

Advances in Indifference: new frontiers in combinatorial game theory

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In Berlekamp, Conway, and Guy's version of Combinatorial Games, the concept of *indifference* induced a partial order relation, and an equivalence relation (interpreted as equality), via disjunctive sums. This led to algorithms for simplifying positions, and determining outcomes. Only a small change in approach brought these relations to *misère*, scoring, and absolute games. Importantly, the players in these games alternate moves. Recently, indifference and disjunctive sums have emerged from hiding in not-necessarily-alternating-move games, such as Dots-and-Boxes, and simultaneous games, such as Rock-Paper-Scissors (but only against Japanese Robots). This talk will not assume any knowledge of combinatorial game theory. I'll hit the highlights, and avoid the gory details, but will show some of the inherent problems. I'll end with how to do your best against a super-fast robot in some simultaneous-move endgames.