

On rainbow matchings and sets not belonging to algebras

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Abstract

Motivated by an algebraic question of Grinblat, we study the minimal number $v(n)$ such that every multigraph, whose edges are coloured with n colours and each colour class has at least $v(n)$ vertices and is the disjoint union of nontrivial cliques, contains a rainbow matching of size n . Grinblat asked whether $v(n) = 3n - 2$ for every $n \geq 4$. In this talk we discuss a proof that affirms Grinblat's question asymptotically, i.e. which shows that $v(n) = 3n + o(n)$. We also look at related problems and conjectures on rainbow matchings in multigraphs as well as on transversals in Latin squares. Based on joint work with Dennis Clemens and Alexey Pokrovskiy.