Logic Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematics

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Thursday, April 24, 2014
2:00 PM
125 Hayes-Healy Hall

Title: Undecidable Diophantine Problems: Uniformity Questions

Abstract:

We address the question: Is there an algorithm which can decide, given a polynomial equations (in many variables), with coefficients in F_p[z] (polynomials over z, with coefficients in the finite field with p elements, p a prime), whether the polynomial has solutions in F_p(z) for almost all primes p (or for infinitely many p, or for all primes p congruent to 1 mod 4)? We will present a negative answer to this question. A critical element of the proof is the solution to an analogue of Buchi's problem, a problem in Number Theory of independent interest.

We will also address the status of the Decidability Problem for diophantine equations over the ring of holomorphic functions (analytic on the complex plane).