1069-05-239 **Zoltan Furedi** and **Lale Ozkahya*** (ozkahya@iastate.edu). *Unavoidable subhypergraphs:* **a**-*clusters.*

One of the central problems of extremal hypergraph theory is the description of unavoidable subhypergraphs, in other words, the Turán problem. Let $\mathbf{a} = (a_1, \ldots, a_p)$ be a sequence of positive integers, $k = a_1 + \cdots + a_p$. An **a**-*partition* of a k-set F is a partition in the form $F = A_1 \cup \ldots A_p$ with $|A_i| = a_i$ for $1 \leq i \leq p$. An **a**-*cluster* $\mathcal{A}$ with *host* F_0 is a family of k-sets $\{F_0, \ldots, F_p\}$ such that for some **a**-partition of F_0, $F_0 \cap F_i = F_0 \setminus A_i$ for $1 \leq i \leq p$ and the sets $F_i \setminus F_0$ are pairwise disjoint. The family $\mathcal{A}$ has $2k$ vertices and it is unique up to isomorphisms. With an intensive use of the delta-system method we prove that for $k > p$ and sufficiently large n, if $\mathcal{F}$ is a k-uniform family on n vertices with $|\mathcal{F}|$ exceeding the Erdős-Ko-Rado bound $\binom{n-1}{k-1}$, then $\mathcal{F}$ contains an **a**-cluster. The only extremal family consists of all the k-subsets containing a given element. (Received January 24, 2011)