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Mircea Mustata and **Sam Payne***, Department of Mathematics, 2074 East Hall, Ann Arbor, MI 48109. *Ehrhart polynomials and stringy Betti numbers.*

We show that the coefficients of the numerator of a rational function appearing as the generating function of the Ehrhart polynomial of a reflexive polytope are the stringy Betti numbers of the projective toric variety corresponding to the dual reflexive polytope. Using this fact, along with a theorem of Yasuda relating stringy Betti numbers to orbifold cohomology and results of Borisov, Chen, and Smith on the orbifold cohomology of toric varieties, we give a formula for the δ -vector of a reflexive polytope (i.e. the coefficients of the numerator of the Ehrhart generating function) as a positive linear combination of shifted h -vectors of simplicial polytopes. We also give counterexamples to Hibi's conjecture on the unimodality of δ -vectors. (Received February 22, 2005)