



FRANCESCO CAMILLI

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Google Scholar: <https://scholar.google.it/citations?hl=it&user=DrP5PjIAAAAJ>

PUBLICATIONS AND PREPRINTS

- A statistical physics approach to a multi-channel Wigner spiked model** January 2022
Alberici, D., Camilli, F., Contucci, P., Mingione, E.
Europhysics Letters, (2022)
- An inference problem in a mismatched setting: a spin-glass model with Mattis interaction** July 2021
Camilli, F., Contucci, P., Mingione, E.
Preprint, arXiv e-prints: 2107.11689, (2021)
- The Solution of the Deep Boltzmann Machine on the Nishimori Line** July 2021
Alberici, D., Camilli, F., Contucci, P., Mingione, E.
Communications in Mathematical Physics **387**, 1191–1214, (2021)
- The Multi-species Mean-Field Spin-Glass on the Nishimori Line** January 2021
Alberici, D., Camilli, F., Contucci, P., Mingione, E.
Journal of Statistical Physics **182**, Article number: 2, (2021)

CONFERENCES AND SEMINARS

- Boltzmann Machines on the Nishimori line** 28 April 2021
University of Bologna
Bologna, Italy (Remote)
Invited speaker at the kick-off workshop AlmaHAI: Hard Sciences.
- The deep Boltzmann machine on the Nishimori line** 2 March 2021
ICTP - International Centre for Theoretical Physics
Trieste, Italy (Remote)
Seminar for the Quantitative Life Sciences (QLS) group at ICTP.
- Mathematical Methods and Models in Machine Learning** 27-28 April 2020
University of Bologna
Bologna, Italy
Member of the organizing committee and chairman of the April 28th's morning session.

EDUCATION

- PhD in Mathematics** November 2019– Current
University of Bologna
Bologna, Italy
Research interests - Statistical Mechanics of Disordered Systems and applications:
 - Hyperbolic and Elliptic multi-species disordered models;
 - Boltzmann Machines;
 - High dimensional statistical inference in optimal and mismatched settings;
 - Disordered models on the Nishimori Line and their relation with statistical inference;
 - Central limit theorems and scaling limits in statistical mechanics and inference;
 - High dimensional inference with structured noise drawn from random matrix ensembles.Supervisor: prof. Pierluigi Contucci.
- Cotutelle: PhD in Physics** May 2021– Current
École Normale Supérieure
Paris, France
Supervisor: prof. Marc Mézard.
- Guest Scientist** December 2021
ICTP - International Centre for Theoretical Physics
Trieste, Italy
Invited by Dr. Jean Barbier, Quantitative Life Sciences (QLS) group.
- M.Sc. in Physics | 110/110 cum laude** September 2017 – October 2019
University of Bologna
Bologna, Italy

- Quantum Field Theory (advanced);
- Statistical Mechanics (advanced);
- General Relativity and basic notions of Quantum Field Theory in curved space-times.

Master Thesis: Statistical Mechanics Perspectives on Boltzmann Machines. Supervisor: prof. Pierluigi Contucci.
Co-supervisor: dott. Emanuele Mingione.

Diploma of the Collegio Superiore

University of Bologna

September 2014 – October 2019

Bologna, Italy

Collegio Superiore is an institute of excellence of the University of Bologna. Admission and permanence are based exclusively on merits. It provides its students some benefits, among which:

- exemption from tuition fees;
- a 2650€/year scholarship;
- lodging.

B.Sc. in Physics | *110/110 cum laude*

University of Bologna

September 2014 – September 2017

Bologna, Italy

Thesis (ITA): Teoria classica dei campi: campo elettromagnetico e radiazione di cariche in moto. Supervisor: prof. Alexandre Kamenchtchik.

High School Diploma | *100/100 cum laude*

Liceo Scientifico G. Marconi

September 2009 – September 2014

Pesaro, Italy

Elected student representative in 2012/2013.

TEACHING EXPERIENCE

Teaching assistant for Statistical Mechanics of Complex Systems

University of Bologna

February 2020 – Current

Bologna, Italy

I assist the professor during the exams of the course. Total amount of hours: 36.

Teaching assistant for Mathematical Physics 1.

University of Bologna

February 2018 – September 2021

Bologna, Italy

I gave some lessons focusing on exercises for the course. I assisted the professor in correcting written tests and in oral exams. Total amount of hours: 246.

SKILLS

Languages: Italian (Native), English (C1), French (Basic interactions and understanding)

Programming: Python (NumPy, SciPy), C++ (Proficient user)

Document Creation: Microsoft Office Suite, LaTeX (Proficient user)