

MATH 731 Lie Groups and Lie Algebras

Fall 2019 Syllabus

Tue Thu 2-3:15 CAS 221

Instructor: Siu-Cheong Lau
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Office hours: Wednesday 10-12; 2-4.

Overview:

Classical Lie groups, associated Lie algebras, exponential map, closed subgroups and homogeneous spaces, classification of simple Lie algebras, and elementary representation theory.

Prerequisites:

Graduate differential geometry.

Textbook:

Hall - Lie groups, Lie algebras and representations, An Elementary Introduction

Homework:

We will have homework weekly. Late homework will not be accepted. Students may discuss homework with each other (and are encouraged to do so) but all written work must be prepared independently.

Presentation:

Towards the end of the course, each student will give a 20-minute presentation on his favorite Lie group. You can talk about topological structures, representations, root systems, applications, or any other meaningful topics about your favorite Lie group.

Exam:

There will be one take-home final exam.

Grading:

Homework	45%
Presentation	15%
Take-home final exam	40%