1155-05-514 **Jonah Blasiak*** (jblasiak@gmail.com), **Jennifer Morse**, **Anna Pun** and **Daniel Summers**.
Catalan functions and k-Schur positivity.

Catalan functions are a family of symmetric functions indexed by pairs consisting of a partition contained in the staircase $(n-1,\dots,1,0)$ and a weight in $\mathbb{Z}^n$. They include the Hall-Littlewood polynomials and their parabolic generalizations. Li-Chung Chen and Mark Haiman conjectured that the k-Schur functions are a subclass of Catalan functions. We settle their conjecture, expose a new miraculous shift invariance property of k-Schur functions, and use this to establish Schur positivity of k-Schur functions.

Our techniques also yield a formula for the k-Schur expansion of the product of a Schur function and a k-Schur function when the indexing partitions concatenate to a partition, thereby describing a new class of Gromov-Witten invariants. (Received January 20, 2020)