Department of Mathematics and Statistics Colloquium

Introduction to Group Cohomology and the Surprise Appearance of ZFC

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Abstract: Group cohomology is a method of turning a group acting on an algebraic object into a nice, easy to understand vector space that reflects properties of the group action. If G is a free abelian group (we will define this, but it's a particularly simple type of example), then the group cohomology of G is trivial practically by definition. One of the most surprising and weird results in this area is that the answer to the obvious next question: "Does group cohomology being trivial imply that the group is free abelian?" is independent of the Zermelo-Fraenkel Choice set theory axioms! [Shelah 1974] This talk will contain an introduction to and motivation for group cohomology along with some history and set theory with the goal of communicating just why this result is so surprising.

Monday, October 29 at 3:50 in Roop 103

Refreshments at 3:30