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**Title:** Orderable groups and Additive number theory

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**Abstract:** Let $G$ denote an arbitrary group.

If $S$ is a subset of $G$, we define its square $S^2$ by $S^2 = \{x_1x_2 \mid x_1, x_2 \in S\}$.

We are concerned with the following general problem:

let $S$ be a finite subset with $k$ elements of a group $G$, determine the structure of $S$, if $|S^2|$ satisfies the following inequality: $|S^2| \leq \alpha|S| + \beta$ for some small $\alpha \geq 1$ and small $|\beta|$.

Problems of this kind are called *inverse problems of small doubling type*. They have been first investigated by G.A. Freiman in the additive group of the integers; many authors are now extending the classical Freiman’s inverse theorems (see [1]) to nonabelian groups.

In this talk we will survey some recent results, contained in [2]-[7], concerning the structure of finite subsets $S$ of an orderable group satisfying the small doubling property with $\alpha = 3$ and small $|\beta|$'s.

**References:**


