

Queen's Algebraic Geometry — Seminar —

PARAMETER SPACES OF ALGEBRAIC CURVES ON TORIC SURFACES

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Abstract

Our primary interest will be on Severi varieties. Severi varieties are parameter spaces of algebraic nodal curves on toric surfaces. We use Tropical Geometry as a tool to study them. It involves several other parameter spaces which have a role of building-blocks.

I will present two applications. First, I will explain Mikhalkin's celebrated work, the enumeration of nodal curves in a combinatorial way, as an intersection number. Second, I will build a clear connection between tropical Severi varieties and Secondary fans. Secondary fans are purely combinatorial objects which are also closely related to algebraic geometry by recognizing them as normal fans of Newton polytopes of both Chow polynomials and principal A -determinants. It had been a hope that we can realize tropical Severi varieties as subfans of Secondary fans. However, a counterexample was found by E. Katz (2009). Our better understanding about their connection will deduce a simple criterion when tropical Severi varieties fail to be subfans of the corresponding Secondary fans.

Monday 31 October 2011
16:30 – 17:30
319 Jeffery Hall