

Northeastern University



Mathematics Department

Geometry, Physics, and Representation Theory Seminar

María Angélica Cueto

Ohio State University

Thursday, October 11, 2:50-3:45 pm, Lake Hall 509

Positivity of the cotangent bundle of a K3 surface

Abstract

Since the beginning of tropical geometry, a persistent challenge has been to emulate tropical versions of classical results in algebraic geometry. The well-known statement “any smooth surface of degree three in \mathbf{P}^3 contains exactly 27 lines” is known to be false tropically. Work of Vigeland from 2007 provides examples of tropical cubic surfaces with infinitely many lines and gives a classification of tropical lines on general smooth tropical surfaces in TP^3 .

In this talk I will explain how to correct this pathology by viewing the surface as a del Pezzo cubic and considering its embedding in \mathbf{P}^4 via its anticanonical bundle. The combinatorics of the root system of type E_6 and a tropical notion of convexity will play a central role in the construction. This is joint work in progress with Anand Deopurkar.