

Limit passages from particle models to entropic gradient flows

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The diffusion equation is the scaling limit of Brownian motion, and can be reformulated as gradient flow of the entropy in the Wasserstein metric. The latter formulation is physically very appealing, since it reveals in a mathematically rigorous way the entropy as driving force out of equilibrium. How can we directly obtain the entropic gradient flow as a scaling limit of particles undergoing Brownian motion? One passage, combining a Large Deviation principle from probability and Gamma-convergence from analysis, will be presented. Related approaches and extensions to other particle systems and other gradient flows will also be sketched.