

PROBLEMS AND RESULTS IN ADDITIVE NUMBER THEORY

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This talk will review some recent problems and results concerning polytopes and sums of sets of lattice points. Here are two examples. .

Let P and Q be lattice polytopes. When is every lattice point in the sumset $P + Q$ the sum of a lattice point in P and a lattice point in Q ? When is every lattice point in the sumset hP a sum of h lattice points in P ?

A subset A of an additive abelian group G is an (r, ℓ) -approximate group if there exists a subset X of G such that $|X| \leq \ell$ and $hA \subseteq X + A$. The set A is an asymptotic (r, ℓ) -approximate group if for every $h \geq h_0(A)$ there exists a subset X_h of G such that $|X_h| \leq \ell$ and $rhA \subseteq X_h + hA$. It is proved that every finite subset of an abelian group is an asymptotic approximate group

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