
Education

- Phd Student in Statistical Mechanics** 10/2018 – present
Università degli Studi di Milano, (IT)
Supervisor: Sergio Caracciolo
Research topics: Combinatorial Optimization, Theoretical Data Science
- Master Student in Theoretical Physics** 10/2016 – 10/2018
Università degli Studi di Milano, (IT)
Master thesis: "Random Euclidean Bipartite Matching with concave cost functions in 1d"
Final grade: 110/110 cum laude
Supervisor: Prof. Sergio Caracciolo
- Bachelor Student in Physics** 10/2013 – 07/2016
Università degli Studi di Milano, (IT)
Bachelor thesis: "Slater decomposition of fractional quantum Hall states"
Final grade: 110/110 cum laude
Supervisor: Prof. Luca Molinari
- High School Student** 09/2008 – 07/2013
Liceo Scientifico "Edith Stein", Gavirate, (IT)
Final grade: 100/100

Schools

- Mathematical and Computational Aspects of Machine Learning** 10/2019
"Ennio De Giorgi" center for Mathematical Research, Pisa (IT)
Lectures on optimal transport theory, mean field Bayesian inference, approximation theory and numerical methods for machine learning.
- SFT 2019 - Lectures on Statistical Field Theory** 02/2019
Galileo Galilei Institute, Florence (IT)
Lectures about Statistical Field Theory in Condensed Matter.
- X-Ray and Neutron Science - International Student Summer Programme** 09/2015
European Synchrotron Radiation Facility, Grenoble (FR)
Lectures about x-ray and neutron techniques in diffractometry and spectroscopy. Experimental project (Fluorescence Spectroscopy of Eu3+) with the "Electronic structure, magnetism and dynamics" group.
- Internship** 02/2013
European Joint Research Center, Ispra (IT)
Activities with researchers on: nuclear decommissioning, radioprotection and EU community policies.
- Summer School** 06/2012
Scuola Normale Superiore, Pisa (IT)
Lectures by experts on a wide variety of topics, from Literature to Physics.

Work

- University Tutor** 03/2019 – present
Università degli Studi di Milano (IT)
Tutoring for the Complex and Functional Analysis course.
Tutoring for first year Natural Sciences students on basic topics in mathematics.
- Supervisor for Junior Camps** 09/2014 – 12/2017
Sardinia Radio Telescope, Cagliari (IT) & Nus Observatory, Nus (IT)
Logistic and teaching support at 6 different Astrophysics Junior Camps organized by Sterrenlab.
- Physics Teacher** 10/2016 – 06/2017
Istituto Professionale "L. Einaudi", Varese (IT)
Physics teacher for the first year adult class of a professional secondary public school.

Private Lecturer

11/2013 – 06/2018

Varese (IT)

Private lectures in Maths and Physics up to university education. Private lectures in Computer Science, Chemistry and Latin up to high school education.

Honors & Awards

Excellence Scholarship

2015 – 2017

Università degli Studi di Milano

1st place "Valerio Filippini"

04/2012

University of Pavia (IT)

Contest in Physics for high school students.

Guitar Studies Scholarship

2005 & 2012

Municipality of Besozzo (IT)

Diplom in Solfege

06/2008

Conservatory of Novara (IT)

Volunteering

Migrant hosting facilities

2017

Laveno (IT)

Secretary of AISF

2015 – 2017

AISF: Italian Association of Physics Students

PAPAP16 Organizer

2016

PAPAP: Particle and Astroparticle Physics Autumn Programme

Full organization of the visits to the Frascati INFN Labs and to the Gran Sasso LNGS Labs.

Selected publications

1. Caracciolo, S., D'Achille, M. P., Erba, V. & Sportiello, A. The Dyck bound in the concave 1-dimensional random assignment model. *Journal of Physics A: Mathematical and Theoretical* **53**, 064001. <https://doi.org/10.1088/1751-8121/ab4a34> (Jan. 2020).
2. Erba, V., Gherardi, M. & Rotondo, P. Intrinsic dimension estimation for locally undersampled data. *Scientific Reports* **9**. <https://doi.org/10.1038/s41598-019-53549-9> (Nov. 2019).
3. Di Gioacchino, A., Molinari, L. G., Erba, V. & Rotondo, P. Unified Fock space representation of fractional quantum Hall states. *Phys. Rev. B* **95**, 245123. <https://link.aps.org/doi/10.1103/PhysRevB.95.245123> (24 2017).