Theodor Misiakiewicz — Ph.D Candidate, Statistics, Stanford University

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Education

Stanford University, Stanford, CA — 2017–2022 (expected)
Ph.D Candidate, Department of Statistics. *Advisor:* Prof. Andrea Montanari

Ecole Normale Superieure, Paris, France
M.Sc. in Theoretical Physics at *International Center of Fundamental Physics* — 2014–2016
B.Sc. in Mathematics, Department of Mathematics — 2013–2014
B.Sc. in Physics, Department of Physics — 2013–2014

Research experience

MIT, Cambridge, MA — Feb. 2017 - Jul. 2017
Visiting student at the *Laboratory for Information and Decision Systems* and *Institute for Data, Systems and Society*, EECS Department. *Advisor:* Prof. Guy Bresler

Los Alamos National Laboratory, Los Alamos, NM
Visiting student at the *Center for Non-Linear Studies. Advisors:* Michael Chertkov & Marc Vuffray

- Funded by *D-Wave Quantum Computing grant* — Jun. 2016 - Sep. 2016
- Power Grid Spectroscopy project, NMC, sponsored by the NSF — Feb. 2015 - Jul. 2015

Ecole Polytechnique, Palaiseau, France — Jan. 2016 - Mar. 2016
Intern at the *Laboratoire Leprince-Ringuet*, joint position CNRS and CERN.
CMS experiment at Large Hadron Collider (LHC), CERN, Geneva
Advisor: Scientist Christophe Ochando

Paris-Diderot University (Paris VII), Paris, France — Jun. 2014 - Aug. 2014
Summer intern at the *Astroparticle and Cosmology Laboratory* (APC)
Cosmology and Gravitation theory group. *Advisor:* Prof. Daniele Steer

Teaching

Teaching Assistant, Stanford University
Data Science 101 (STATS 101), Introduction to Statistical Inference (STATS 200), Data Mining and Analysis (STATS 202), Theory of Probability (STATS 116), Stochastic Processes (STATS 310C)

Honours and Awards

Silver medal at the *43rd International Physics Olympiads*, Tallinn, Estonia — Jul. 2012

2nd Prize Physics and **Honors Maths**, Concours General (National Competition) — Jul. 2011

1st Prize, French National Physics Olympiads — Dec. 2010

Research Interests

- ◇ Theoretical Deep Learning, mean-field description and Kernel-based methods
- ◇ Statistical Physics, spin glasses, replica symmetry method
- ◇ High-dimensional statistics, message-passing algorithms, AMP
- ◇ Non-convex optimization, probabilistic algorithms

Selected Publications

B. Ghorbani, S. Mei, T. Misiakiewicz and A. Montanari, *Limitations of Lazy Training of Two-layers Neural Networks*, NeurIPS 2019.

B. Ghorbani, S. Mei, T. Misiakiewicz and A. Montanari, *Linearized two-layers neural networks in high dimension*, submitted to Annals of Statistics.

S. Mei, T. Misiakiewicz and A. Montanari, *Mean-field theory of two-layers neural networks: dimension-free bounds and kernel limit*, COLT 2019.

S. Mei, T. Misiakiewicz and A. Montanari, *Solving SDPs for synchronization and MaxCut problems via the Grothendieck inequality*, COLT 2017.

M. Vuffray and T. Misiakiewicz, *Concentration to Zero Bit-Error Probability for Regular LDPC Codes on the Binary Symmetric Channel: Proof by Loop Calculus*, 53rd ACCC (Allerton, 2015).