Set-coloring Ramsey numbers

Jacob Fox

Abstract

An (r,s)-coloring of a graph is an assignment of a set of s colors from a palette of r colors to each edge of the graph. The set-coloring Ramsey number $R(n; r, s)$ is the minimum N such that every (r,s)-coloring of the complete graph on N vertices contains a clique on n vertices in which there is a common color on each edge of the clique. The case $s = 1$ is the classical multicolor Ramsey number, and the case $s = r - 1$ was first studied by Erdos, Hajnal, and Rado in the 1960s and later by Erdos and Shelah. In this talk we explore further connections to error correcting codes, Turan numbers, and design theory. Based on joint works with David Conlon, Xiaoyu He, Dhruv Mubayi, Andrew Suk, Jacques Verstraete and also with Huy Tuan Pham and Yufei Zhao.