

Correlation functions for coalescing random walks in two dimensions.

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Non-equilibrium particle models in two space dimensions can be rarely solved exactly. Coalescing random walks on a two dimensional lattice (or Brownian disks on R^2) are an exception related to the fact that 2 is the critical dimension for these models. As it turns out, it is possible to rigorise the old Smoluchowski argument to prove that the probability of finding n walkers at fixed positions x_1, x_2, \dots, x_n at large time t decays at $(\log(t)/t)^n (\log(t))^{-(n(n-1)/2)}$.

(Joint work with Roger Tribe and Jamie Lukin)