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BAYESIAN LOCALLY-OPTIMAL DESIGN OF KNOCKOUT TOURNAMENTS

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The elimination or knockout format is one of the most common designs for pairing competitors in tournaments and leagues. In each round of a knockout tournament, the losers are eliminated while the winners advance to the next round. Typically, the goal of such a design is to identify the overall best player. Using a common probability model for expressing relative player strengths, we develop an adaptive approach to pairing players for each round that maximizes the probability that the best player advances to the next round. We evaluate our method using simulated game outcomes under several data-generating mechanisms, and compare it to random pairings, to the standard knockout format, and to variants of the standard format by Hwang (1982) and Schwenk (2000).

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