

TRANSVERSALS TO THE CONVEX HULLS OF k -SETS

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What is the maximum positive integer n such that every set of n points in \mathbb{R}^d has the property that the convex hulls of all k -sets have a transversal $(d - \lambda)$ -plane? In this paper, we investigate this and closely related questions. We define a special Kneser hypergraph and by using some topological results and the well-known λ -Helly property, we relate our question with the chromatic number of the Kneser hypergraph, and we establish a connection ($\lambda = 1$) with so called Kneser's conjecture, first proved by Lovász. This problem is all connected with Gale embeddings, the discrete version of Rado's Problem, and with cyclic polytopes.

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