

# Lipschitz Games

Yaron Azrieli, Eran Shmaya

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The Lipschitz constant of a finite normal-form game is the maximal change in some player's payoff when a single opponent changes his strategy. We prove that games with small Lipschitz constant admit pure  $\{\epsilon\}$ -equilibria, and pinpoint the maximal Lipschitz constant that is sufficient to imply existence of pure  $\{\epsilon\}$ -equilibrium as a function of the number of players in the game and the number of strategies of each player. Our proofs use the probabilistic method.

Comments: minor changes, forthcoming in Mathematics of Operations Research

Subjects: **Combinatorics (math.CO)**; Computer Science and Game Theory (cs.GT)

MSC classes: 91A10, 05D40

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