Normalized height of projective toric varieties

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The height of a subvariety $X \subset \mathbb{P}^N$ is a measure of the bit complexity of a symbolic representation of X, for instance via its Chow form. This notion generalizes the height of points widely applied in questions of diophantine approximation. In higher dimensions, it behaves like an arithmetic analog of the degree.

In this talk I will present an explicit expression for the normalized height of a projective toric variety. This expression decomposes as a sum of local contributions, each term being the integral of a certain function, piecewise affine and concave. The set of functions introduced behaves as an arithmetic analog of the polytope classically associated to the torus action.Besides the formulae for the height, we show that this object behaves in a natural way with respect to several standard constructions: joins, Segre products, Veronese embeddings, decomposition into orbits.