Speaker: Dino J Lorenzini

Title: The index of an algebraic variety

Abstract: Let K be a field. Suppose that the algebraic variety is given as the set of common solutions to a system of polynomials in n variables with coefficients in K. Given a solution $P = (a_1, \ldots, a_n)$ of this system with coordinates in the algebraic closure of K, we associate to it an integer called the degree of P, and defined to be the degree of the extension $K(a_1, \ldots, a_n)$ over K. When all coordinates a_i belong to K, then P is called a K-rational point, and its degree is 1. The index of the variety X/K is the greatest common divisor of all possible degrees of points on X. After recalling the definitions and several interesting examples, we will survey in this talk some recent results on the index, including how the index varies in a local family and in a global family. We will also discuss a new way of computing the index using commutative algebra.