

Lev, Vsevolod F.

Restricted set addition in groups. II: A generalization of the Erdős-Heilbronn conjecture.

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[For Part I, see *J. Lond. Math. Soc.* (2) 62, 27-40 (2000; [Zbl 0964.11016](#)).]

Let A, B be subsets of a finite commutative group G , and let $\mathcal{R} \subset A \times B$. The \mathcal{R} -restricted sum $A +_{\mathcal{R}} B$ is defined as the set of all sums $a + b$ with $a \in A, b \in B, (a, b) \notin \mathcal{R}$. In the case $\mathcal{R} = \{(a, a)\}$ this reduces to the much investigated case of sums with distinct summands.

The author finds estimates for $|A +_{\mathcal{R}} B|$ when $|A|, |B|$ and $|\mathcal{R}|$ are given. In case of a cyclic group of prime order he finds essentially the best possible estimates. These results do not yield the Dias da Silva-Hamidoune theorem on distinct summands, where the bound is $|A| + |B| - 3$, and it is shown by examples that such a strong estimate does not hold in general even when \mathcal{R} is assumed to be of the special form $\mathcal{R} = \{(a, \tau(a))\}$ with some injective function τ .

Reviewer: [I.Z.Ruzsa \(Budapest\)](#)

MSC:

[11B75](#) Other combinatorial number theory
[05D99](#) Extremal combinatorics
[20F99](#) Special aspects of infinite or finite groups

Cited in **1** Review
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sumsets; restricted set addition; cyclic group of prime order

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