From static to kinetic mean field theories - hierarchy and duality

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Abstract

In the first part, we describe the mathematics for point vortex mean field in accordance with elliptic theory and quantization.Then we turn to the Smoluchowski-Poisson equation and nonlinear spectraldynamics. The leading principle, kinetic uniformization theory, and related problems; competitive system of chemotaxis, higher-dimensional quantization, and dual variation are also presented.