

Optimal control of systems described by measures: motivation, challenge and perspectives

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I will motivate the study of optimal control problems of systems described by positive measures, namely for optimization and large deviations of mean field systems. I will explain why the associated Hamilton-Jacobi equation plays a crucial role in these problems, as well as the main mathematical challenges it raises. I will focus in particular on the difficulties arising when trying to prove a comparison principle for such PDEs, which is the crucial step in their mathematical analysis. I will then present some results on such equations, as well as some tools that have been developed in their study that might be of independent interest.

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