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**Yiguang Zhang\*** (yzhan132@jhu.edu), Applied Mathematics & Statistics Department, Johns Hopkins University, Baltimore, MD 21218, and **Yonah Biers-Ariel**. *Superpatterns and Alon's Conjecture*. Preliminary report.

Given a set  $X$  and a class  $\mathcal{R}$  such that each object in  $\mathcal{R}$  is a string of  $k$  elements in  $X$  with certain restrictions, a *superpattern* is a string of  $n$  elements in  $X$  provided it contains at least one  $p$ -pattern for all  $p \in \mathcal{R}$ . We focus on three classes of superpatterns: superpatterns on words, superpatterns on preferential arrangements, and superpatterns on permutations and prove several structural results. For example, we show that the shortest superpattern that contains all the permutations of length  $k$  with entries from  $[k]$  is also a superpattern of preferential arrangement with size  $k$  on the  $k$  characters. We then attempt to resolve an important conjecture of Noga Alon on the length of the smallest randomly generated permutation that contains patterns of all permutations at length  $k$  with high probability, where  $k < n$ . (Received September 05, 2014)