

AN OVERLAPPING THEOREM WITH APPLICATIONS

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Abstract

We establish a general and optimal lower bound for the complete sum of the probabilities of k -intersections of n events. We then describe various applications to additive and multiplicative number theory, graph theory, coding theory, study of lattice points on circles, and divisors of polynomials.

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Key words. Probability of intersections, divisors, lattice points, Sidon sets, graph theory, divisors of polynomials, coding theory.