



Speaker: Roger Zierau
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Wednesday, April 13, 2016

4:00 PM

117 Hayes-Healy Hall

Title: Invariants of Representations of Lie Groups

Abstract:

A representation of a group is a homomorphism from the group into the group of invertible linear transformations of a vector space. For example we often think of the dihedral group as some reflections and rotations in euclidean space; this is really a homomorphism from the dihedral group into the group of orthogonal linear transformations. The groups considered in this lecture are reductive Lie groups; these are groups like $SO(n)$, $SL(n, \mathbb{R})$ and $Sp(2n, \mathbb{R})$. The representations will satisfy some continuity condition and the vector space might be a Hilbert space. The lecture will focus mostly on the irreducible representations (the building blocks of all representations). There are a number of invariants, from the dimension (typically infinite) to the 'global character' (an exceedingly complicated distribution). We will consider two invariants, the 'associated cycle' and the 'Dirac Index'. The definitions themselves are quite interesting and somewhat elementary. We will see one way in which these two invariants are related to each other and what they can tell us about representations.