

**Stanford University**  
**Departments of Mathematics and Statistics**

PROBABILITY SEMINAR

4pm, Monday, November 12, 2018  
Sequoia Hall Room 200

Refreshments served at 3:30pm in the Lounge.

**Speaker:** Pascal Maillard, *Université Paris-Sud*

**Title:** **The algorithmic hardness threshold for continuous random energy models**

**Abstract:**

I will report on recent work with Louigi Addario-Berry on algorithmic hardness for finding low-energy states in the continuous random energy model of Bovier and Kurkova. This model can be regarded as a toy model for strongly correlated random energy landscapes such as the Sherrington–Kirkpatrick model. We exhibit a precise and explicit hardness threshold: finding states of energy above the threshold can be done in linear time, while below the threshold this takes exponential time for any algorithm with high probability. I further discuss what insights this yields for understanding algorithmic hardness thresholds for random instances of combinatorial optimization problems.