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Cristian Lenart* (1enart@albany.edu), Department of Mathematics, State University of New York at Albany, 1400 Washington Avenue, Albany, NY 12222. *From Macdonald polynomials to a charge statistic in classical Lie types*. Preliminary report.

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 Hall-Littlewood symmetric polynomials in terms of Schur polynomials; they are also Lusztig's q -analogue of weight multiplicities in Lie type A . 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. The key step is to derive from the Ram-Yip formula (at $t = 0$) a formula in terms of sequences of Kashiwara-Nakashima columns (Kashiwara-Nakashima tableaux are the natural generalization of semistandard Young tableaux to classical Lie types). I am currently working with Anne Schilling on a conjectured connection between the generalized charge and the energy function on affine crystals. (Received February 16, 2010)