On the Chromatic Index of STS Block Intersection Graphs

David Pike

Memorial University of Newfoundland

dapike@mun.ca

(joint work with Jonathan Poulin)

Given a combinatorial design, its block intersection graph is obtained by creating a vertex for each block and making vertices adjacent when their blocks have non-empty intersection. The chromatic index $\chi'(G)$ of a graph G is the least number of colours with which the edges can be labelled such that adjacent edges are never of the same colour. For any simple graph of maximum degree $\Delta(G)$, Vizing has established that $\Delta(G) \leq \chi'(G) \leq \Delta(G) + 1$. Here we consider the chromatic index of block intersection graphs of Steiner triple systems.

MSC2000: 05B07, 05C15.

Keywords: Steiner triple system, block intersection graph, edge colouring.