

Lorenzo Cavallo

PHD STUDENT · UNIVERSITÀ DEGLI STUDI DI PADOVA

Dipartimento di Fisica e Astronomia, Università degli Studi di Padova, Vicolo dell'Osservatorio 3, 35122 Padova, Italy

☎ +39 351 5806323 | ✉ lorenzo.cavallo@phd.unipd.it | 🏠 physicslollo0.github.io | 📄 [Publication List](#)

STELLAR ASTROPHYSICS ★ MACHINE LEARNING ★ GALACTIC ARCHEOLOGY

Education

PHD ASTROPHYSICS

2021 - present

Università degli Studi di Padova, Italy

- Thesis: Contribution of merging neutron stars to the gravitational wave signal
- Supervisor: Dr. Laura Greggio

MS ASTROPHYSICS AND COSMOLOGY

2018 - 2020

Università degli Studi di Trieste, Italy

- Thesis: Impact of the Hierarchical Clustering Scenario on the Eu enrichment in the Galactic halo
- Supervisor: Prof. Francesca Matteucci
- Co-supervisor: Dr. Gabriele Cescutti

BS PHYSICS

2015 - 2018

Università degli Studi di Trieste, Italy

- Thesis: Eu production by neutron star and supernovae in the first stage of our Galaxy
- Supervisor: Prof. Francesca Matteucci
- Co-supervisor: Dr. Gabriele Cescutti

Publications

FIRST AUTHOR

Cavallo, L., Spina L., Carraro G., Magrini L., Poggio E., Cantat-Gaudin T., Pasquato M., Lucatello S., Ortolani S., Schiappacasse-Ulloa J., 2024, *Parameter Estimation for Open Clusters using an Artificial Neural Network with a QuadTree-based Feature Extractor*, The Astronomical Journal (AJ), 167, 12

Cavallo, L. and Greggio L., 2023, *On the hosts of neutron star mergers in the nearby Universe*, Monthly Notices of the Royal Astronomical Society (MNRAS), 522, 3

Cavallo, L., Cescutti G. and Matteucci F., 2023, *Europium enrichment and hierarchical formation of the Galactic halo*, Astronomy & Astrophysics (A&A), 674, A130

Cavallo, L., Cescutti G. and Matteucci F., 2021, *Neutron stars mergers in a stochastic chemical evolution model: impact of time delay distributions*, Monthly Notices of the Royal Astronomical Society (MNRAS), 503, 1

Professional Experience

SCHOOLS AND INTERSHIPS

- 2023 **Scuola Italiana di modelli 3D e realtà virtuale e aumentata per l'Astrofisica e l'Inclusione nella Scienza**, Enhance skills in the development of 3D models and the use of innovative technologies such as virtual reality (VR) and augmented reality (AR), as well as in the analysis of astronomical data
- 2022 **3rd Italian Astrostatistics School**, The primary goal of the school was to train astronomers to the use of modern statistical techniques, specifically parameter estimation and model selection.
- 2020 **Master's Internship**, Implementation of Bayesian analysis in order to explore the space of parameters of a stochastic chemical evolution model
- 2018 **Undergraduate Internship**, Analysis of Crab Nebula Flare by Fermi Science Tool

TEACHING EXPERIENCE

- 2024 **Tutor**, Physics with applications to biological systems | BS Biology of Human and Environmental Health (1st year)
- 2024 **Support activity**, Physics Laboratory I | BS Physics (1st year)
- 2023 **Tutor**, Physics Laboratory I (Statistic) | BS Physics (1st year)
- 2022 **Tutor**, Mathematical Analysis 3 | BS Physics & BS Astronomy (2nd year)
- from 2018 **Private Lessons**, Maths, Physics, Astrophysics, Cosmology | BS and MS courses (30+ students)

SUPERVISION

- 2024-ongoing **João Galupa**, MS Engineering Physics - Faculdade de Ciências da Universidade de Lisboa

VISITING

- Feb-March 2024 **André Moitinho - Faculdade de Ciências da Universidade de Lisboa**, Disentangle Fake and Real Open Clusters with a pure data-driven approach

REFEREEING

- 2023 **The Astronomical Journal (AJ)**, (1)

Languages

- Human **Italian** (*native*)
English (*B2/C1*)
- Computer **Advanced:** Python, LaTeX
Intermediate: ADQL/SQL, Fortran
Beginner: HTML, C++, C

Presentations

CONTRIBUTED PRESENTATIONS

- Cavallo, L.**, 2023, *Parameter Estimation for Open Clusters using an Artificial Neural Network with a QuadTree-based Feature Extractor*. Oral presentation: From star clusters to field populations: survived, destroyed and migrated clusters, Firenze, Italy.
- Cavallo, L.**, 2023, *On the hosts of neutron star mergers in the nearby Universe*. Oral presentation: High redshift Gamma-Ray Bursts in the JWST era, Sesto, Italy.
- Cavallo, L.**, 2022, *On the hosts of neutron star mergers in the nearby Universe*. Oral presentation: International conference PUMA22 Probing the Universe with Multimessenger Astrophysics, Sestri Levante, Italy.
- Cavallo, L.**, 2022, *On the hosts of neutron star mergers in the nearby Universe*. Oral presentation: V Congresso Nazionale GRB, Trieste, Italy.

SEMINARS

Cavallo, L., 2024, *The quest to undercover Open Clusters in Machine Learning Era*. CENTRA seminars (Instituto Superior Técnico), Lisbon, Portugal.

Cavallo, L., 2023, *Gravitational waves from neutron star merges and host galaxies: clues from short-GRBs*. Online: LIGO seminars (Caltech), Pasadena, California, USA.

Cavallo, L., 2023, *Gravitational waves from neutron star merges and host galaxies: clues from short-GRBs*. INAF seminars (OAPD), Padova, Italy.

Outreach & Professional Development

May 2024	La vita delle stelle , Oral Presentation, <i>Liceo Enrico Fermi (Padova, Italy)</i>
Sep 2023	Science4all , Science Communicator
2022-2023	PhD Astronomy , Representative
Sep 2022	Science4all , Science Communicator
Jun 2022	Festival di Astronomia - l'Universo attraente , Science Communicator
2019-2020	MS Astrophysics and Cosmology , Representative
Feb 2020-	Specola di Margherita Hack , Support for the guided tours
Jun 2020	
2014	Io Amo la Scienza (Outreach community) , Founder

Media

2024	Highlight on Media INAF	Link
------	--------------------------------	----------------------

Meeting organization

2025	Meeting (LOC) , An extraordinary journey into the Transient Sky: from restless progenitor stars to explosive multi-messenger signals	<i>Padova, Italy</i>
------	---	----------------------