Institut für Optimierung und Diskrete Mathematik

Vortrag im Seminar Diskrete Mathematik und Optimierung

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Seminarraum C208, Steyrergasse 30, 2. Stock

Algorithms and automata for the Tower of Hanoi[1]

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Mathematical solitaire games like the Chinese Rings and the Tower of Hanoi can be modelled by state graphs, leading to the two-parameter classes of Sierpiński graphs S_p^n and Hanoi graphs H_p^n. Shortest path algorithms can be based on automata in the Sierpiński case, so that the metric properties of S_p^n (and $H_3^n \cong S_3^n$) are now completely understood. For Hanoi graphs with $p > 3$, however, the notorious Frame-Stewart Conjecture (1941) is still undecided and unexpected behavior of eccentricities like Korf's Phenomenon (2004) remains unexplained. Wheras $\operatorname{diam}(S_p^n) = 2^n - 1$ for all $p \geq 2$, the diameter of H_p^n is known only for small values of the parameters by computer experiments.

References.

[1] Hinz, A.M., Klavžar, S., Milutinović, U., Petr, C., The Tower of Hanoi—Myths and Maths, Springer, Basel, 2013.

[2] Hinz, A.M., Holz auf der Heide, C., An efficient algorithm to determine all shortest paths in Sierpiński graphs, Discrete Appl. Math. 177(2014), 111–120.

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