1073-05-49   **Cristian Lenart*** (`lenart@albany.edu`), Department of Mathematics and Statistics, State University of New York at Albany, 1400 Washington Avenue, Albany, NY 12222, and **Anne Schilling** (`anne@math.ucdavis.edu`), Department of Mathematics, University of California at Davis, One Shields Avenue, Davis, CA 95616-8633. *From Macdonald polynomials to a charge statistic in classical Lie types.*

The charge is an intricate statistic on words, due to Lascoux and Schützenberger, which gives positive combinatorial formulas for the Kostka polynomials. These are the coefficients in the expansion of the (type A) Hall-Littlewood symmetric polynomials in terms of Schur polynomials. It has been a long-standing problem to generalize charge to all classical types. I will present a method to address this problem based on the recent Ram-Yip formula for Macdonald polynomials. Then I will present my work with Anne Schilling, proving that the type A and C charge coincides with the energy function on the corresponding affine crystals. The latter are colored directed graphs encoding representations of quantum affine algebras when the quantum parameter goes to zero, and the energy function defines a grading on them. (Received July 21, 2011)