

ON ZERO SUM STOCHASTIC GAMES WITH GENERAL STATE SPACE. I

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Abstract: The present paper treats of discrete-time stationary models of stochastic games with an abstract measurable state space and separable metric action spaces. Under different assumptions on the state space, action spaces, the reward function, and the law of motion (assumptions (M_1) , (M_2) , (M_3)), a full solution of the finite horizon models is given. To ensure the existence of value in the infinite horizon models we impose some convergence conditions (conditions (D) and (P)) on the expected rewards, thus including the discounted case. The proofs of the existence of optimal (or ε -optimal) strategies for both players rely on iterative, finite horizon to infinite horizon methods.

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