

Department of Mathematics and Statistics
Colloquium Announcement

**“Multiplicity Problems in Representation Theory of
Lie algebras”**

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Abstract: Representation theory is a branch of mathematics that studies abstract algebraic structures such as groups or associative algebras by representing their elements as linear transformations of vector spaces. If the vector space is finite-dimensional this is equivalent to representing the elements as matrices while the abstract operations among elements become the usual matrix operations. The applications of representation theory are diverse, ranging from the abstract structure theory of groups to Fourier analysis and touching many subareas of physics. Lie algebras are a type of algebras named after the mathematician Sophus Lie which arose as Lie considered an approach to studying differential equations by exploring their symmetries.

In this talk we will give an elementary introduction to representation theory and we will then discuss some aspects of representation theory of Lie algebras - the so-called multiplicity problems - which have very strong intersection with combinatorics and which are relevant in other areas, especially in theoretical physics. We will end the talk by briefly mentioning our research work on related topics done in collaborations with V. Chari and D. Jakelic.

Date: February 12, 2010

Time: 1:00 p.m.

Teatime: 2:00 p.m.

Location: 206 Bear Hall