1073-05-231 **Chris Berg**, **Nantel Bergeron**, **Hugh Thomas** and **Mike Zabrocki***
(zabrocki@mathstat.yorku.ca). *Expansion of k-Schur functions for maximal k-rectangles within the affine nilCoxeter algebra.*

The k-Schur functions were introduced by Lapointe, Lascoux and Morse in 2003 as an approach to finding a combinatorial interpretation of the Macdonald q,t-Kostka coefficients. Since then there have been two additional conjecturally equivalent definitions of the k-Schur functions proposed. Using one of these definitions (at t=1) T. Lam identified the k-Schur functions as the Schubert basis of the homology of the affine Grassmannian while Lapointe and Morse identified Gromov-Witten invariants as certain special cases of the structure coefficients. An important open problem in this area is to give a combinatorial interpretation for the structure coefficients of these elements. I will explain how the problem can be reduced to expanding the k-Schur functions in the affine nil-Coxeter algebra and I will give a formula for the k-Schur functions indexed by a maximal rectangle. (Received August 02, 2011)