Séminaire de Probabilités et Statistique

Mardi 31 Janvier 2023 à 14h00
Laboratoire Dieudonné

Xavier Erny
CMAP, Polythechnique

Annealed limit for a diffusive disordered mean-field model with random jumps

We study a sequence of $N-$particle mean-field systems, each driven by N simple point processes $Z^{N,i}$ in a random environment. Each $Z^{N,i}$ has the same intensity $(f(X_{t-}^N))_t$ and at every jump time of $Z^{N,i}$, the process X^N does a jump of height $U_i/\sqrt{N}$ where the U_i are disordered centered random variables attached to each particle. We prove the convergence in distribution of X^N to some limit process $\bar{X}$ that is solution to an SDE with a random environment given by a Gaussian variable, with a convergence speed for the finite-dimensional distributions. This Gaussian variable is created by a CLT as the limit of the patial sums of the U_i. To prove this result, we use a coupling for the classical CLT relying on the result of [Komlós, Major and Tusnády (1976)], that allows to compare the conditional distributions of X^N and $\bar{X}$ given the random environment, with the same Markovian technics as the ones used in [Erny, Löcherbach and Loukianova (2022)].