

1112-05-72

Miklós Bóna, **Marie-Louise Bruner** and **Bruce E Sagan*** (sagan@math.msu.edu),
Department of Mathematics, Wells Hall, 619 Red Cedar Road, East Lansing, MI 48824. *Longest increasing subsequences and log concavity*. Preliminary report.

Let \mathfrak{S}_n be the n th symmetric group and view the elements of \mathfrak{S}_n as sequences. Let $l_{n,k}$ be the number of $\pi \in \mathfrak{S}_n$ having k as the length of a longest increasing subsequence. William Chen conjectured that the sequence $l_{1,n}, l_{2,n}, \dots, l_{n,n}$ is log concave. We also conjecture that if $i_{n,k}$ is the number of involutions in \mathfrak{S}_n with longest increasing subsequence length k then $i_{1,n}, i_{2,n}, \dots, i_{n,n}$ is log concave. We show that these two conjectures are strongly related. We also present evidence to support the truth of both. Our main tool is the Robinson-Schensted correspondence. Many other associated conjectures will be discussed. (Received July 15, 2015)