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A better-than-Plunnecke bound for $A + 2A$

If A is a finite set in an abelian group, we can measure the additive structure of A by the size of its doubling constant, $K = |A + A|/|A|$. Plunnecke's inequality lets us measure the size of iterated sumsets in terms of K, and in particular it tells us that $|A + A + A| \leq K^3|A|$. The set $A + 2A = \{a + b + b : a, b \in A\}$ is a subset of $A + A + A$ and so the upper bound $K^3|A|$ applies. In this talk, I will describe recent work with G. Petridis where we prove that in fact $|A + 2A| \leq K^{2.95}|A|$, answering a question of B. Bukh.