Quenched invariance principle for random walks in random environment admitting a finite cycle representation

Abstract. This is joint work with Holger Koesters. We consider a class of random walks in a random environment on $\mathbb{Z}^d$ admitting a finite cycle representation, that is the corresponding jump rates are labeled by finite oriented cycles with ergodic weights, eg. [K], [M]. The reversible random conductances model with trivial two points cycles is a particular case, see [S] thus our model extends to the non reversible situation. Assuming uniform irreducibility, we prove a quenched invariant principle for the rescaled process. The annealed CLT result has been proved recently in the special case of two-fold walks by Komorovski and Olla in [K]. We adapt the quenched proof of Sidoravicius and Sznitman, [S], to the non reversible case using corrector, the sector condition and the heat kernels upper bounds for centered random walks by Mathieu, [M].

