



Speaker: Gregory Smith
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Wednesday, September 17, 2014
4:00 PM
231 Hayes-Healy Hall

Title: Nonnegative sections and sums of squares

Abstract:

A polynomial with real coefficients is nonnegative if it takes on only nonnegative values. For example, any sum of squares is obviously nonnegative. For a homogeneous polynomial with respect to the standard grading, Hilbert famously characterized when the converse holds, that is when every nonnegative homogeneous polynomial is a sum of squares. After reviewing some history of this problem, we will examine this converse in more general settings such as global sections of a line bundle. This line of inquiry has unexpected connections to classical algebraic geometry and leads to new examples in which every nonnegative homogeneous polynomial is a sum of squares. This talk is based on joint work with Grigoriy Blekherman and Mauricio Velasco.