

# On Subset Sums

Endre Szemerédi

Let  $A \subset [1, N]$  be a set of integers. We denote by  $S_A$  the collection of partial sums of  $A$ :

$$S_A = \left\{ \sum_{x \in B} x \mid B \subset A \right\}.$$

For a positive integer  $\ell \leq |A|$ , we denote by  $\ell^*A$  the collection of partial sums of  $\ell$  elements of  $A$ :

$$\ell^*A = \left\{ \sum_{x \in B} x \mid B \subset A, |B| = \ell \right\}.$$

We are going to discuss the structure of  $\ell^*A$ , and we are going to give a tight bound for the size of  $A$  not containing an  $N$  element arithmetic progression. Some of the results are joint work with Van Vu. The others are joint work with Simao Herdade.