1021-05-210 **Louis J. Billera*** (billera@math.cornell.edu), Department of Mathematics, Malott Hall, Cornell University, Ithaca, NY 14853-4201, and **Francesco Brenti** (brenti@mat.uniroma2.it), Dipartimento di Matematica, Universitá di Roma "Tor Vergata", Via della Ricerca Scientifica, 1, I-00133 Roma, Italy. *The complete* **cd**-*index of a Bruhat interval and a simple expression for its Kazhdan-Lusztig polynomial.*

We define a nonhomogeneous extension of the usual **cd**-index of a Bruhat interval in an arbitrary Coxeter group, called the *complete* **cd**-index. This is shown to have many of the algebraic properties of the usual (homogeneous) **cd**-index of the underlying Eulerian poset. In the case of a Bruhat interval that is a lattice, for example, the complete **cd**-index reduces to the usual one.

We give an expression for the Kazhdan-Lusztig polynomial of a Bruhat interval in terms of its complete **cd**-index. Other than this **cd**-index, this expression involves only simple - explicitly defined - polynomials. As one corollary, we obtain a formula of Bayer and Ehrenborg that gives the intersection homology Betti numbers of a toric variety in terms of the usual **cd**-index of the underlying polytope. (Received September 05, 2006)