

Lines in the tropics.

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Tropical Geometry has been the subject of great amount of recent activity over the last decade. Loosely speaking, it can be described as a piecewise-linear version of algebraic geometry. It is based on tropical algebra, where the sum of two numbers is their maximum and the product is their sum. This turns polynomials into piecewise-linear functions, and their zero sets into polyhedral complexes. These tropical varieties retain a surprising amount of geometric information about their classical counterparts.

In this talk, I will give a gentle introduction to the subject and will illustrate this powerful technique through two concrete examples from classical algebraic geometry: the 28 bitangent lines to smooth plane quartics and the 27 lines on smooth cubic surfaces in projective 3-space. This is based on joint works in progress with Hannah Markwig and Anand Deopurkar