

Two New Models For The Two-Person Red-and-Black Game

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Abstract

In a two-person red-and-black game, each player holds an integral amount of chips. At each stage of the game, each player can bet any integral amount in his possession, winning the chips of his opponent with a probability which is a function of the ratio of his bet to the sum of both players' bets and is called a win probability function. Both players seek to maximize the probability of winning the entire fortune of his opponent. In this paper we propose two new models. In the first model, at each stage, there is a positive probability that two players exchange their bets. In the second model, the win probability functions are stage dependent. In both models, we obtain suitable conditions on the win probability functions such that it is a Nash equilibrium for the subfair player to play boldly and for the superfair player to play timidly.

Key words : Bold strategy; Convex function; Nash equilibrium; Timid strategy;
Two-person red-and-black game; Win probability function