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Marielle SIMON - Hydrodynamic limit for a facilitated exclusion process

Wednesday, May 31, 2023 2:15 PM (45 minutes)

In this talk we will be interested in a one-dimensional exclusion process subject to strong kinetic constraints, which belongs to the class of cooperative kinetically constrained lattice gases. More precisely, its stochastic short range interaction exhibits a continuous phase transition to an absorbing state at a critical value of the particle density. In one dimension, and if the microscopic dynamics is symmetric, we will see that its macroscopic behavior, under periodic boundary conditions and diffusive time scaling, is ruled by a non-linear PDE belonging to free boundary problems (or Stefan problems). One of the ingredients is to show that the system typically reaches an ergodic component in subdiffusive time.
The asymmetric case can also be fully treated: in this case, considered on the infinite line, the empirical density converges to the unique entropy solution to a hyperbolic Stefan problem.

Based on joint works with O. Blondel, C. Erignoux, M. Sasada and L. Zhao.

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