

Mathematics Colloquium

Vanishing of functions on intersections of algebraic varieties

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11:10 a.m. - 12:00 noon
Science North Building 53, Room 202

Abstract

Let X, Y be subvarieties of the affine space of dimension n over a field k , and fix a polynomial f in n variables over k . We will discuss the question of finding bounds on the order of vanishing of f along the intersection $X \cap Y$ in terms of the orders of vanishing of f along X and Y . Kurano and Roberts' work on Serre's Positivity Conjecture for intersection multiplicities provides one such bound as well as our motivation for investigating this question. We will describe a sharper, more symmetric bound that follows from our generalization of Serre's dimension inequality. We will introduce the relevant tools and ideas from commutative algebra used to understand this problem, illustrating each one with concrete examples.

Dr. Sather-Wagstaff is a candidate for a tenure-track position in the
Mathematics Department at Cal Poly.