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**Yuval Roichman** and **Michelle Wachs\*** ([wachs@math.miami.edu](mailto:wachs@math.miami.edu)). *On  $r$ -inversions and symmetric functions*. Preliminary report.

The  $r$ -inversion number is a statistic on words of length  $n$  (over the positive integers), which interpolates between the descent number ( $r = 2$ ) and the inversion number ( $r = n$ ). We consider a symmetric function  $U_{n,r}$  that enumerates words of length  $n$  by this statistic. The symmetric function  $U_{n,r}$  is an example of an LLT polynomial. The LLT polynomials were shown to be Schur-positive by Grojnowski and Haiman by means of Kazhdan-Lusztig theory. It is an open question to give a combinatorial description of the coefficients in the Schur basis expansion. For  $r = 2$  and  $r = n$ , such descriptions are well known. For  $r = 3$ , a description (in a more general setting) was conjectured by Haglund and was proved by Blasiak using noncommutative Schur functions and Lam's algebra of ribbon Schur operators. Here we give a more elementary proof for the  $r = 3$  case, which uses classical RSK theory, and we give some consequences. (Received September 26, 2017)