



Speaker: Enrico Carlini
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Monday, November 1, 2010
4:00 PM
117 Hayes-Healy Hall

Title: Decomposition of polynomials and geometry

Abstract:

Polynomials are very basic tools in Mathematics and we usually write them as sum of monomials. But this presentation is far from the only one possible. We all know about the diagonalization of a square symmetric matrix. This process can be viewed as writing a given degree 2 homogenous polynomial, not as a sum of monomials, but as a sum of squares of linear forms. In two variables this sum of powers decomposition is related to plane conics. Increasing the degree from 2 to 3, we move to the twisted cubic curve in three-space, and we have to study its tangent and secant lines. Increasing the number of variables, we move deeper into geometry and we have to study the so-called Veronese surfaces and their higher secant varieties. In this colloquium talk I will try to introduce the audience to this beautiful and fascinating relation between polynomial decomposition and geometry.