



## SEMINARIUM MATEMATYKA DYSKRETNA

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### Percolation and empires

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Let  $G$  be a simple graph, usually an infinite  $d$ -dimensional grid  $\mathbb{Z}^d$ . In this graph we randomly (e.g. independently, with identical probability) remove some edges and study the properties of the remaining subgraph. In particular, the event that this subgraph has an infinite component is called *percolation*, and we can ask when the probability of such event is positive, or equal to one.

This problem was introduced as a model of a family of physical processes, describing the flow of a liquid through a porous medium. Later, a number of other applications were discovered, including the spread of epidemic diseases.

We present selected important results in this field and then investigate some problems related to *empire percolation*.