

# LOUISE BUDZYNSKI

## RESEARCH

◊ Maître de conférence at the Computer Science Department of ENS, Paris, France

$\diamond$ Postdoc at La Sapienza University, Rome, Italy	April 2023 - August 2024
◊ Postdoc at Polytechnic University of Turin, Italy	November 2020- March 2023

#### **EDUCATION**

**Ph.D.** in Statistical Physics 2017–2020
 Supervised by Guilhem Semerjian at Laboratoire de Physique de l'École Normale Supérieure (LPENS), in Paris.
 Title : Algorithmic barriers in random Constraint Satisfaction Problems

#### $\diamond$ Master in theoretical physics

Master ICFP (International Center for Fundamental Physics) at École Normale Supérieure de Paris. Master thesis supervised by Jesper Lykke Jacobsen at the Laboratoire de Physique de l'École Normale Supérieure (LPENS) *Title : Matrix product states and Temperley-Lieb algebra* 

## $\diamond$ Undergraduate program in physics

Licence FIP (Formation Interuniversitaire de Physique) at École Normale Supérieure de Paris

## TEACHING

◇ Tutorials in scientific programming
 C-language, algorithms and models in science

At La Sapienza University of Rome, for undergraduate students (L2).

## $\diamond$ Tutorials in Special Relativity and Electromagnetism

At École Normale Supérieure, for undergraduate students (L3, Licence FIP).

## PUBLICATIONS

♦ Alfredo Braunstein, Louise Budzynski, Matteo Mariani. Statistical Mechanics of Inference in Epidemic Spreading.

*Phys. Rev. E 108, 064302 - Published 15 December 2023* https://doi.org/10.1103/PhysRevE.108.064302

 Louise Budzynski, Andrea Pagnani. Small Coupling Expansion for Multiple Sequence Alignment. Phys. Rev. E 107, 044125 – Published 25 April 2023 https://doi.org/10.1103/PhysRevE.107.044125

2013–2014

October-December 2023

2014–2016

September 2024 - Now

◇ Alfredo Braunstein, Louise Budzynski, Stefano Crotti and Federico Ricci-Tersenghi. The closest vector problem and the zero-temperature p-spin landscape for lossy compression.
 *Phys. Rev. E 106, 054101 - Published 1 November 2022* https://doi.org/10.1103/PhysRevE.106.054101

 Louise Budzynski, Guilhem Semerjian. Biased measures for random constraint satisfaction problems: larger interaction range and asymptotic expansion. Journal of Statistical Mechanics : Theory and Experiment 2020 (10), 103406. https://doi.org/10.1088/1742-5468/abb8c8

Louise Budzynski, Guilhem Semerjian. The Asymptotics of the Clustering Transition for Random Constraint Satisfaction Problems.
 Journal of Statistical Physics 181 (5), 1490–1522 (2020).
 https://doi.org/10.1007/s10955-020-02635-8

Louise Budzynski, Federico Ricci-Tersenghi and Guilhem Semerjian. Biased landscapes for random constraint satisfaction problems.
 Journal of Statistical Mechanics : Theory and Experiment 2019 (2), 023302
 https://doi.org/10.1088/1742-5468/ab02de

◊ Etienne Granet, Louise Budzynski, Jérôme Dubail, and Jesper Lykke Jacobsen. Inhomogeneous Gaussian free field inside the interacting arctic curve. Journal of Statistical Mechanics : Theory and Experiment 2019 (1), 013102 https://doi.org/10.1088/1742-5468/aaf71b

# TALKS

 $\diamond$  Talk at the workshop "Complex networks : from socio-economic systems to biology and the brain" (10/07/2022 - 16/07/2022), in Lipari Island, Italy. *July*,10–16 2022 Title of the talk : Small Coupling Expansion for Multiple Sequence Alignment.

♦ Invited talk at the Conference "Youth in High-dimensions : Machine Learning, High-dimensional Statistics and Inference for the New Generation", at ICTP, Trieste. Organized by F. Krzakala and J. Barbier.

Title of the talk : Biased landscape in random constraint satisfaction problems June, 29–July, 3 2020

 ◊ Journées de physique statistique 2019, Paris. Organized by Cécile Cottin-Bizonne, Vivien Lecomte, Rémi Monasson, Emmanuel Trizac, Francesco Zamponi
 January,31–February,1 2019

# CONFERENCES/SCHOOLS ATTENDED

◊ 40 years of Replica Symmetry Breaking, organized by P. Charbonneau, E. Marinari, G. Parisi, F. Ricci-Tersenghi, F. Zamponi, G. Gradenigo and G. Sicuro.
 September, 10−13 2019

Beg Rohu summer schools :
 Glasses, Jamming and Slow Dynamics.
 Deep Neural Networks and Statistical Physics.

June-July 2019 June-July 2018

## **PROGRAMMING SKILLS**

C, Python, Julia, Mathematica

#### LANGUAGES

French (mother tong), English (fluent), Italian (fluent)

## ATTESTAZIONE

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 196/2003, coordinato con il Decreto Legislativo 101/2018, e dell'art. 13 del GDPR (Regolamento UE 2016/679) ai fini della pubblicazione in Amministrazione Trasparente - Sapienza come da normativa vigente.