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**Jerrold R. Griggs\*** (j@sc.edu), Department of Mathematics, University of South Carolina, Columbia, SC 29208, and **Wei-Tian Li** and **Linyuan Lu**. *The Lubell function and  $H$ -free families of subsets*. Preliminary report.

We consider the problem of determining the largest size  $\text{La}(n, H)$  of a family of subsets of  $[n] := \{1, \dots, n\}$  that contains no subposet isomorphic to a given poset  $H$ . Sperner's Theorem is the foundational result of this kind, and Katona *et al.* have made recent progress. We introduce the Lubell function  $L_n(F)$  for families  $F$  of subsets of  $[n]$ , derived from the familiar LYM inequality, to obtain upper bounds on  $|F|$  for  $H$ -free families  $F$ . This allows us to improve bounds on  $\lim_{n \rightarrow \infty} \text{La}(n, H) / \binom{n}{\lfloor n/2 \rfloor}$ , if it exists, and to determine the limit for several posets  $H$ . (Received February 16, 2010)