

# Representation Theory, Geometry & Combinatorics Seminar

Organizer(s): M. Haiman, K. Reshetikhin, D. Hill & J. Sussan

Monday, 1:00–3:00pm, 939 Evans

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9/22/08    **Jon Kujawa**, University of Oklahoma

*Crystal graphs and the modular representations of the supergroup  
 $GL(m|n)$*

In 2003 Jonathan Brundan used Kashiwara's theory of crystals to describe the action of certain translation functors on the Grothendieck ring of a category  $\mathcal{O}$  for the complex Lie superalgebra  $\mathfrak{gl}(m|n)$  and, in turn, used this to derive a new, purely algebraic, proof that the characters of the simple supermodules can be given in terms of certain Kazhdan-Lusztig type polynomials. We will discuss how much of this picture beautifully generalizes to the modular situation. It is worth remarking that our results (which are also valid over the complex numbers) are used in Brundan's paper. It is also worth observing that our results specialize to a generalization of Kleshchev's branching rules for  $GL(n)$ .