Large-scale dynamics of random interfaces

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This series of lectures will focus on stochastic (Markovian) reversible dynamics of random interfaces. In statistical physics, such stochastic processes model the evolution of boundaries between coexisting thermodynamic phases (e.g. domain walls in the Ising model). After a heuristic introduction to the general picture (mixing time, hydrodynamic limit, fluctuations, ...), we will discuss a couple of examples that can be treated mathematically. Specifically, we will concentrate mostly on the dynamics of a discrete, two-dimensional interface model [1, 2] that is tightly related to fully-packed dimer models on a two-dimensional lattice.

References

[1] B. Laslier, F. L. Toninelli, Lozenge tiling dynamics and convergence to the hydrodynamic equation, Comm. Math. Phys., 358 (2018), 1117-1149

[2] B. Laslier, F. L. Toninelli, Hydrodynamic limit equation for a lozenge tiling Glauber dynamics, Ann. Henri Poincare': Theor. Math. Phys. 18 (2017), 2007-2043.