Luca Onnis

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Summary

I am a PhD student in Mathematics and Applications at the University of Genoa, affiliated with MaLGa / LCSL. My research interests lie in inverse problems on spaces of measures, iterative regularization and early stopping, optimal transport and Wasserstein geometry. I completed my MSc in Mathematics at the University of Cagliari, where I worked on the truncated $\mathbb{Z}$-moment problem. I have also worked on random walks and dimensionality reduction.

Education

PhD — **University of Genoa**, Mathematics and Applications — Nov. 2026–present
- Funded doctoral position at MaLGa (Machine Learning Genoa Center), LCSL unit.
- Research area: inverse problems, iterative regularization and Wasserstein geometry.

MSc — **University of Cagliari**, Mathematics — 2024 – 2026
- Grade: **110/110 cum laude**.
- Thesis: *The truncated $\mathbb{Z}$-moment problem*. Supervisor: Prof. M. Infusino.

BSc — **University of Cagliari**, Mathematics — 2021 – 2024
- Grade: **110/110 cum laude**.

High school — **Liceo Scientifico L. B. Alberti**, Scientific High School — 2016 – 2021
- Final grade: **100/100**.

Manuscripts and Research Projects

Random walks across spheres in $\mathbb{R}^d$, with M. Infusino — 2025
Submitted manuscript on random walks and crossings of spherical boundaries.

The truncated $\mathbb{Z}$-moment problem, with M. Infusino — 2026
MSc research on solvability conditions and constructive criteria for truncated moment sequences supported on the integer lattice.

Research Interests

Inverse problems in spaces of measures and probability measures; iterative regularization with noisy data and early stopping; optimal transport and Wasserstein gradient flows; moment problems; probability theory, stochastic processes and statistical learning.

Research and Teaching Experience

MaLGa / LCSL, University of Genoa, PhD researcher — Nov. 2026–present
Exploring the extension of iterative regularization and primal–dual approaches from Hilbert spaces to spaces of measures, with emphasis on stability under noisy observations and stopping rules.

University of Cagliari, Research intern — Nov. 2025–Feb. 2026
Dimensionality reduction for large datasets, with applications to clustering and classification. Supervisors: M. Infusino and B. Manca.

University of Cagliari, Teaching Assistant in Probability Theory — 2024 – 2026
Weekly problem-solving sessions and teaching support for undergraduate students over two academic years.

Academic Activities and Schools

Excellence Program in Applied Mathematics, University of Cagliari — 2024 – 2026

Advanced seminars, additional mathematical training and research-oriented activities.

Days of Optimization, University of Cagliari 21–22 May 2026
Workshop on optimization.

DIMA Winter School in Mathematics, University of Genoa 26–28 Mar. 2026
Awarded a scholarship covering board and lodging.

Moments, Non-Negative Polynomials and Algebraic Statistics, University of Konstanz 17–21 Feb. 2025
Winter school; awarded a scholarship covering board and lodging.

Awards

Merit-based award, University of Cagliari (EUR 900) 2025

Bachelor Merit Award, University of Cagliari (EUR 900) 2024

Languages

- **Italian:** native.
- **English:** B2.

Computer Skills

Programming Python, R, MATLAB, C, Mathematica.
Scientific writing LaTeX; academic writing and computational experimentation.

Other Activities

Competitive chess player; FIDE rating above 1900.