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Mean-field games with controlled jumps

Abstract
We study a family of mean field games (MFGs) with a controlled jump component. We establish the existence of a solution in a relaxed version of the MFG and give conditions guaranteeing that the optimal strategies are in fact Markovian.
Such a game represents the limit, as n goes to infinity, of a n-player nonzero-sum stochastic differential game, with controlled jumps and mean field type interaction among the players.
Under the assumption that the limiting game admits a Markovian solution, we show that an approximate Nash equilibrium can be constructed for the finite-player game.

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