

Dynamics of a planar Coulomb gas

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We study the dynamics of a finite system of interacting stochastic particles, in dimension two, confined by an external field and subject to a singular pair repulsion. The invariant law is a Coulomb gas known as the Ginibre ensemble. Despite the apparent simplicity, the interaction is not convex and the invariant law is not product. We study the long-time behavior of the system as well as the behavior when the number of particles tends to infinity, seeing the system as a singular McKean-Vlasov model. We identify in particular two natural regimes depending on the asymptotic behavior of the noise. This is a joint work in progress with Francois Bolley and Joaquin Fontbona.