entitled "Hierarchical evolution of stellar-sized binary black holes in active galactic nuclei" under the supervision of Prof. Michela Mapelli at Università degli Studi di Padova, Padua (PD), Italy.

October 1st – December 31st 2022 Fellowship in Gravitational Waves Physics at IFAE-UAB, Barcelona, Spain under the supervision of Prof. Mario Martinez Perez and Dr. Lluïsa-Maria Mir i Martínez

Invited talks

July 10th – 14th, 2023 Flash talk titled "Semi-analytical Model for Hierarchical Binary Black Hole Mergers" at the workshop "**GwPopNext**" hosted by University of Milano Bicocca, Milan, Italy

June 26th – 30th, 2023 at the workshop "**The Renaissance of Stellar Black-Hole Detections in The Local Group**" hosted by Lorentz Center, Leiden, Netherlands

April 19th – 21st, 2023 Invited Speaker, "**Physics of Data Workshop**", invited talk about "How do black holes grow? Active galactic nuclei as a breeding ground for intermediate-mass black holes", Venezia, Italy

Publications submitted

- The Hitchhiker's guide to the galaxy catalog approach for gravitational wave cosmology, Jonathan R. Gair, Archisman Ghosh, Rachel Gray, ..., Maria Paola Vaccaro et al., 2022, *ApJ*, arXiv:2212.08694

Courses and conference attendance

- 4th G2Net Training School "A network for Gravitational Waves, Geophysics and Machine Learning" hosted by Aristotle University of Thessaloniki (remote attendance) - March 28th-30th, 2023
- Python Course (level advanced) hosted by ICFO in Barcelona, Spain - November 24th-30th, 2022
- Einstein Telescope Annual Meeting hosted by EGO, Pisa, Italy (attended remotely) - November 15th-17th, 2022
- GW Open Data Workshop hosted by GWOSC (online event) - May 23rd-25th, 2022
- IPAM Workshop III: Source inference and parameter estimation in Gravitational Wave Astronomy (remote attendance) - November 15th-19th, 2021

Outreach

- Member of the cultural association Scholé based in Roccella Jonica (RC), Italy since 2020
- Member of the organizing committee for the Scholé "School of physics" 2023: a series of lectures held by university professors in the high school Liceo Volta in Reggio Calabria (RC), Italy
- Speaker and staff member at the 2023 Philosophy Summer School titled "PHYSIS" ("Nature") organized by Scholé in Roccella Jonica (RC), Italy. Talks:
 - "Understanding Nature with Quantum Mechanics" with Prof. Giancarlo Cella (Pisa, Italy) – July 25th, 2023
 - "The concept of space from Newton to Einstein" with Prof. Paolo Bussotti (Udine, Italy) – July 29th, 2023

Awards and other activities

- Don Peppe Presutto award from Circolo CFR Serracapriola for academic achievements - 2016, 2020, 2023
- Aupair program in Cork, Ireland for language enhancement - Summer 2018
- Lions Club Tifernus award and 500€ scholarship for educational achievements - 2016
- Internship in the local newspaper Termolionline in Termoli (CB), Italy - June 2014