

Combinatorics Seminar

Friday May 17, 2013 at 2PM

Room MS.04

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Conflict-free coloring of graphs

When talking about coloring a graph, the by far most studied notion is the proper coloring, that is, a coloring of the vertex set such that the color of each vertex is unique in the vertex's closed neighborhood. We study a generalization of this concept, calling a coloring *conflict-free* if the closed neighborhood of each vertex contains a vertex with a color that is unique there. We study the conflict-free chromatic number χ_{CF} of graphs from the extremal and probabilistic points of view.

We resolve a question of Pach and Tardos about the maximum conflict-free chromatic number an n -vertex graph can have. Our construction is randomized. In relation to this we study the evolution of the conflict-free chromatic number of the Erdős-Rényi random graph $G(n, p)$ and give the asymptotics for $p = \omega(1/n)$. We also show that for $p \geq 1/2$ the conflict-free chromatic number typically differs from the domination number by at most 3. Joint work with Tibor Szabó and Gábor Tardos.

**There will be refreshments for the attendees.
Please bring your own mugs (for coffee/tea) if possible.
Everyone is welcome.**



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