

Additive Combinatorics
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New examples of k -intersective sets

Nikos Frantzikinakis
`nikos@math.ias.edu`
Institut for Advanced Study
Simonoyi Hall, 1 Einstein Drive
Princeton, NJ 08540
USA

Abstract

A set S of positive integers is k -intersective if every integer subset with positive density contains an arithmetic progression of length $k+1$ and common difference in S . Sets that are k -intersective for $k > 1$ are hard to come by and until very recently there were no known examples of 2-intersective but not 3-intersective sets. We will give explicit examples of such sets (*joint work with E. Lesigne and M. Wierdl*). We will also discuss the question of whether the set of the shifted primes $P-1$ is k -intersective for every k (*joint work with B. Host and B. Kra*). Both arguments use ergodic theory.