

Algebra/Topology Seminar

CRISTIAN LENART

MACDONALD POLYNOMIALS, QUANTUM K -THEORY, AND AFFINE LIE ALGEBRA REPRESENTATIONS

Thursday, March 30, 2017
1:15 p.m. in ES-143

ABSTRACT. The (symmetric) Macdonald polynomials are Weyl group invariant polynomials with rational function coefficients in q, t , which specialize to the irreducible characters of semisimple Lie algebras upon setting $q = t = 0$. Quantum K -theory is a K -theoretic generalization of quantum cohomology. Kirillov-Reshetikhin (KR) modules are certain finite-dimensional modules for affine Lie algebras. Braverman and Finkelberg related the Macdonald polynomials specialized at $t = 0$ to the quantum K -theory of flag varieties. With S. Naito, D. Sagaki, A. Schilling, and M. Shimozono, I proved that the same specialization of Macdonald polynomials equals the graded character of a tensor product of (one-column) KR modules. I will discuss the combinatorics underlying both of these connections. The talk is largely self-contained.