Mathematics, Statistics, and Computer Science **@ UIC**

Logic Seminar

Between PAC and NSOP

Daniel Hoffman (Notre Dame)

Abstract: There are several attempts to describe theories by Galois groups, and new notions of Galois group have been defined for this purpose (Shelah Galois group, Kim-Pillay Galois group, Lascar Galois group). My project goes in the other direction: instead of introducing new Galois groups, finding theories which are controlled by the "classical" Galois groups.

In the case of the theory of fields, there is a special class of fields, pseudoalgebraically closed fields (PAC fields). PAC fields were the core of research in field theory in the second half of the 20th century. Why? Because the theory of a PAC field is controlled by its absolute Galois group, so all the machinery from Galois theory can be invoked and used with success; e.g. Nick Ramsey showed that a PAC field is NSOP1 if and only if its absolute Galois group is NSOP1. Therefore it makes sense to develop model-theoretic Galois theory in the case of PAC structures, a generalization of PAC fields. With my co-authors, I obtained recently a generalization of the Elementary Equivalence Theorem for PAC structures: two PAC structures share the same first order theory provided they have isomorphic absolute Galois groups. Also Ramsey's result was generalized. In my talk, I will summarize the situation and explain connections between some results from my preprints, because combining them together gives us an algorithm for obtaining PAC structures with an absolute Galois group which can be "calculated", and so there is a prospective way to generate new examples of NSOP1 structures.

Tuesday, October 22 at 3:30 PM in 427 SEO