

An improved lower bound for Folkman's theorem

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Ramsey type of results in additive combinatorics could be originated to Hilbert. In this talk a brief history of the topics and some recent developments will be explained.

Folkman's Theorem asserts that for each natural number k , there exists another natural number $n = F(k)$ such that whenever the elements of $[n] = 1, \dots, n$ are two-coloured, there exists a subset A of $[n]$ of size k with the following property: all the sums of numbers in A belong to $[n]$ and have the same colour. In 1989, Erdős and Spencer showed that $F(k) \geq 2^{ck^2/\log k}$, where $c > 0$ is an absolute constant; here, we improve this bound.

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