

Labeled binary trees, subarrangements of the Catalan arrangements, and Schur-positivity

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Abstract

In 1995, Gessel introduced a multivariate formal power series G tracking the distribution of ascents and descents in labeled binary trees. In addition to showing that G is a symmetric function, he conjectured that G is Schur-positive. In this talk, we'll see how to expand G positively in terms of ribbon Schur functions. Moreover, we'll see how certain specializations of G relate to actions on hyperplane arrangements. As an application of our work, we get a proof of gamma-positivity of the distribution of right edges over the set of local binary search trees.