

Speaker: Sam Payne

Title: Tropical geometry and adelic amoebas

Abstract: Tropical geometry is a relatively new collection of combinatorial geometric techniques for studying algebraic varieties over nonarchimedean fields, with applications to enumerative geometry and linear series on algebraic curves, and is closely related to both nonarchimedean analytic geometry and Groebner theory. The primary objects of study are finite polyhedral projections of nonarchimedean analytifications induced by embeddings in tori and toric varieties, which can also be obtained as limits of archimedean amoebas under deformations of almost complex structures.

The adelic amoeba of a subvariety of a torus over a global field is the union of its tropicalizations with respect to all nonarchimedean places, together with its amoebas at the archimedean places, and its radial projection to the sphere governs expansiveness properties of an associated algebraic dynamical system.

In this talk, I will present the basic principles of tropicalization, give examples of adelic amoebas, and discuss recent work applying results of S.-W. Zhang on torsion points in subvarieties of tori to characterize those subvarieties whose adelic amoebas have small radial projection.