

Ramsey graphs and additive combinatorics without addition

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Abstract

A graph is Ramsey if its largest clique or independent set is of logarithmic size. While almost all graphs are Ramsey, there is still no known explicit construction of Ramsey graphs. We discuss recent progress on finding these “dark matter” of graphs. Along the way, we study some fundamental problems in additive combinatorics, and discover that group structure is superfluous for these problems. Joint work with David Conlon, Huy Tuan Pham, and Liana Yepremyan.