



SEMINARIUM MATEMATYKA DYSKRETNA

wtorek, 15 kwietnia 2025 r., godz. 12:30, s. 612 C7

Generating optimal mixed strategies for some combinatorial games

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For many combinatorial games, finding optimal strategies for players is a challenging problem. In many cases, we want to find the strategies for a specific game instance (e.g., for the fixed graph). During the talk, we will present the procedure based on Mixed Integer Linear Programming to efficiently generate optimal mixed strategies for players. The procedure will be presented on the example of the min-max *Shortest Path with Additional Weights* game.

The game takes place on a weighted graph G . One player (called *Pather*) chooses the path in the graph G between two fixed vertices. The another player (called *Attacker*) has the fixed budget that he can distribute among the edges of the graph, thereby increasing the weights of some edges. By mixed strategy we mean that the player has a probability distribution over the space of player's moves.

This is a joint work with Armin Fügenschuh and Konstanty Junosza-Szaniawski. Research was funded by the Warsaw University of Technology within the Excellence Initiative: Research University (IDUB) programme.