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*The Game of Flipping Coins*

Coin flipping games have been studied for decades. In particular, Berlekamp, Conway and Guy introduced many impartial coin flipping games in their book series *Winning Ways for Your Mathematical Plays*. In this talk, we will explore a brief history of such combinatorial games, and then introduce a new partizan variant called Flipping Coins.

Flipping Coins is played on a row of coins, laying flat on a table. Each coin has two sides: one side is labelled by T and the other by H. Only one side is facing up for each coin. There are two players called Left and Right. On their turn, Left chooses two coins labelled T, and flips them to H. Right chooses two coins, one labelled H and the other T, as long as they appear in that order within the row, and flips them to T and H respectively. The last player to move wins. We show that the values of this game are numbers, and these are found by applying a reduction, then decomposing the position into an iterated ordinal sum. This unexpected result leads to many questions for future research.

This is joint work with Anthony Bonato and Richard J. Nowakowski.