
Colourings, Independence, and (Forbidden) Subgraphs
(Org: Ingo Schiermeyer (Technical University Freiberg, Germany))

STEPHAN MATOS CAMACHO, Technische Universität Bergakademie Freiberg
Stars in Minimum Rainbow Subgraphs

Let G be an edge-coloured graph, then a minimum rainbow subgraph is a subgraph of smallest order containing exactly one edge of every colour. We will discuss a polynomial time algorithm using stars for approximating this problem.

ANJA KOHL, Technical University Bergakademie Freiberg
Investigating the b -chromatic number of bipartite graphs by using the bicomplement

A b -coloring of a graph G by k colors is a vertex coloring such that each color class contains a vertex that has neighbors in all other $k - 1$ color classes. The b -chromatic number $\chi_b(G)$ is the maximum integer k for which G has a b -coloring by k colors. In this talk, we investigate $\chi_b(G)$ for bipartite graphs $G = (A \cup B, E)$ by considering the bicomplement $\tilde{G} = (A \cup B, \tilde{E})$ with $\tilde{E} := \{\{a, b\} \mid a \in A, b \in B, \{a, b\} \notin E\}$.

VADIM LOZIN, University of Warwick
Vertex 3-colorability of claw-free graphs

The vertex 3-colorability problem is NP-hard in the class of claw-free graphs, since it includes, as a subproblem, the edge 3-colorability of general graphs. We study the computational complexity of the problem in subclasses of claw-free graphs defined by additional forbidden induced subgraphs and obtain a number of positive (polynomially solvable) and negative (NP-hard) results of this type. Joint work with Christopher Purcell

INGO SCHIERMEYER, Technical University Freiberg, Germany
Graphs with rainbow connection number two

An edge-coloured graph G is *rainbow-connected* if any two vertices are connected by a path whose edges have distinct colours. The *rainbow connection number* $rc(G)$ of a connected graph G is the smallest number of colours that are needed in order to make G rainbow-connected. We characterize connected graphs with rainbow connection number $rc(G) = 2$.