

Antonio Farina

PERSONAL INFORMATION

WORK EXPERIENCE

01/11/2025 – present

Borsa di ricerca

INAF – Osservatorio Astronomico di Brera, Milano, Italy

Principal Investigator: Dr. Benjamin Rudolph Granett

Research activity:

- Characterisation of the selection function of the Euclid spectroscopic survey, including alternative strategies for random catalogues (e.g. SOM-based) and measurements on early data (TR1 and DR1).
- Development of Euclid LE3 processing functions, including VMSP-SEL and the three-point correlation function (3PCF) estimator.

EDUCATION AND TRAINING

01/11/2022 – 31/10/2025

Ph.D. in Physics, cum laude

Università degli Studi di Genova, Genova, Italy

Awarded on 19/05/2026

Thesis: Towards accurate cosmological constraints with Euclid: from selection effects to higher-order statistics.

Supervisors: Prof. Enzo Franco Branchini, Dr. Benjamin Rudolph Granett, Dr. Alfonso Veropalumbo

23/09/2019 – 07/06/2022

Master's Degree in Physics (Laurea Magistrale, LM-17), 110/110 cum laude

Università degli Studi di Roma Tre, Roma, Italy

Thesis: A new model for the galaxy three-point correlation function and its anisotropies: implementation and validation against simulated data.

Supervisors: Prof. Enzo Franco Branchini, Dr. Alfonso Veropalumbo

26/09/2016 – 24/10/2019

Bachelor's Degree in Physics, 110/110 cum laude

Università degli Studi di Roma Tre, Roma, Italy

Thesis: The least action principle in Cosmology.

Supervisor: Prof. Enzo Franco Branchini

09/2011 – 07/2016

High school diploma (Liceo Scientifico), 100/100

Liceo Scientifico A. Segni, Ozieri, Italy

RESEARCH VISITS

Apr 2026

Visiting researcher

Perimeter Institute for Theoretical Physics & Waterloo Centre for Astrophysics, Waterloo (ON), Canada

Host: Prof. Will Percival

TEACHING EXPERIENCE

2023 – 2025

Teaching tutor, General Physics

Università degli Studi di Genova, Genova, Italy

- 1st-year Management Engineering students (2023, 2024, 2025). Supervisor: Prof. Marco Raveri.
- 1st-year Biomedical Engineering students (2023, 2024, 2025). Supervisor: Prof. Enzo Franco Branchini.

SCIENTIFIC RESPONSIBILITIES

Euclid

Core member of the team in charge of developing and implementing alternative strategies to characterise the selection function of the Euclid spectroscopic survey.

Refereeing

Referee for the Open Journal of Astrophysics.

Organisation

Member of the Local Organising Committee (LOC) of the conference “Understanding the Galaxy-Matter Connection in the Era of Large Surveys”, Sestri Levante, Italy, 16–17 September 2024.

HONOURS AND AWARDS

2026

Euclid Special Talent and Recognition (STAR) Prize

Awarded to the Spectroscopic Pipeline Coordination Group for achieving the mission key point delta and producing the DR1 spectroscopic data, making it available to the Euclid community.

2016

Prize “Prof.ssa Maria Madau”

Best high-school student of Liceo Scientifico Antonio Segni, Ozieri.

TALKS

Conferences

- Jul 2025 **Characterizing selection effects in the Euclid spectroscopic survey**
Optimizing the Extraction of Cosmological Information from the Latest Spectroscopic Redshift Surveys, Sexten, Italy (14–18 July)
- Sep 2024 **Characterizing the Euclid selection function: overview of the visibility mask procedure and alternatives for early spectroscopic data**
Understanding the Galaxy-Matter Connection in the Era of Large Surveys, Sestri Levante, Italy (16–17 September)
- Sep 2023 **Modelling and estimation of the anisotropic galaxy 3-point correlation function**
109th National Congress of the Società Italiana di Fisica, Salerno, Italy (11–15 September)

Euclid Collaboration meetings

- Feb 2026 **Random catalogs with SOM and TR1 measurements (plenary)**
Euclid GC SWG Meeting, Trieste, Italy
- May 2025 **Optimizing catalogues' selections: lessons learned (splinter)**
Euclid Collaboration Meeting, Barcelona, Spain
- Jan 2025 **Alternative strategies for random catalogs (plenary)**
Euclid GC SWG Meeting, Garching, Germany
- Jun 2024 **Random catalogs for early spectroscopic data (splinter)**
Euclid Collaboration Meeting, Roma, Italy

PUBLICATIONS

Member of the Euclid Collaboration; reached the 2 FTE threshold for co-authorship on all Key Project publications. Listed below are selected publications highlighting direct contributions.

First- and second-author publications

- [1] **A. Farina**, A. Veropalumbo, E. Branchini, M. Guidi (2026). Modeling and measuring the anisotropic halo 3-point correlation function: a coordinated study. JCAP, 02 (2026), 028.
- [2] **A. Farina**, M. Guidi, A. Veropalumbo, C. Guida (2026). Denoising cosmological covariance matrices with Rotational Invariant Estimators. Submitted to A&A.
- [3] E. Branchini, **A. Farina** (2024). Large scale structure and neutrinos. Il Nuovo Cimento, in press.

Publications with significant contribution

- [4] Euclid Collaboration: B.R. Granett, S. de la Torre, M. Moresco, **A. Farina** et al. (2026). Euclid preparation. Bypass end-to-end simulations for spectroscopic galaxy clustering performance assessment. Under Euclid Consortium internal review.
- [5] Euclid Collaboration: A. Veropalumbo, M. Moresco, F. Marulli, E. Branchini, M. Guidi, **A. Farina** et al. (2026). Euclid preparation. Three-dimensional galaxy clustering in configuration space: Three-point correlation function estimation. Submitted to A&A.

- [6] M. Guidi, M. Moresco, A. Veropalumbo, L. Cavazzini, **A. Farina**, A. Labate (2026). First full-shape joint 2- and 3-point correlation function analysis on real data: Λ CDM cosmological constraints from BOSS DR12. Submitted to A&A.

Euclid Key Project publications (co-author)

- [7] Euclid Collaboration: M. Guidi, A. Veropalumbo, A. Pugno, M. Moresco, E. Sefusatti et al., incl. **A. Farina** (2026). Euclid preparation. Full-shape modelling of 2-point and 3-point correlation functions in real space. A&A, 707, A228.
- [8] Euclid Collaboration: M. Kärcher, M.-A. Breton, S. de la Torre, A. Veropalumbo, A. Eggemeier et al., incl. **A. Farina** (2026). Euclid preparation. Galaxy 2-point correlation function modelling in redshift space. Submitted to A&A.
- [9] Euclid Collaboration: K. Pardede, A. Eggemeier, D. Alkhanishvili, E. Sefusatti, A. Moradinezhad Dizgah et al., incl. **A. Farina** (2026). Euclid preparation. Galaxy power spectrum and bispectrum modelling. Accepted for publication in A&A.
- [10] Euclid Collaboration: D. Linde, A. Moradinezhad Dizgah, G. Parimbelli, K. Pardede, E. Sefusatti et al., incl. **A. Farina** (2026). Euclid preparation: Testing multi-field inflation with galaxy power spectrum and bispectrum. Submitted to A&A.
- [11] Euclid Collaboration: E. Sarpa, A. Veropalumbo, M. Bonici, M. Kärcher, M. Crocce et al., incl. **A. Farina** (2026). Euclid preparation. Baryon acoustic oscillations extraction techniques: comparison and optimisation. Accepted for publication in A&A.

In preparation

- [12] Euclid Collaboration: **A. Farina**, B.R. Granett, A. Veropalumbo, I. Risso, E. Branchini et al. Euclid: Alternative strategies for modeling the Euclid spectroscopic selection function in absence of the Deep Fields.
- [13] M. Guidi, **A. Farina**, A. Nusser, E. Branchini. Modeling the velocity divergence–galaxy–galaxy 3-point correlation function.
- [14] C. Guida, A. Veropalumbo, **A. Farina**, E. Branchini. Non-Gaussian prescriptions for the joint power spectrum and 2-point correlation function covariance matrix.

PERSONAL SKILLS

Mother tongues Italian, Sardinian

Other languages English: fluent (spoken and written).

Digital skills

- Programming: advanced knowledge of Python and good knowledge of C++; solid general programming and scientific software development skills.
- Euclid software: good knowledge of the Euclid Development Environment (EDEN) and of the structure of the Euclid Level 3 (LE3) processing functions.
- Excellent knowledge of the infrastructure, tools and validation workflows of the Euclid Galaxy Clustering Science Working Group (GC SWG).

The undersigned, aware of the criminal penalties provided for by art. 76 of Italian Presidential Decree (D.P.R.) no. 445 of 28 December 2000 in the case of false declarations, declares, pursuant to arts. 46 and 47 of the same Decree, that the information contained in this curriculum vitae is true.

I authorise the processing of the personal data contained in this curriculum vitae in accordance with EU Regulation 2016/679 (GDPR) and Legislative Decree no. 196 of 30 June 2003, as amended by Legislative Decree no. 101 of 10 August 2018.

Place and date:

Signature _____