

Toric Geometry (L24)

Dr. Veronica Arena

This course will provide an introduction to the world of toric varieties. Toric varieties are a particularly nice class of algebraic varieties, as their properties can be studied in a more elementary way thanks to their combinatorial nature. Studying toric varieties will allow us to play with many of the definitions and properties studied in the previous courses in algebraic geometry and get a nice set of "ready to use" examples to keep in mind for the future. It will also provide the basics to enter many areas of modern research, such as tropical or logarithmic geometry. The course will cover a selection of topics including:

- Affine toric varieties: constructing toric varieties from cones
- Fans and toric varieties
- Singularity and compactness
- Orbits, topology and line bundles
- Some topics in intersection theory

Prerequisites

It is required that the students have a previous knowledge of the contents of the Part III Algebraic Geometry course.

Literature

1. W. Fulton *Introduction to toric varieties*. Springer, 1993
2. D. Cox, J. Little, and H. Schenck, *Toric varieties*. American Mathematical Society, 2011

Additional support

Four examples sheets will be provided and four associated examples classes will be given. There will be a one-hour revision class in the Easter Term.