

On Convolutions of Convex Sets and Related Problems

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Abstract. We prove some results concerning convolutions, the additive energy and sumsets of convex sets and its generalizations. In particular, we show that if a set $A = \{a_1, \dots, a_n\} \subseteq \mathbb{R}$ 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 $c > 0$.