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Problems and results in extremal combinatorics. II. (English) Zbl 1152.05053

Summary: Extremal Combinatorics is one of the central areas in Discrete Mathematics. It deals with problems that are often motivated by questions arising in other areas, including Theoretical Computer Science, Geometry and Game Theory. This paper contains a collection of problems and results in the area, including solutions or partial solutions to open problems suggested by various researchers. The topics considered here include questions in Extremal Graph Theory, Polyhedral Combinatorics and Probabilistic Combinatorics. This is not meant to be a comprehensive survey of the area, it is merely a collection of various extremal problems, which are hopefully interesting. The choice of the problems is inevitably biased, and as the title of the paper suggests, it is a sequel to a previous paper [N. Alon, Discrete Math. 273, No.1-3, 31–53 (2003; Zbl 1030.05060)] of the same flavor, and hopefully a predecessor of another related future paper. Each section of this paper is essentially self contained, and can be read separately.

MSC:
05Dxx Extremal combinatorics
05C35 Extremal problems in graph theory
90C27 Combinatorial optimization
90C57 Polyhedral combinatorics, branch-and-bound, branch-and-cut
60C05 Combinatorial probability
94B75 Applications of the theory of convex sets and geometry of numbers (covering radius, etc.) to coding theory
05–02 Research exposition (monographs, survey articles) pertaining to combinatorics
90–02 Research exposition (monographs, survey articles) pertaining to operations research and mathematical programming

Keywords:
extremal graph theory; coupon collector; covering codes; polyhedral combinatorics; probabilistic combinatorics

Full Text: DOI

References:
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