

Seminar on Toric Varieties

Announcement

Description

A variety is called *toric* if it contains a copy of the group $T = (k^\times)^n$ (an *algebraic torus*) in such a way that the action of T on itself extends to the whole variety.

The class of toric varieties turns out to be surprisingly rich. Moreover, in a way that is not immediately obvious from the above definition, they can be studied by means of very accessible combinatorial data encoded in lattices, cones, and fans. This way, they provide a fruitful testing ground for a variety of problems in algebraic and arithmetic geometry and are handy examples to have in mind when studying geometry.

The aim of the first part of the seminar is to study toric varieties and their construction by means of monoids, cones, polytopes, and fans. In the second part, we will set out to better understand their geometry and to understand their geometry as expressed by divisor class groups and similar objects.

Time

The preliminary meeting for this seminar is on

Tuesday, 16 April, 16:00
in HS6 (in the *Nebengebäude*).

If you would like to participate but are unavailable at that time, do not hesitate to contact me by mail:

`florian.wilsch@mathematik.uni-goettingen.de`.

Tuesday, 16:00 is also the tentative time slot for the seminar.

Prerequisites

To participate, you would need some basic knowledge on varieties over algebraically closed fields (or over the complex numbers in particular).

Modules

The seminar will count towards both a Bachelor's and Master's degree in mathematics. Details will soon appear when the seminar is officially entered into the university's systems. If you would require credit for a very particular module, feel free to contact me.

Stud.IP

The seminar is a late addition to this term's seminar program and does not yet have a page in Stud.IP (but it should soon follow).

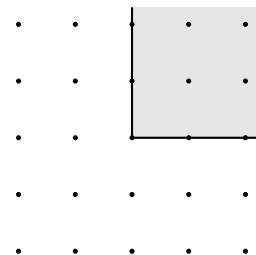


Figure 1: The cone corresponding to the affine plane.

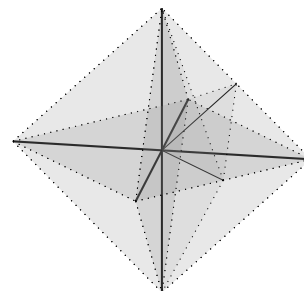


Figure 2: A fan describing a more complicated three-dimensional toric variety.