1030-05-377 **Harout Aydinian** and **Éva Czabarka*** (czabarka@math.sc.edu), Department of Mathematics, Columbia, SC 29208, and **Péter L Erdős** and **László Székely**. *M-part L-Sperner families.* Preliminary report.

Let $X = X_1 \cup X_2 \cup \cdots \cup X_M$ be a partition of the n-element underlying set X. A set system $\mathcal{F} \subseteq 2^X$ is an M-part Sperner family if for all $E, F \in \mathcal{F}$ such that E is a strict subset of F, $F \setminus E$ is not a subset of any of the X_i. It is known (Kleitman, 1965; Katona, 1960) that the size of a 2-part Sperner family cannot exceed the maximum size of a Sperner family, $\binom{n}{\lfloor n/2 \rfloor}$. However, for $M > 2$ the situation is quite different, and the maximum size of a family is unknown in the general case.

$\mathcal{F}$ is an M-part L-Sperner family if for any chain $E_1 \subset E_2 \subset \cdots \subset E_{L+1}$ of size $L+1$ in the family, $E_{L+1} \setminus E_1$ is not a subset of any of the X_i. Füredi, Griggs, Odlyzko and Shearer (1987) determined the maximum size of such a family for $M = L = 2$ and posed the question of maximal size in the general case.

We define $\mathcal{F}$ is an M-part $L_1, L_2, \ldots, L_M$-Sperner family if for any $j \in \{1, \ldots, M\}$ for any chain $E_1 \subset E_2 \subset \cdots \subset E_{L_j+1}$ of size $L_j + 1$ in the family, $E_{L_j+1} \setminus E_1$ is not a subset X_j.

We will present some results and conjectures about these generalizations. (Received August 07, 2007)