

Gorenstein polytopes and their stringy E -functions

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A *Gorenstein polytope* is a lattice polytope, one of whose multiples is a translate of a reflexive polytope. Reflexive polytopes were originally introduced by Batyrev in the context of mirror symmetry for Calabi-Yau varieties. Inspired by these ideas from algebraic geometry, Batyrev and Nill have introduced the *stringy E -function* of a Gorenstein polytope. Its definition involves several interesting invariants of lattice polytopes. The stringy E -function is a priori a rational function in two variables, but Batyrev and Nill conjectured that it is a polynomial.

We present and motivate a conjecture about Gorenstein polytopes that implies the conjecture of Batyrev and Nill.