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

# Logic Seminar

*Elementary amenable groups and the space of marked groups*

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**Abstract:** (Joint work with Jay Williams) The space of marked groups is a cantor space that parameterizes all countable groups. This space allows for tools from descriptive set theory to be applied to group-theoretic questions. The class of elementary amenable groups is the smallest class that contains the abelian groups and the finite groups and that is closed under group extension, taking subgroups, taking quotients, and taking directed unions. In this talk, we first give a characterization of elementary amenable marked groups in terms of well-founded trees; as a consequence, elementary amenability is equivalent to a chain condition. We then show the set of elementary amenable marked groups is coanalytic and non-Borel. This gives a new, non-constructive proof of a theorem of Grigorchuk: There are amenable non-elementary amenable groups. We conclude by discussing further questions and possible generalizations of the techniques.

Tuesday, November 17 at 4:00 PM in SEO 427