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SOME PROPERTIES OF m - FAMILIES

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1 Introduction

Let m be a positive integer. The notion which give the title of our paper was introduced by Klee [7] and it one defined as follows:

A family $\mathcal{A}$ of $m+1$ convex subsets of a vector space E will be called an m - *family* in E if $\cap\mathcal{A} = \emptyset$, but each m members of $\mathcal{A}$ have a common point.

From Helly's theorem [6], it immediately follows that, if E is finite-dimensional then in E there is no m - family for $m > \dim E$. The aim of this work is to point out some properties of the m - families. The main result in [2] will receive a new proof (Theorem 6).

If m is a positive integer by $\langle m \rangle$ we denote the set $\{1, 2, ..., m\}$. For an m - family $\{A_1, A_2, ..., A_{m+1}\}$ we shall introduce the following notations:

$A_i' = \cap\{A_j : j \in \langle m+1 \rangle \setminus \{i\}\}$ for each $i \in \langle m+1 \rangle$;

$C = \text{conv}(\cup\{A_i' : i \in \langle m+1 \rangle\})$ and $B_i = A_i \cap C$ for each $i \in \langle m+1 \rangle$.