1054-05-298 **Jozsef Solymosi*** (solymosi@math.ubc.ca), 1984 Mathematics Road, Vancouver, BC. V6T1Z2, Canada, and **Endre Szemeredi**. *On sumsets which have large subsets with small doubling.* Preliminary report.

Let A be a finite subset of an abelian group. The sumset $A+A$ is the set of all pairwise sums $a+b$ where a and b are elements of A. One of the central results in additive combinatorics is Freiman's theorem which describes the structure of sets with small sumsets. In this talk we consider the following problem; suppose that $|A+A| \leq |A|^{3/2}$. Under what conditions can we guarantee that a large subset $B \subset A+A$ has small doubling? (i.e. $|B+B| \leq C|B|$ where C is a slow-growing function of $|B|$) We will see that this is the case when A is uniform enough. We will illustrate the result with applications to the sum-product conjecture and some related problems. (Received September 15, 2009)