Lavinia Paiella

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Research interests

I am strongly interested in **compact objects** and their **multi-messenger** emissions. I am currently investigating the role of **star clusters** in producing **heavy intermediate-mass black holes** using semi-analytic **population synthesis codes** and their potential detection with current and future **gravitational-wave** interferometers.

Education

Ph.D. program — **Gran Sasso Science Institute**
Astroparticle Physics — *Nov 2022 - Present*
Supervisors: Prof. Manuel Arca Sedda, Prof. Gor Oganesyan
key words: intermediate mass black holes, star clusters, population codes, gravitational waves

Master degree — **La Sapienza University**
Astrophysics, 110/110 w.h. — *Sep 2020 - Sep 2022*
key words: neutron star binaries, gravitational waves, kilonovae

Bachelor Degree — **La Sapienza University**
Physics, 110/110 w.h. — *Sep 2017 - Sep 2020*
key words: machine learning, galaxy surveys

Awards and Honours

Transnational Visitor Programme Grant
Awarded by AHEAD2020, ∼ 2.5k euros — *April 2024*
Grant for short-term visitor programmes aimed at the realization of projects in high energy astrophysics.

Milla Baldo Ceolin National Prize
Awarded by INFN, ∼ 1k euros — *July 2023*
National award for the 10 best master theses in Theoretical Physics written by women.

Scientific visits

Short term stay (AHEAD2020 programme) — **ICCUB**
Barcelona , Spain — *22 Sept - 13 Oct 2024*
Project on the formation of black hole - neutron star binaries and their potential as gamma-ray bursts progenitors. Supervision of Dr. Sara Rastello and Prof. Mark Gieles.

Short term stay — **Johns Hopkins University**
Baltimore , USA — *25 Oct - 23 Nov 2023*
Hosted by Prof. Emanuele Berti's research group in the context of ITA-USA Bilateral Agreement between GSSI and Johns Hopkins University.

Publications (short-author)

[1]: **Paiella, L.**, Ugolini, C., Spera, M., Branchesi, M., and Arca-Sedda, M., Assembling GW231123 in star clusters through the combination of stellar binary evolution and hierarchical mergers, *ApJL, accepted, 2025*, 10.3847/2041-8213/ace9b8

[2]: Cozzumbo, A., Mestichelli, B., Mirabile, M., **Paiella, L.**, Tissino, J., and Harms, J., Opportunities and limits of lunar gravitational-wave detection, *Phil. Trans. R. Soc. A, 2023*, 10.1098/rsta.2023.0066

Conferences & Workshops

Seminars

APC seminars 2024/2025 — **SISSA**
Trieste, Italy — *19 March 2025*

Pizza Seminars 2024/2025 — **ICE - CSIC**
Barcelona, Spain — *11 Oct 2024*

Contributed talks

EAS 2025 — **University College Cork**
Cork, Ireland — *23-27 June 2025*

MODEST 2025 — **Seoul National University**
Seoul, South Korea — *16-20 June 2025*

ET Symposium 2025 — **CNR center**
Bologna, Italy — *26-30 May 2025*

Unveiling massive black hole evolution with gravitational waves and light — **APC Paris**
Paris, France — *19-23 May 2025*

MODEST 2024 — **Nicolaus Copernicus Astronomical Center**
Warsaw, Poland — *19 -23 Aug 2024*

Short talks

Challenges and future perspectives in GW astronomy — **Lorentz center**
Leiden, Netherlands — *14 -18 Oct 2024*

Posters

EAS 2024 — **Padova Congress**
Padova, Italy — *1–5 Jul 2024*

Outreach

European Researchers' Night — **Gran Sasso Science Institute**
L'Aquila, Italy — *26 Sep 2025*
Volunteered at the activities organized by Gran Sasso Science Institute.

Space Explorers — **Gran Sasso Science Institute**
L'Aquila, Italy — *2023 - Present*
Outreach event organized by the Astrophysics and Cosmology Group of Gran Sasso Science Institute for elementary schools in L'Aquila.

European Researchers' Night **Gran Sasso Science Institute**
L'Aquila, Italy *29-30 Sep 2023*
Volunteered at the activities organized by Gran Sasso Science Institute.

Technical skills

Programming: Python (advanced), C/C++ (intermediate), Mathematica, Fortran (beginner)

O.S.: Linux, Windows (advanced)

Other: LaTeX, Office (advanced), Matlab (beginner)

Languages

Italian: Native

English: Proficient *IELTS Certificate, average score: 8 (January 2022)*