Title: Computational methods for continuous games

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Abstract:

There has been much recent interest in effective methods to compute Nash or correlated equilibria for finite games. In this talk we present some of our recent results for the computation of equilibria in games where players have an infinite number of pure strategies. In particular, we discuss games where the payoff functions are a polynomial expression of the actions of the players. In the zero-sum case, we show that the value of the game, and the corresponding optimal mixed strategies, can be computed by solving a single semidefinite programming problem, thus providing a natural generalization of the well-known LP characterization of finite games. We also discuss some further extensions to the general nonzero sum case, for both Nash and correlated equilibria. Much of the material is joint work with Asu Ozdaglar and Noah Stein.