

Sharp entropy decay for hypocoercive Fokker-Planck equations with linear drift coefficients

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We investigate the existence of steady states and exponential decay for hypocoercive Fokker–Planck equations with linear drift. In the uniformly parabolic case, the entropy method can be used to prove sharp decay rates towards the steady state. In the hypocoercive case, we first establish a condition that is equivalent to the existence of a unique normalised steady state. The (standard) entropy method is then extended to prove a rate of decay of solutions towards this steady state. Finally, we show that the obtained rate is indeed sharp.