Ilya Shkredov

A new bound for the size of weak Sidon sets.

A weak Sidon set S_k of degree $k > 1$ is a set having no solutions of the equation $(*)$ $x_1+\dots+x_k = x'_1+\dots+x'_k$, where variables $x_1, \dots, x_k, x'_1, \dots, x'_k \in S_k$ are different. Determining the maximal size of such a set from the segment $\{1, \dots, N\}$ is a rather old question of Additive Combinatorics having little success. Recently, bounding the number of the solutions of equation $(*)$, Schoen and Shkredov showed that $|S_k| \ll k^{2-c}N^{1/k}$, where $c > 0$ is an absolute constant. We give a scheme of the proof in our talk.