



## EDUCATION

### PhD in Physics | Politecnico di Torino (Torino, Italy)

NOVEMBER 2022 – PRESENT

### Master of Science programme in Physics of Complex Systems | Université Paris Cité (Paris, France)

SEPTEMBER 2021 – JULY 2022

- Mark: 17.6/20, Très Bien.
- Thesis title: “Bayesian variable selection for environment-dependent phylogenetic models of diversification”.
- Ranked 1<sup>st</sup> out of ~ 60 students in the first semester, with an average of 18.6.
- Course taught entirely in English.

### Master of Science programme in Physics of Complex Systems | Politecnico di Torino (Turin, Italy)

SEPTEMBER 2020 – OCTOBER 2022

- Mark: 110/110 Cum Laude.
- Thesis title: “Bayesian variable selection for environment-dependent phylogenetic models of diversification”.
- Admitted to the international track.
- Attended the first semester at SISSA and ICTP (Trieste, Italy), the second semester at Politecnico di Torino (Torino, Italy) and the third semester at Sorbonne Université, Université de Paris and Université Paris Saclay (Paris, France).
- Course taught entirely in English.

### Bachelor of Science in Physics | Università degli Studi dell’Insubria (Como, Italy)

SEPTEMBER 2017 – OCTOBER 2020

- Mark: 110/110 cum laude.
- Thesis title: “Generation of prime numbers from a random bit stream”.
- Scholarship of excellence and merit.



## SCIENTIFIC INTERESTS

- Applications of statistical physics to optimization and inference problems, with a focus on stochastic processes on graphs. Strong background in mean field methods and message passing algorithms.
- Out-of-equilibrium stochastic systems on graphs. Experienced in working with path integral techniques for the study of stochastic processes. Currently studying the application of dynamic cavity methods to study the dynamics of Stochastic Differential Equations (SDEs) on diluted graphs.
- Random matrices. Experienced in cavity methods for the study of non-hermitian sparse random matrices.
- Interested in spin-glass theory, applications of statistical physics to neuroscience and machine learning.



## SKILLS

### Language

- **Italian:** mother tongue.
- **English:** C1 level (IELTS Academic test, mark 7.5).
- **French:** elementary level.

### IT

- **Programming:** advanced user of Matlab, Python, Julia. Intermediate user of C++ and R.
- **Operating system:** advanced user of Windows and Linux-based systems.
- **Graphics and editing:** intermediate user of Photoshop, Lightroom, Gimp, InkScape, Vegas Pro.



## TEACHING

- Senior tutor of the Physics I course at Politecnico di Torino (AY 2023/24).
- Consolidated experience in tutoring students from elementary school to high school.



## ACTIVITIES

- **Complex networks: from socio-economic systems to biology and the brain Workshop**, Lipari, July 2023.
- **Beg Rohu Summer School of physics "Statistical Physics of Complex Systems"**, Saint-Pierre Quiberon, June 2023.
- **CAMBI (Computational Aspects and Modeling of Biological Information) Workshop**, Bocconi University, Milan, December 2022.
- **Spring College in the Physics of Complex Systems (smr 3690)**, ICTP, Trieste, February/March 2022.
- **Winter School on Quantitative Systems Biology: Quantitative Approaches in Ecosystem Ecology (smr 3486)**, ICTP, Online, November/December 2020.



## PROJECTS

- **SIMBAD - Statistical Inference from Multiscale Biological Data: theory, algorithms, applications**, (2023-2027)  
UE-funded research - HE - Excellent Science - MSCA



## PUBLICATIONS

- Braunstein, G. Catania, L. Dall'Asta, M. Mariani, F. Mazza and M. Tarabolo, *Small-Coupling Dynamic Cavity: A Bayesian mean-field framework for epidemic inference*, (2023), arXiv:2306.03829.
- M. Tarabolo and L. Dall'Asta, *Gaussian approximation of dynamic cavity equations for linearly-coupled stochastic dynamics*, (2024), soon available on arXiv.