

Schaller, Karin, Stringy Chern classes of toric varieties, lattice polytopes, and the number 24

We give a combinatorial interpretation of the stringy Libgober-Wood identity in terms of generalized stringy Hodge numbers and intersection products of stringy Chern classes for arbitrary projective Q -Gorenstein toric varieties.

As a first application we derive a novel combinatorial identity relating reflexive polytopes of dimension $d \geq 4$ to the number 24. Our second application is motivated by computations of stringy invariants of non-degenerated hypersurfaces in 3-dimensional algebraic tori whose minimal models are K3-surfaces, giving rise to a combinatorial identity for the Euler number 24. Using combinatorial interpretations of the stringy E -function and the stringy Libgober-Wood identity, we show with purely combinatorial methods that this identity holds for any 3-dimensional lattice polytope containing exactly one interior lattice point.