Institut für Optimierung und Diskrete Mathematik

Vortrag im Seminar Diskrete Mathematik und Optimierung

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Seminarraum C208, Steyrergasse 30, 2. Stock

Connectedness, Sperner's Lemma, and combinatorial problems

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Let G be a graph whose vertex set is partitioned into classes $V_1 \cup \ldots \cup V_t$. An *independent transversal* in G is an independent set $\{v_1, \ldots, v_t\}$ in G such that $v_i \in V_i$ for each i. Many combinatorial problems can be formulated by asking whether a certain vertex-partitioned graph has an independent transversal, for example various colouring, hypergraph matching and covering problems. We discuss how the topological connectedness of the independence complex of G can be used to show the existence of independent transversals, and hence give solutions to some of these problems.

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