

INTERACTING BROWNIAN MOTIONS RELATED TO RANDOM MATRICES

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Interacting Brownian motions are an infinite number of Brownian particles moving in Euclidean spaces with the effect of interaction potentials.

In this talk we consider two classes of interacting Brownian motions. One has Gibbs equilibrium measures and other has equilibrium measures with logarithmic (2D Coulomb) potentials. The later measures appear in the thermodynamic limit of the spectrum of random Gaussian matrices.

The first class is the standard one for interacting Brownian motions in the sense that each particle converges to a Brownian motion under diffusive scaling (of at least more than one dimension). We can see this by considering the homogenization and the tagged particle problem.

As for the second class, we see a big difference in the dynamical properties to those of the first class because of the strong, long range effects of logarithmic potentials.