Anti-Ramsey Number of Expansions of Secondly Edge-critical graphs in uniform hypergraphs

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Abstract

For an r-graph H, the anti-Ramsey number $\mathrm{ar}(n, r, H)$ is the minimum number c of colors such that for any edge-coloring of the complete r-graph on n vertices with at least c colors, there is a copy of H whose edges have distinct colors. A 2-graph F is *secondly edge-p-critical* if $\chi(F - e) \geq p$ for every edge e in F and there exist two edges e_1, e_2 in F such that $\chi(F - e_1 - e_2) = p - 1$. The anti-Ramsey numbers of *secondly edge-p-critical* graphs were determined by Jiang and Pikhurko, which generated the anti-Ramsey number of cliques proved by Erdős, Simonovits and Sós. In general, few exact values of $\mathrm{ar}(n, r, F)$ are known for $r \geq 3$. Given a 2-graph F, the expansion $F^{(r)}$ of F is an r-graph obtained from F by $r-2$ new vertices to each edge of F. In this talk, for all $r \geq 3$, we determine the exact value of $\mathrm{ar}(n, r, F^{(r)})$ for any secondly edge-p-critical 2-graph F when n is large enough. This is a joint work with Tong Li and Guiying Yan.

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