

**Marylou Gabrié**  
Postdoctoral researcher  
Ancienne Élève de l'École Normale Supérieure

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[Google Scholar](#)  
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My research lies at the boundary of machine learning and statistical physics. My objective is to improve our theoretical understanding of machine learning successes with approaches ranging from the statistical physics treatment of disordered systems to information theory. I am also interested in adapting machine learning technics for scientific use, in particular in the context of scarce data.

### Education

- 2016 - 2019: PhD in statistical physics applied to machine learning, École Normale Supérieure, Paris  
Supervisors: F. Krzakala and L. Zdeborová  
Thesis title: "Towards an understanding of neural networks: Mean-field incursions"
- 2013 - 2015: Masters of Science in Physics, ICFP LabeX, École Normale Supérieure, Paris
- 2009 - 2011: Classe préparatoire, Physics and Chemistry, Lycée Thiers, Marseille  
Final national rankings (PC): 1st at École Polytechnique, 4th at ENS Paris.

### Research Experience

- Jan 2020 - : Flatiron Institute Research Fellow, Center for Computational Mathematics, New York
- Jan 2020 - : Center for Data Science Faculty Fellow, New York University, New York
- Mar-Jun 2018: Research intern, Facebook AI Research, with L. Bottou, New York
- Jan-May 2016: Visiting Student Researcher, Simons Institute for the Theory of Computing, Berkeley  
Scientific program: Counting Complexity and Phase Transitions
- 2015 - 2016 : Research Intern, Laboratoire de Physique Statistique (ENS), Paris  
Supervisor: F. Krzakala, "Mean field approximations of Boltzmann machines"
- Feb-July 2013: Astrophysics research Intern, European South Observatory, Santiago de Chile

### Publications Summary and Scientific Communications

- Papers: 7 publications including 5 first author, 2 Neurips, 1 single authored review published in J-PhysA: Special Issue on Machine Learning and 1 pre-print as last author under review (MSML)
- Talks: 5 invited talks at conferences and workshops including ITA (2020), 5 contributed talks at conferences and workshops including a Neurips Spotlight (2018), over 10 seminar invitations
- Reviewer: machine learning (Neurips, ICML, MSML), physics journals (J-Phys A, J-Stat, PRE)

### Fellowships & Awards

- PhD Scholarship 2016-2019, Capital Fund Management Foundation for Research, Data Science Chair
- Fellowship L'Oréal-UNESCO for Women in Science (Bourses France), PhD Laureate 2018 – 15,000 €

### Teaching Experience

- Machine learning DS-GA1003 (co-lead teacher) – Graduate Course, NYU, Spring 2021
- Statistical physics for machine learning (lecturer) – VDSP-ESI Winter School 2020
- Numerical Physics (teaching assistant) – ICFP masters program, ENS Paris, Fall-Winter 2017-2018
- Non Linear Physics (teaching assistant) – ICFP masters program, ENS Paris, Fall 2017 and 2018
- Statistical Physics and Applications PH2821 (teaching assistant) – École Centrale Paris, Spring 2017

### Other Experience

- Feb-July 2014: Visiting Associate, Boston Consulting Group, Strategy consultant, Paris