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The affine sieve and expanders

Many problems concerning the search for prime numbers can be formulated naturally in terms of orbits of a group of affine morphisms of n-space. We will explain this set up as well as the theory of the affine linear sieve, which thanks to a number of striking recent developments connected with "expanders", is now an effective theory. We highlight applications to classical Diophantine problems such as integral Apollonian packings.