

COLLOQUIUM

Convex bodies, algebraic geometry and symplectic geometry

Kiumars Kaveh
University of Pittsburgh

October 17, 2014

I will discuss appearances of convex bodies (i.e. compact convex subsets of the Euclidean space) in algebraic geometry and symplectic geometry. Our approach is via the recent theory of Newton-Okounkov bodies which associates convex bodies to algebraic varieties encoding some important information about their geometry. The root of this theory is in the basic notion of Newton polytope of a polynomial f in several variables, that is the convex hull of exponents of the monomials of f .

Symplectic geometry is the mathematical framework for classical mechanics. Symplectic manifolds are the mathematical abstraction of phase space of systems in classical mechanics. Algebraic varieties, main objects of study in algebraic geometry, are one of the most important examples of symplectic manifolds. They provide a fertile ground for the interplay between algebra, geometry, symplectic geometry and combinatorics. Material discussed is based on the research work of the speaker during the past 4-5 years.

The lecture will take place in Thackeray 704 at 3:30pm.
Refreshments will start at 3:00pm.