1102-22-165 **Mark Colarusso*** (`colaruss@uwm.edu`) and **Jeb Willenbring** (`jw@uwm.edu`). *Tensor product multiplicities for rational representations of GL(n) via contingency tables.* Preliminary report.

Littlewood-Richardson theory provides a combinatorial description of the multiplicities of irreducible $GL(n,\mathbb{C})$-representations in a tensor product. Most expositions of this theory reduce to the case where all representations have polynomial matrix coefficients. Of course, many finite dimensional representations do not have this property (e.g. the adjoint representation). The usual way to make this reduction is to tensor with a sufficiently high power of the determinant. However, this is not the only way to organize the combinatorics.

We present a generalization of Littlewood-Richardson theory describing the multiplicities of irreducible $GL(n,\mathbb{C})$-representations in a tensor product of an arbitrary number of *rational* representations of $GL(n,\mathbb{C})$. Using the dual pair $(GL(n,\mathbb{C}),\mathfrak{u}(p,q))$ we show that these multiplicities are given by branching multiplicities between certain irreducible Harish-Chandra modules. These branching multiplicities are easily computed using an abstraction of what is known as a *contingency table*. This is joint work with Jeb Willenbring. (Received July 28, 2014)