Speaker: Zhou FAN (Yale University, USA)

Title: Free probability and AMP

Abstract: In the first part of the tutorial, I will discuss some of the basic concepts of free probability, focusing on the combinatorial aspects of the theory. This will touch upon notions of the non-crossing partition lattice, free cumulants, Cauchy- and R-transforms, and draw parallels to classical independence of random variables. In the second part, I will discuss applications of some of these ideas to the analysis of an Approximate Message Passing algorithm for orthogonally invariant random matrices.