

# Giulia GARCIA LORENZANA

PhD student

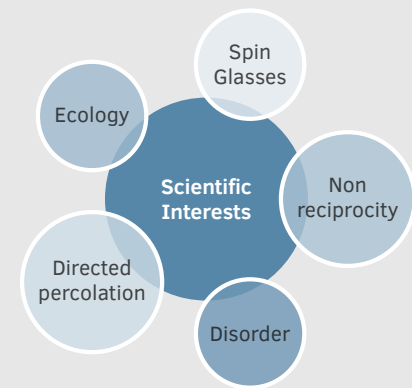
École Normale Supérieure,  
LPENS  
Université Paris Cité, MSC

January 29, 1998

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## About Me

I am a PhD student in Theoretical Physics between Laboratoire de Physique de l'École Normale Supérieure and Matière et Systèmes Complexes lab, under the supervision of Giulio Biroli and Ada Altieri. My main interest is the Statistical Physics of Disordered Systems and its applications to Theoretical Ecology, with a focus on out-of-equilibrium dynamics.



## Languages

Italian ●●●●●●●●  
Spanish ●●●●●●●●  
English ●●●●●●●●  
French ●●●●●●●●

## Skills

C, python,  $\text{\LaTeX}$ , MATLAB, Wolfram Mathematica, Linux, Vim.  
Theoretical background:  
Replica and Cavity Method, DMFT, Statistical Field Theory, M-layer construction.

## Education

- 2022 – present **PhD in Physics** LPENS, MSC, Paris  
*Spatially extended many-species heterogeneous ecosystems.*  
Supervisors: Giulio Biroli, Ada Altieri · CDSN founding
- 2019 – 2022 **Diplome de l'ENS** École Normale Supérieure, Paris  
International Selection scholarship
- 2019 – 2021 **Master in Theoretical Physics** École Normale Supérieure, Paris  
Average grade: 17.58/20 (mention très bien).
- 2016 – 2019 **Bachelor in Physics** La Sapienza, Rome  
Final grade: 110/110 with honors  
Thesis supervisor: A. D. Polosa, *Fano-Feshback resonances*
- 2016 – 2019 **Superior School of Advanced Studies** La Sapienza, Rome

## Research internships

- 2021 – 2022 **Role of spatial structure in random Lotka-Volterra model** LPENS, MSC  
10 months  
Supervisors: Giulio Biroli, Ada Altieri · Paper under review.
- 2021 **Strong interactions in random Lotka-Volterra model** MSC  
3 months  
Master 2 internship · Supervisor: Ada Altieri · Final grade: 19/20, results published in Phys.Rev.E.
- 2020 **Loop expansion for Anderson localization** LPTMC  
5 months  
Master 1 internship · Supervisor: Marco Tarzia · Final grade: 19/20, paper under review.
- 2018 – 2019 **Interaction between water flow and surface waves** LPENS  
7 weeks  
Supervisors: François Petrelis, Stéphane Perrard

## Publications

- 2022 **Well-mixed Lotka-Volterra model with random strongly competitive interactions**  
*G. Garcia Lorenzana, A. Altieri*  
Phys. Rev. E **105**, 024307
- 2023 **Corrections to the Bethe lattice solution of Anderson localization**  
*M. Baroni, G. Garcia Lorenzana, T. Rizzo, M. Tarzia*  
arXiv:2304.10365
- 2023 **Emergent Bistability and Mutualistic Behavior: How Interactions and Dispersal Rescue Diverse Ecosystems from Extinction**  
*G. Garcia Lorenzana, A. Altieri, G. Biroli*  
arXiv:2309.09900

## Teaching

- 2022 – 2023 **TA Mathematics for Physicists** ENS  
40 hours per year

## Workshop organization

- 2023 **Microbial community ecology: bridging theory and observations** Max Planck Institute, Plön

## Talks

### Invited Talks

2024	SIFS Young Seminar	
2023	Theory Group Seminar	Institut Curie

### Contributed Talks

2023	STATPHYS28	University of Tokyo
2023	Cophee	University of Tokyo
2023	YITP-YSF symposium	Kyoto University
2022	Eco-evolutionary Dynamics of Microbial Communities Across Scales	ICTP, Trieste
2022	Simons Collaboration on Cracking the Glass Problem Meeting	Venice

## Awards

2019	First of my year in ranking of Sapienza Physics students for attribution of fees reduction based on academic performance.
2016	Silver Medal in the Italian Mathematical Olympics.
2016	Third place in the Mediterranean Youth Mathematical Championship as member of the Italian team.