

Mathematics Colloquium

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“Refined Combinatorics and Geometry of Schur Functions”

February 8, 2006 (Korman 247, 1:00 PM)

After a brief introduction to the space of symmetric polynomials we will discuss how one basis, the Schur function basis, connects symmetric function theory to combinatorics. We will then show how our study of an open combinatorial problem in symmetric function theory led us to the discovery of a new family of polynomials. We will see that our polynomials are a combinatorial analog for the Schur basis, and that they play a central role in the understanding of mysterious objects called Macdonald polynomials.

Time permitting, we will discuss how our polynomials also provide the fundamental analog for Schur functions in a geometric sense and are the natural vehicle to study the "quantum cohomology" of the Grassmannian.