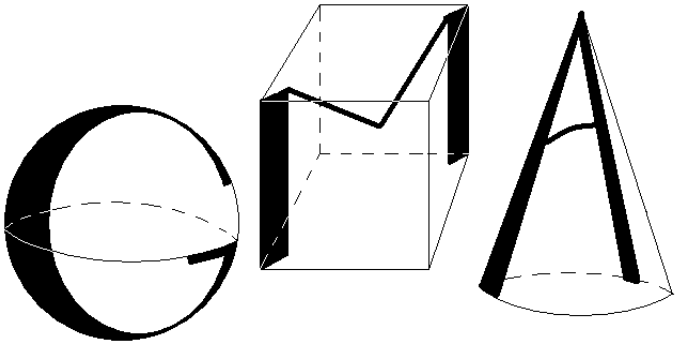

Colloquium

Wednesday, September 16, 3:00 p.m. (8^{th} Period)

In **LIT233**
Refreshments provided.

Speaker: Jack Graham

Title: Free Extreme Points of Free Spectrahedra

Abstract

A spectrahedron is a convex set defined as the solution set to a linear matrix inequality. This notion can be extended to the dimension-free setting by evaluating on tuples of symmetric matrices. The corresponding solution set is called a free spectrahedron. Free spectrahedra play an important role in systems engineering, operator algebras, and the theory of matrix convex sets. In this talk, we will present results on the abundance, in certain real free spectrahedra, of free extreme points, which are the dimension-free analogue of classical extreme points. In particular, we will provide a geometric construction of an infinite family of free extreme points at the second level of the maximal matrix convex set over a polygon with at least four sides. We will also extend the result to bounded real free spectrahedra that have a non-simplectic polygonal face using a graded face lifting technique.