

Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 1st March 12:30

AE06, Steyrergasse 30

Semirestricted Rock, Paper, Scissors

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A semirestricted variant of the well-known game Rock, Paper, Scissors was recently studied by Spiro et al (Electronic J. Comb. 30 (2023), P4.32). They assume that two players R (restricted) and N (normal) agree to play $3n$ rounds, where R is restricted to use each of the three choices exactly n times each, while N can choose freely. Obviously, this gives an advantage to N . How large is the advantage?

The main result of Spiro et al is that the optimal strategy for R is the greedy strategy, playing each round as if it were the last. (I will not give the proof, and I cannot improve on this.) They also show that with optimal play, the expected net score of N is $\Theta(\sqrt{n})$. In the talk, I will show that with optimal play, the game can be regarded as a twice stopped random walk, and I will show that the expected score is asymptotic to $c\sqrt{n}$, where $c = 3\sqrt{3}/(2\sqrt{\pi})$.

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