

# Arithmetics of one-codimensional cycles in toric varieties

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For a one-codimensional cycle  $Z$  in a toric variety, its Newton polytope  $\text{NP}(Z)$  contains enough information to describe its intersection theoretical properties. Namely, the degree of  $Z$  with respect to a nef toric divisor can be expressed in terms of the mixed volume of  $\text{NP}(Z)$  and the polytope associated to the divisor.

When the toric variety is defined over an adelic field, we associate to  $Z$  a collection of real functions on a real vector space, the Ronkin functions of  $Z$ , which capture enough of the arithmetic nature of  $Z$ . Building on the recent results obtained by Burgos Gil, Philippon and Sombra, we show that the height of  $Z$  with respect to a semipositive toric metrized divisor can be expressed as the mixed integral of such Ronkin functions and the functions associated to the metrized divisor.

A well-known result by V. Maillot for the canonical height of hypersurfaces in toric varieties follows from our general approach.

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