

SILVIA FASCE

PERSONAL PROFILE

PhD Candidate in Physics and Nanosciences at the University of Genoa with specialization in computational condensed matter physics. Experience in molecular dynamics simulations for the study of topological defects in metallic nanoparticles.

PROFESSIONAL EXPERIENCE

April 2024 – Mathematics and Physics Teacher

October 2024 *Centro Scolastico Diocesano Redemptoris Mater, Albenga (SV), Italy*

EDUCATION

November 2024 – PhD in Physics and Nanosciences

Present *University of Genoa – DIFI*

Research area: Computational condensed matter physics. Thesis topic: Formation and evolution processes of topological defects in metallic nanoparticles via molecular dynamics simulations. Supervisors: Prof. Riccardo Ferrando, Dr. Diana Nelli, Prof. Nicola Maggiore.

September 2021 – Master's Degree in Physics (LM-17)

March 2023 *University of Genoa – DIFI*

Curriculum: Theoretical Physics. Final grade: 110/110 cum laude. Thesis: "Covariant theory of fractons in 3 spacetime dimensions". Supervisors: Prof. Nicola Maggiore, Dr. Daniele Musso; Co-supervisor: Prof. Riccardo Ferrando.

September 2018 – Bachelor's Degree in Physics (L-30)

July 2021 *University of Genoa – DIFI*

Final grade: 110/110 cum laude.

COURSES AND SPECIALIZED SCHOOLS DURING PHD

- High Performance Computing, University of Genoa (2026)
- Soft Matter, University of Genoa (2025)
- Introduction to Nanophotonics and Nanofabrication, University of Genoa (2025)
- HPC Molecular Modelling Course, CINECA, Casalecchio di Reno (2025)
- Advanced School on High Performance Computing with GPU Accelerators, CINECA (Online) (2025)
- Atomistic Simulations with Machine Learning Based Interatomic Potentials, University of Genoa (2024)

CONFERENCES AND WORKSHOPS

- Cluster Surface Interaction (CSI 2026), Paris, France. Poster: "Facet-Dependent Adhesion of Gold clusters on Iron Substrate" (2026)
- International Meeting on Nanoalloys (IMN 2025), Barcelona, Spain. Poster: "Evolution of Five-fold Twin Gold Clusters with a Peripheral Axis" (2025)
- International Meeting on Nanoalloys (IMN 2024), Genoa, Italy. Organizing committee member (2024)

PUBLICATIONS

- "Geometry-controlled competition between axis centering and detwinning in fivefold-twinned gold nanoparticles", S. Fasce, D. Nelli, L. Benzi, G. D. Förster, R. Ferrando. Published in Computational Materials Science, 2026. DOI: 10.1016/j.commatsci.2026.114930
- "Covariant action for scalar-charge fractons: Gauge hierarchy, elastic defects, and nonsymmetric completion", E. Bertolini, S. Fasce, N. Maggiore. Under review (2026)

PERSONAL COMPETENCES

Language competences

Italian	Native speaker
English	Level B2

Digital competences

Operating systems	GNU/Linux, Windows
Programming languages	C++, Python, MATLAB
Scientific software	LabView, LibreOffice, ROOT, SciDAVis, LaTeX, Typst

ADDITIONAL INFORMATION

- Participant in the International Day of Women and Girls in Science (2026) – Third Mission activity
- Poster presentation at Research Day, Department of Physics, University of Genoa (2026)
- Science Communicator, Genoa Science Festival (2022)