

COMBINATORICS
SEMINAR

Erdos-Rogers Functions

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Abstract: The Erdos-Rogers functions are generalizations of Ramsey numbers, introduced around fifty years ago. The general question given graphs F and H is to determine the maximum number of vertices $f(n, F, H)$ in an F -free induced subgraph of any H -free n -vertex graph. The case $F = K_2$ is equivalent to determining Ramsey numbers $r(H, t)$. The case F and H are cliques has received considerable attention. In this talk we give almost tight bounds, showing that for $s > 3$,

$$f(n, K_s, K_{s-1}) = \sqrt{n}(\log n)^{\Theta(1)}$$

where the exponent of the logarithm is between $1/2 - o(1)$ and $1 + o(1)$. We also give new bounds on Ramsey numbers $r(F, t)$.

In part joint work with David Conlon, Sam Mattheus and Dhruv Mubayi.

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