Manhattan Algebra Day

Alice Medvedev

City College of New York

A refinement of Ritt's theorem on polynomial decompositions

Friday, December 6, 2013
CUNY Graduate Center, Room 4102
4:10pm

Abstract:
We all know how to factor one-variable polynomials with respect to multiplication. This talk is about factoring them with respect to composition. In his 1922 paper "Prime and composite polynomials", Ritt proves that the complete compositional decomposition of a one-variable polynomial over a field of characteristic zero is unique up to permutations, in a certain sense. Composition is highly non-commutative, so very few permutations are possible. In our recent refinement of this theorem, we make this intuition precise. We find a nearly canonical way to write a polynomial as a composition of "clusters" from which one may easily read off the possible permutations.