

**Stony Brook University
The Graduate School**

Doctoral Defense Announcement

Abstract

Neighborly Properties of Simple Convex Polytopes

By

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We are interested in simple polytopes with all facets having certain neighborly properties, such as being pervasive and powerful. It is easy to see that simplexes and product of simplexes have these properties. In the paper "Polytopes with Mass Linear Functions" by Dusa McDuff and Susan Tolman, they proved that in dimension 4, the only simple convex polytopes with all facets being pervasive and powerful are either 4-simplex or the product of 2-simplexes. In this thesis we prove that there are no such pervasive and powerful polytopes with 8 or 9 facets in dimension 5, there is one in dimension 6 but still being a product of simplexes, and there is a non product one in dimension 7.

Date: July 27th, 2007

Time: 3:00 pm

Place: Mathematics Building, room 5-127

Program: Mathematics

Dissertation Advisor: Dusa McDuff