Prof. Philippe Michel
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ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

SEMINAR OF MATHEMATICS

Thursday January 26th, 2017 at 10h00, CIB lecture hall BI A0 448

Prof. Emmanuel Abbe *(Princeton University)*

will present a seminar entitled:

"Statistical graph clustering"

Abstract:

Clustering is at the core of unsupervised machine learning and network data analysis. Despite significant advances at the methodological level, establishing fundamental limits remains a challenge. Our approach is based on a statistical framework to graph clustering (community detection), starting with stochastic block models. In this context, we obtain sharp characterizations of when clusters estimations are possible or not. These are obtained from two proof techniques: local to global hypothesis testing and inference on branching processes. We further establish the physicists' conjecture on the emergence of a gap between the statistical and computational thresholds, using a sampling method. This underlines the importance of bridging statistical and computational methods in this field, likely to be a recurrent theme in data sciences. Data implementations, spectral methods and connections to Ramanujan graphs will also be discussed.

Lausanne, January 23rd, 2017 / mg