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Tropical geometry and algebra over idempotent semirings

Abstract

Tropical geometry is a tool that can reduce problems in algebraic geometry to piecewise polyhedral geometry and combinatorics, but it is also a new world of geometry in its own right. In this talk I will introduce the emerging picture of this kind of geometry as parallel to Grothendieck's vision of algebraic geometry. Here rings are replaced by idempotent semirings, and the role of linear algebra in classical commutative algebra is replaced by the combinatorics of matroids.