1152-05-207 **Cédric Lecouvey** and **Cristian Lenart*** (clenart@albany.edu), Department of Mathematics and Statistics, State University of New York at Albany, 1400 Washington Avenue, Albany, NY 12222. *Atomic decomposition of characters and crystals.*

Lusztig defined the Kostka-Foulkes polynomial $K_{\lambda,\mu}(t)$ as a t-analogue of the multiplicity of a dominant weight μ in the irreducible representation of highest weight λ of a semisimple Lie algebra. Lascoux stated that the type A Kostka-Foulkes polynomials expand positively in terms of so-called atomic polynomials. We define a combinatorial version of the atomic decomposition in arbitrary type, as a decomposition of a modified version of the Kashiwara crystal graph encoding the representation; this property can also be viewed as a strengthening of the monotonicity of $K_{\lambda,\mu}(t)$. We prove that the combinatorial atomic decomposition holds in type A (which provides a new, conceptual approach to Lascoux's statement), as well as in types B, C, and D in a stable range for $t = 1$. We also give a geometric interpretation and other applications. (Received September 04, 2019)