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Extremal multigraphs for edge-colouring

The chromatic index χ' of a multigraph G is the minimum number of colours needed to colour the edges of G such that no two edges sharing a vertex have the same colour. There are many well-known upper bounds for χ', including bounds by Shannon, Vizing, Goldberg and Steffen. In this talk we explore the question of which multigraphs actually achieve these bounds. As part of the discussion we present a new partial characterization of those multigraphs achieving Vizing's upper bound, a result obtained jointly with P. Haxell.