

STATISTICS COLLOQUIUM

MONDAY, DECEMBER 11, 2006

TALK: 4:00 PM — SCIENCE CENTER B-10

RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

“Bayesian Optimal Design of Knockout Tournaments”

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ABSTRACT

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 two adaptive approaches to pairing players for each round. The first approach maximizes the probability that the best player advances to the next round. The second approach involves maximizing the expected log-probability of game outcomes over all possible sets of pairings. Our methods are evaluated based on simulating game outcomes under several data-generation mechanisms. We compare our two approaches to random pairings, to the standard knockout format, and to variants of the standard format by Hwang (1982) and Schwenk (2000).