

Seminar Toric Varieties

Dr. Paul Ziegler

SS 2023

Time and Place: Mo 16:15-17:45, SR3

Webpage: <http://www.paulziegler.ch/tv.html>

Target group: Bachelor and Master students

Prerequisites: Basic knowledge of Algebraic Geometry

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Organizational Meeting: Mo 17.4, 16:15, SR3

Topic: Toric varieties are a class of algebraic varieties which admit a relatively simple description in terms of combinatorial data (namely polyhedral cones and fans), but still contain a wealth of interesting examples. In this seminar, we will study the basic properties of these varieties and use them to illustrate various concepts and methods from algebraic geometry.

Talks

- (1) Introduction
- (2) Affine Semigroups ([CLS11, 1.1] from p16)
- (3,4) Cones and Affine Toric Varieties ([CLS11, 1.2])
- (5,6) Properties of Affine Toric Varieties ([CLS11, 1.3])
- (7) Fans and Normal Toric Varieties ([CLS11, 3.1])
- (8,9) Orbit-Cone Correspondence and Completeness ([CLS11, 3.2 and 3.4])
- (10,11) Divisors on Toric Varieties ([CLS11, 4.1 and 4.2])
- (12,13) Toric Resolution of Singularities ([CLS11, 10.1])

References

- [CLS11] David A. Cox, John B. Little, and Henry K. Schenck. *Toric varieties*, volume 124 of *Graduate Studies in Mathematics*. American Mathematical Society, Providence, RI, 2011.