

Chromatically Supremal Decompositions of Graphs

Robert E. Jamison* Eric Mendelsohn^{†‡}

05. April, 2007

Abstract

If G is a graph, a G -decomposition of a host graph H is a partition of the edges of H into subgraphs of H which are isomorphic to G . The *chromatic index* of a G -decomposition of H is the minimum number of colors required to color the parts of the decomposition so that parts which share a common node get different colors. We establish an upper bound on the chromatic index and characterize those decompositions which achieve it. The structurally most interesting of the decompositions with maximal chromatic index are associated with $(v, k, 1)$ -designs.

* email: rejam@clemsn.edu

[†]Department of Mathematics, University of Toronto, Toronto, ON, Canada M5S 3G3
email: mendelso@math.utoronto.ca

[‡]supported by NSERC research grant #OGP007621