Dr. Asaf WEINSTEIN (Stanford University, USA) will present a seminar entitled:

“A power analysis of Knockoffs”

Abstract:

Knockoffs is a new framework for controlling the false discovery rate (FDR) in multiple hypothesis testing problems involving complex statistical models. While rigorous results have been obtained regarding type-I error control in a wide range of models, type-II error rates have been far less studied. In general, power calculations are admittedly difficult, in part owing to the very particular structure of the knockoff matrix. Nevertheless, there is a specific setting, involving an i.i.d. Gaussian design, where such calculations are possible. Working in that setting, we leverage recent results from Bayati and Montanari (2012) to show that a knockoff procedure associated with the Lasso path, achieves close to optimal power with respect to an appropriately defined oracle. This result demonstrates that, in our setting, augmenting the design with fake (knockoff) variables does not have a high cost in terms of power.

This is joint work with Emmanuel Candes and Rina Foygel-Barber.