DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
UNIVERSITY OF SOUTHERN DENMARK, ODENSE

Mathematics seminar

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Connections between graph theory, transversals in hypergraphs and Algorithms

Monday 7 December 2015, 12:15-13:15
IMADA seminar room

Abstract

We will first show the connection between total domination in graphs and transversals in hypergraphs. A set, S, of vertices in a graph, G, is a total dominating set if and only if every vertex of G has a neighbour in S. A hypergraph is a generalization of a graph, in the sense that hyperedges can contain any number of vertices and not just two as in a graph. A transversal in a hypergraph is a set of vertices intersecting every hyperedge.

We will give a short survey of results on transversals in hypergraphs together with some applications. For example, we will mention a recent (unpublished) proof of the well-known Tuza-Vestergaard conjecture.

* Tuza-Vestergaard Conjecture: If every hyperedge in a hypergraph, H, contains 6 vertices and every vertex belongs to 3 hyperedges, then one can always find a transversal containing at most a quater of the vertices in H.

We will furthermore briefly explain the notion of a fixed parameter tractable algorithm and relate this to the above.
During the presentation we will use and relate the results to other areas of directed and undirected graph theory.

Host: Martin Svensson