

Lavinia Paiella

✉ lavinia.paiella@gssi.it • [laviniapaiella.github.io](https://github.com/lavinipaiella)
🆔 0009-0001-7605-991X

Research interests

I am strongly interested in **compact objects**, especially in their **formation channels** and their **multi-messenger** emissions. I am currently investigating the dynamical assembly of **intermediate-mass black holes** using semi-analytic **population synthesis codes** and their potential detection with current and future **gravitational-wave** detectors.

Education

Ph.D. program

Astroparticle Physics

Gran Sasso Science Institute

Nov 2022 - Jan 2027 (exp. defense)

Supervisors: Prof. Manuel Arca Sedda, Prof. Gor Oganessian

keywords: intermediate mass black holes, star clusters, population synthesis, gravitational waves

Master Degree

Astrophysics, 110/110 w.h.

La Sapienza University

Sep 2020 - Sep 2022

Supervisors: Prof. Paolo Pani, Prof. Andrea Maselli

keywords: neutron star binaries, gravitational waves, kilonovae

Bachelor Degree

Physics, 110/110 w.h.

La Sapienza University

Sep 2017 - Sep 2020

keywords: machine learning, galaxy surveys

Awards and Funding

ACME 3rd TNA Call

Awarded by ACME, ~ 1.3k euros

May 2026

Project selected for one week visit at SRON (Leiden) to collaborate with Dr. Valerya Korol on dynamical galactic binaries modeling for LISA.

CINECA Computational Resource Allocation (Pleiadi Call 7)

65,000 core hours on Leonardo-Booster

Apr 2026 - Sept 2026

Project: "Intermediate-mass black holes secular growth in dense star clusters".

Transnational Visitor Programme Grant

Awarded by AHEAD2020, ~ 2.5k euros

April 2024

Project selected for 3-weeks visit at ICCUB (Barcelona) in the context of multimessenger 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.

Publications (selected)

The complete publication list is available on [NASA ADS](#).

[1]: Arca Sedda M., **Paiella L.**, Ugolini C. *et al.*, *Isolated or Dynamical? Tracing Black Hole Binary Formation through the Population of Gravitational-Wave Sources*, *arXiv preprint*, arXiv:2603.20430

[2]: **Paiella L.**, Arca Sedda M., Mestichelli B., Ugolini C., *Seeds to success: Growing heavy black holes in dense star clusters*, *A&A*, 10.1051/0004-6361/202557230

[3]: **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*, 2025, 10.3847/2041-8213/ae1447

[4]: Mestichelli B., Mapelli M., Santoliquido F., Arca Sedda M., Branchesi M., **Paiella L. et al.**, *Black Hole - Neutron Star and Binary Neutron Star Mergers from Population III and II stars*, *A&A*, 10.1051/0004-6361/202555951

Scientific visits

Short term stay (AHEAD2020)

Barcelona, Spain

ICCUB

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

Baltimore, USA

Johns Hopkins University

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.

Seminars & Talks

Seminars.....

Seminar @ IGFAE

Santiago de Compostela, Spain

IGFAE

19 May 2026

Teeminars 2026

Heidelberg, Germany (online)

Heidelberg University

27 Jan 2026

Galaxy Evolution Coffee

Garching, Germany

ESO

13 Nov 2025

APC Seminars

Trieste, Italy

SISSA

19 March 2025

Pizza Seminars

Barcelona, Spain

ICE - CSIC

11 Oct 2024

Invited talks.....

OePG-CMD 2026

Graz, Austria

University of Graz

21 Sept 2026

GRaviCon2026

Pisa, Italy

Scuola Normale Superiore

22-24 Apr 2026

Contributed talks

EAS 2026 <i>Lausanne, Switzerland</i>	SwissTech Convention Centre 29 Jun - 3 Jul 2026
XVI ET Symposium <i>Aachen, Germany (online)</i>	Aachen University 15-19 Jun 2026
BritGrav26 <i>Cardiff, United Kingdom</i>	Cardiff University 9-10 Apr 2026
LISA Astro-WG Meeting <i>Geneva, Switzerland</i>	Campus Biotech 15-17 Dec 2025
EAS 2025 <i>Cork, Ireland</i>	University College Cork 23-27 Jun 2025
MODEST 2025 <i>Seoul, South Korea</i>	Seoul National University 16-20 Jun 2025
XV ET Symposium <i>Bologna, Italy</i>	CNR center 26-30 May 2025
Unveiling massive black hole evolution with gravitational waves and light <i>Paris, France</i>	APC Paris 19-23 May 2025
MODEST 2024 <i>Warsaw, Poland</i>	Nicolaus Copernicus Astronomical Center 19 -23 Aug 2024

Outreach

Ricerca Fuori Campo <i>L'Aquila, Italy</i> Event moderator of public discussion on the representation and role of researchers in society.	Gran Sasso Science Institute 24 Nov 2025
European Researchers' Night <i>L'Aquila, Italy</i>	Gran Sasso Science Institute 26 Sep 2025
Space Explorers <i>L'Aquila, Italy</i> Outreach event on astronomy organized for elementary schools in L'Aquila.	Gran Sasso Science Institute 2023 - Present
European Researchers' Night <i>L'Aquila, Italy</i>	Gran Sasso Science Institute 29-30 Sep 2023

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