

CMJ Mathematics Colloquium

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Big Match

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Shapley introduced the notion of zero sum two person stochastic games with discounted payoff and proved that they always admit optimal strategies for the two players. Further they can also be chosen by the maximizer to be a stationary strategy that guarantees value against any strategy of the minimizer. A similar statement holds for the minimizer admitting stationary optimal strategy. However if the players are interested in optimizing the long run average payoff (Cesaro payoff), it is quite possible that neither player has any optimal strategy even though value exists in behavioral strategies. A specific game with just 3 states where two states are absorbing is constructed and we will show that one of the players has only an epsilon optimal behavior strategy.