1160-11-45 **Brandon Hanson*** (brandon.w.hanson@gmail.com) and **Giorgis Petridis**. *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 sumset, $A + A$. One way of quantifying this structure is the 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 $|A + A + A| \leq K^3|A|$. This inequality can be sharp. What about the set $A + 2A = \{a + b + b : a, b \in A\}$? It is a subset of $A + A + A$ and so the upper bound $K^3|A|$ applies. Moreover, it may not be a proper subset, as is the case when $A = \{1, \ldots, N\}$. However, in this case Plunnecke's inequality is not sharp. In this talk, I will describe recent work with G. Petridis where we prove that $|A+2A| \leq K^{2.95}|A|$, answering a question of B. Bukh. (Received July 31, 2020)