



## SEMINARIUM MATEMATYKA DYSKRETNA

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### **Domination in digraphs and their products**

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Domination in graphs is one of the most studied topic in graph theory, while its digraph counter-part has been given much less attention. In this talk, we present a recent work in which we make a tiny step towards altering this discrepancy. In particular, the classical result of Meir and Moon is extended to the context of digraphs by showing that the domination number of an arbitrary ditree equals its packing number. The proof methods, however, are different as in the context of graphs, and we use them to give an alternative proof of the Meir-Moon theorem as well. A similar result concerning total domination and open packing in ditrees is also proved, and is used for obtaining a formula for the total domination number of direct products of digraphs in which one of the factors is a ditree. We also consider Cartesian products of digraphs. While the notorious Vizing's conjecture for the domination number of Cartesian products of graphs is still unsolved, we give a sharp lower bound on the domination number of the Cartesian product of two digraphs. A different (Vizing-like) lower bound is proved when one of the factors is a ditree, and we investigate the attainment of the bound in more detail.

The talk is based on a joint work with Kirsti Kuenzel and Doug Rall.