Toric varieties over general fields

Alexander Duncan[*]

University of South Carolina, EEUU

Abstract

Over the complex numbers, a "torus" is a finite product of copies of the non-zero complex numbers and a "toric variety" is a certain kind of compactification of a torus. A basic example is projective space. Toric varieties have simple combinatorial descriptions permitting very explicit computations. Nevertheless, they are complex enough to exhibit many subtle behaviors of interest to algebraic geometers. Despite their popularity, the vast majority of the literature assumes that the base field is the complex numbers. In this talk, I will discuss a more general notion of toric variety over arbitrary fields. This generalization is broad enough to include the Severi-Brauer varieties, which are a natural extension of the notion of projective spaces when the field is not algebraically closed.

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[*]e-mail: `duncan@math.sc.edu`