

# Colloquium

University of Notre Dame  
Department of Mathematics

**Speaker:** Joseph Rabinoff  
Georgia Institute of Technology



**Will give a lecture entitled**

Diophantine equations to p-adic analytic geometry

**Date:** Friday, November 30, 2018

**Time:** 4:00 PM

**Location:** 117 Hayes-Healy Hall

**Departmental Tea:** Tea in Room 257 (lounge in Hurley Hall) at 3:30 p.m.

**Abstract:**

A Diophantine equation is a polynomial equation in several variables, generally with integer coefficients, like  $x^3 + y^3 = z^3$ . Provably finding all integer solutions of a Diophantine equation is a storied mathematical problem that is easy to state and notoriously difficult to solve. The method of Chabauty--Coleman is one particularly successful technique for ruling out extraneous solutions of a certain class of Diophantine equations. The method is p-adic in nature, and involves producing p-adic analytic functions that vanish on all integer-valued solutions. I will discuss work with Katz and Zureick-Brown on finding uniform bounds on the number of rational points on a curve of fixed genus, defined over a number field, subject to a (conjecturally weak) restriction on its Jacobian. The same technique also makes progress on the uniform Manin--Mumford conjecture on the size of torsion packets on curves of fixed genus.