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**Speaker:** Jeb Willenbring  
University of Wisconsin, Milwaukee

Wednesday, November 11, 2009  
12:45 PM  
127 Hayes-Healy Hall

**Title:** Stable Hilbert series and the Kronecker coefficients

**Abstract:**

This talk will describe a problem in invariant theory motivated by the concept of quantum entanglement. Specifically, we compute a stable formula for the Hilbert series of the invariant algebra of polynomial functions on a tensor product of defining representations of unitary groups. The example may be interpreted physically as the quantum analog of a classical system consisting of several particles in which each has a finite number of classical states. The stable formula involves elementary combinatorics. The derivation involves the representation theory of the symmetric group. In particular, the Kronecker coefficients play an important role.

We also show how the value of the Hilbert function counts certain directed graphs with colored edges. These graphs encode an explicit expression for the invariants. We describe how combinatorial properties of the graphs are reflected in the structure of the ring of invariants. The results presented are joint with M. Hero and L. Williams.