

Quartic Spectrahedra

Date Thursday, March 27

Time 11:30

Location 633 Mudd

Abstract: Spectrahedra are the feasible regions in semidefinite programming. This includes convex polyhedra, the feasible regions in linear programming. We present a tiny first step towards the classification of spectrahedra of a given degree and dimension, by focusing on the 24-dimensional family of all quartic spectrahedra in 3-space. These come in 20 generic types, according to the location of their nodal singularities. This lecture is based on joint work with John Christian Ottem, Kristian Ranestad, and Cynthia Vinzant. It intertwines convexity and combinatorics with classical algebraic geometry, and offers many colorful pictures.