Colloquium

UNIVERSITY OF NOTRE DAME
Department of Mathematics

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4:30 PM
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Title: Algebraic dynamics and the model theory of difference fields.

Abstract:

A (discrete) dynamical system is a set X with a function F from X to itself. Dynamics studies orbits of F and F-invariant subsets of X, usually in the context of some further structure on X, such as a metric or a topology or. When X is the solution set of some polynomial equations and F is also given by polynomials, (X,F) is called an algebraic dynamical system. Deep theorems concerning the arithmetic of elliptic curves and abelian varieties give rise to analogous conjectures about algebraic dynamical systems, which are easier to state and (apparently) harder to prove. The model-theoretic machinery built and used by Hrushovski for the former turns out to also be useful for the latter. I will describe some of these conjectures in algebraic dynamics and some of the model-theoretic tools we used to solve them, and explain the close connection between algebraic dynamical systems and the model theory of difference fields.