1089-05-89 **Nantel Bergeron***, York University, Dept. of Mathematics and Stat., Toronto, Ontario M3J1P3, Canada, and **C. Berg**, **F. Saliola**, **L. Serrano** and **M. Zabrocki**. *Immaculate basis and the non-commutative littlewood richardson rule.*

We have defined a new basis for $NSym$, the non-commutative symmetric functions. We called it the immaculate basis and denote it I_α indexed by compositions α. This basis has the property that the forgetful map χ from $NSym$ to symmetric function gives $\chi(I_\alpha) = s_\alpha$ where $s_\alpha = \det(h_{\alpha_i - i + j})$ is the Schur function defined by the Jacobi-Trudi determinant. In particular the s_α make sense even for a composition α.

we give versions of the right Pieri rule and non-commutative Littlewood-Richardson rules in this context. The non-commutative Littlewood-Richardson coefficient $C^{\beta}_{\alpha,\lambda}$ are shown to be all positive (for a partition λ) and satisfies a fascinating new relation.

We also construct indecomposable modules for the 0-Hecke algebra whose characteristics are the dual immaculate basis of the quasi-symmetric functions. (Received February 03, 2013)