

The relaxation spectrum of interacting particle systems

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A quantitative description of the relaxation to equilibrium dynamics is crucial to understanding important phenomena in statistical physics, e.g. meta-stability, cooling strategies, and first passage properties. In Markovian systems, where the system evolves according to a Liouvillian operator, the physics of relaxation is captured by the spectrum of the Liouvillian operator, i.e. the relaxation spectrum. For macroscopic interacting systems, with a large state space, extraction of the relaxation spectrum is restricted to integrable systems. Here, we present a novel approach for extracting the relaxation spectrum of interacting particle systems within the framework of the macroscopic fluctuation theory. We demonstrate the approach for the paradigmatic simple exclusion process.

[1] O. Shpielberg, *in preparation* (2024).