

MATHEMATICS DEPARTMENT
North Carolina State University

ALGEBRA SEMINAR

Friday, September 28, 2007

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University of Michigan

Hives by degenerating triples of flags

ABSTRACT: Knutson and Tao have given a combinatorial formula for GL_n tensor product multiplicities in terms of counting lattice points inside a cone known as the Hive cone. Let R be the ring of functions on $G \times G \times G$ that are invariant by the left action of $N \times N \times N$ and by the left diagonal action of G . (Where $G = GL_n$ and N is the upper triangular matrices.) Then R has a \mathbb{Z}^{3n} dimensional grading such that the dimensions of the graded components of R are the tensor product multiplicities. I will describe a degeneration of R to the semigroup ring of the Hive cone, thus explaining Knutson and Tao's result. If time permits, I will explain joint work with Ezra Miller in which we use this degeneration to compute combinatorial formulas for the Hilbert series of the space of pairs of flags (F_\bullet, G_\bullet) where the dimension of $F_i \cap G_j$ is required to be at least some fixed constant r_{ij} .

3:00 - 3:50 pm HA 335

Faculty and Students are invited to attend.