1138-05-397 **J Blasiak** and **J Morse*** (morsej@virginia.edu), Kerchof Hall, Department of Math, Charlottesville, VA 22911, and **A Pun** and **D Summers**. *Combinatorics, computing, and k-Schur functions.*

Combinatorial structures have been used to give efficient and elegant constructions for polynomial coefficients going all the way back to the binomial theorem. In turn, a wide spectrum of problems can be converted to computations with appropriate polynomials. We will see how this plays out on examples from representation theory and geometry.

The k-Schur functions, (symmetric) polynomials defined using the Bruhat order poset on the type-A affine Weyl group, are a key example. Over the last two decades, calculations with these polynomials have been tied to finding string theory invariants named for Gromov and Witten, to characterizing the irreducible decomposition of the Garsia-Haiman bigraded modules, and to Schubert structure constants for the (quantum) cohomology of the flag variety. However, the intricacy of the k-Schur definition has been a major obstruction to finding the sought-after computational rules. We will discuss these developments and a new hope. (Received February 13, 2018)