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SMALE STRATEGIES FOR THE n-PERSON ITERATED PRISONER'S DILEMMA

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Abstract. Adapting methods introduced by Steven Smale, we describe good strategies for a symmetric version of the Iterated Prisoner's Dilemma with n players.

1. Introduction

In [5] Smale introduced an approach to strategy for the Iterated Prisoner's Dilemma which was different from the popular Markov chain methods. He suggested using as data the current time average payoff to the players rather than using the results of the most recent round of play. Smale's results were extended in [1]. Here we apply these methods to a symmetric n player version of the Prisoner's Dilemma. The goal is to describe good plans which stabilize the cooperative outcome where each player receives (in long-term average) the payoff p_n obtained when all n players cooperate. A strategy is a choice of initial play together with a plan responding to previous play.

We describe good plans with the following properties:

- If all n players eventually use good plans, then from any initial position, convergence to cooperation is achieved.

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