On Convolutions of Convex Sets and Related Problems
Tomasz Schoen

Abstract. We prove some results concerning covolutions, the additive energy and sumsets of convex sets and its generalizations. In particular, we show that if a set $A = \{a_1, \ldots, a_n\} < \subseteq \mathbb{R}$ has the property that for every fixed $1 \leq d < n$, all differences $a_i - a_{i-d}, d < i < n$, are distinct, then $|A + A| \gg |A|^{3/2+c}$ for a constant $c > 0$. 