Bocconi

6 OCTOBER 2025
02:00 PM

Bocconi University
Room 205, 2° floor
Via Sarfatti 25, Milano

Geometric Barriers to Classical and Quantum Computing in Random Structures

Speaker

David Gamarnik
Professor of Operations Research
MIT Sloan School of Management

Abstract

I will discuss geometric barriers which arise in algorithmic questions of optimizing random Hamiltonians. These include the problems of finding a largest independent set in a random graph, random constraint satisfaction problems, spin glasses and perceptron models. The barriers which arise take the form of Overlap Gap Property (OGP) which I will define.

We will show how OGP becomes a barrier to large classes of algorithms exhibiting either input stability or which are online, appropriately defined. Time permitting, and if there is an interest I will discuss the case of random quantum Hamiltonians such as quantum spin glasses.

Università Bocconi
DEPARTMENT OF COMPUTING SCIENCES