

Institut für Diskrete Mathematik

## Seminar für Kombinatorik und Optimierung

22.2.2021, 10:00 (on time)

Webex virtual meeting

### Knights and Liars on Graphs

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Abstract:

We discuss the Knights and Liars problem, which is the problem of maximizing the number of red vertices in a red-blue-coloring of the vertices on a square grid, such that for each red vertex, exactly half of its neighbors are red, and for each blue vertex, *not* exactly half of its neighbors are red. We discuss the generalization of the problem to arbitrary graphs and provide an integer programming formulation, by which we give results for grid graphs, torus grid graphs, triangular grid graphs, and graphs corresponding to the transitive closure of the boolean lattice. We give a full combinatorial treatment for two-dimensional grid graphs whose shorter interval-size is less than seven. We further prove that the decision version of the generalized problem is NP-complete.

Joint work with Dieter P. Gruber

Meeting will be started at 9:30 a.m. for an informal chat. Talk starts at 10:00 a.m.

<https://tugraz.webex.com/tugraz/j.php?MTID=m2394f3c4c58450f6e3bd1b6b700e3cb5>

Meeting number (access code): 121 114 2286, password Uk4GvhrZ7p4

Eranda Dragoti-Çela and Bettina Klinz