

# Random graphs and its applications for networks

**Oriane Blondel**

## Tagged particle diffusion in KA models

Kinetically constrained lattice gases (KCLG) are interacting particle systems on  $\mathbb{Z}^d$  with hard core exclusion and Kawasaki type dynamics. Their peculiarity is that jumps are allowed only if the configuration satisfies a constraint which asks for enough empty sites in a certain local neighborhood. KCLG have been introduced and extensively studied in physics literature as models of glassy dynamics. We focus on the Kob Andersen (KA) models. We analyze the behavior of a tracer (i.e. a tagged particle) at equilibrium and prove that at any density, under diffusive rescaling the motion of the tracer converges to a  $d$ -dimensional Brownian motion with non-degenerate diffusion matrix. Therefore we disprove the occurrence of a diffusive/non diffusive transition which had been conjectured in physics literature.