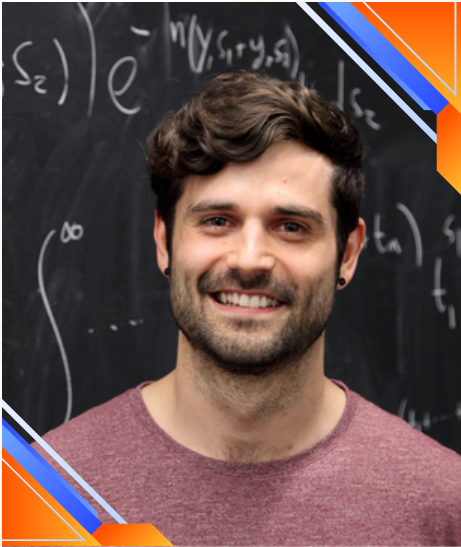


IEEE 24th International Symposium on Intelligent Systems and Informatics

SISY 2026

Plenary talk



Jean Barbier

Research Scientist

International Center for Theoretical Physics,
Trieste

<https://jeanbarbier.github.io/jeanbarbier/>

Jean Barbier has done his PhD in theoretical physics at the ENS of Paris, and his Postdoc at the EPFL in Lausanne. He is currently a Research Scientist (Associate Professor) at the International Centre for Theoretical Physics (ICTP) in Trieste, working on the mathematical physics of information processing systems, high-dimensional inference and the theory of neural networks. Thanks to a grant from the European Research Council, the CHORAL team is currently developing novel statistical tools to better quantify the performance of deep neural networks trained from structured data, through a combinations of random matrix theory, statistical mechanics and information theory.

September 23-25, 2026
Pula, Croatia

**IEEE 24th International
Symposium on Intelligent
Systems and Informatics**

SISY 2026

Plenary talk

Statistical physics of neural networks: From classical results to deep learning

Statistical physics has been playing a major role in analyzing learning in neural networks since the eighties. In particular, the methods from disordered systems have been very successful at describing equilibrium and dynamical properties of simple networks such as the perceptron or committee machines. But until recently, these approaches were facing a wall in analyzing modern deep architectures. In this talk, I will review some old results in the statistical physics of learning, and discuss new ones that pave the way to the analysis of deep architectures, and discuss the challenges ahead.

**September 23-25, 2026
Pula, Croatia**