François DELARUE: CLT and LDP for mean field games

Abstract: We establish central limit theorems (CLT) and large deviation principles (LDP) for mean field games, when the so-called master equation associated with the mean field game admits a sufficiently smooth solution. The key idea is to use the solution to the master equation to construct an associated McKean-Vlasov interacting n-particle system that is sufficiently close to the Nash equilibrium dynamics of the n-player game for large n, and then deduce scaling limit theorems for the former from scaling limit theorems for the latter.

Joint work with D. Lacker (Columbia) and K. Ramanan (Brown)