
Ergodic and Thermodynamic Games

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Abstract

Let $T: X \rightarrow X$ and $S: Y \rightarrow Y$ be continuous maps defined on compact sets. Let $\varphi_i(\mu, \nu) = \int_{X \times Y} A_i(x, y) d\mu(x) d\nu(y)$ for $i = 1, 2$, where μ is T -invariant and ν is S -invariant, be payoff functions for a game (in the usual sense of game theory) between players that have the set of invariant measures for T (player 1) and S (player 2) as their strategy sets. The main tools came from ergodic optimization (as we are optimizing over the set of invariant measures) or thermodynamic optimization (as we are optimizing over the set of invariant measures) for cooperative games.

We show the existence of Nash equilibrium points with two independent arguments. One of the arguments works for the case with entropy

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