
THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE
Geometric Functional Analysis and Probability Seminar

Room 290C ,Ziskind Building
on Thursday, Jan 04, 2018at 13:30

Sebastien Bubeck (Microsoft Research) and Percy Deift (Courant Institute)-

Double Seminar

Abstract:

Sebastien Bubeck (Microsoft Research)

Title: k-server via multiscale entropic regularization

Abstract: I will start by describing how mirror descent is a natural strategy for online decision making, specifically in online learning and metrical task systems. To motivate the k-server problem I will also briefly recall what we know and what we don't know for structured state/action spaces in these models. Using the basic mirror descent calculations I will show how to easily obtain a $\log(k)$ -competitive algorithm for k-paging. I will then introduce our new parametrization of fractional k-server on a tree, and explain how to analyze the movement cost of entropy-regularized mirror descent on this parametrization. This leads to a $\text{depth} \cdot \log(k)$ -competitive (fractional) algorithm for general trees, and $\log^2(k)$ for HSTs. I will also briefly mention dynamic embeddings to go beyond the standard $\log(n)$ loss in the reduction from general metrics to HSTs.

Joint work with Michael B. Cohen, James R. Lee, Yin Tat Lee, and Aleksander Madry.

Percy Deift (Courant Institute)

Title: Universality in numerical analysis with some examples of cryptographic algorithms.

Abstract: We show that a wide variety of numerical algorithms with random data exhibit universality. Most of the results are computational, but in some important cases universality is established rigorously. We also discuss universality for some cryptographic algorithms.

Joint work with C. Pfrany, G. Menon, S. Olver, T. Trogdan and S. Miller.