

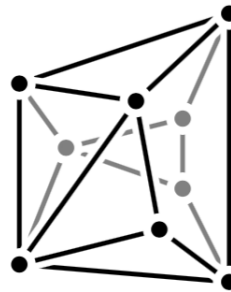
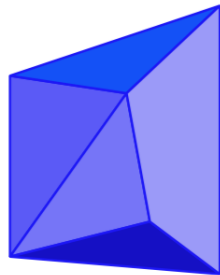
Student Research Talks (StReeTs)

Mason Experimental Geometry Lab (MEGL)

The Hirsch Conjecture and the Diameters of Polytope Graphs

Mac Gallagher

Department of Mathematics Sciences
George Mason University



Abstract

The diameter of polytopes and polyhedra is directly related to the efficiency of the simplex algorithm used in linear optimization. We will describe the connection, and discuss how recent research (since 2010) connects with a question posed in 1957 by Hirsch and a result on diameters from 1992. In 1992, Kalai and Kleitman proved a quasipolynomial upper bound on the diameters of convex polyhedra. Very recently, Todd and Sukegawa-Kitahara proved tail-quasipolynomial bounds on the diameters of polyhedra. We will briefly explain their results and present an explanation of what a tail bound is. We will present new tail-quasipolynomial bounds on the diameters of polytopes and present the proof of the first tail-polynomial upper bounds on the diameters of polyhedra. The talk is completely self-contained and is joint work with Edward D. Kim.

Date: Friday, April 8, 2016

Time: 2:30pm–3:30pm

Place: Exploratory Hall 4106

Pizza and soda will be served at the presentation.

For further information or for special accommodations, please contact Sean Lawton via email at seanlawton@gmail.com or drop by the MEGL.