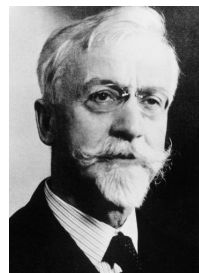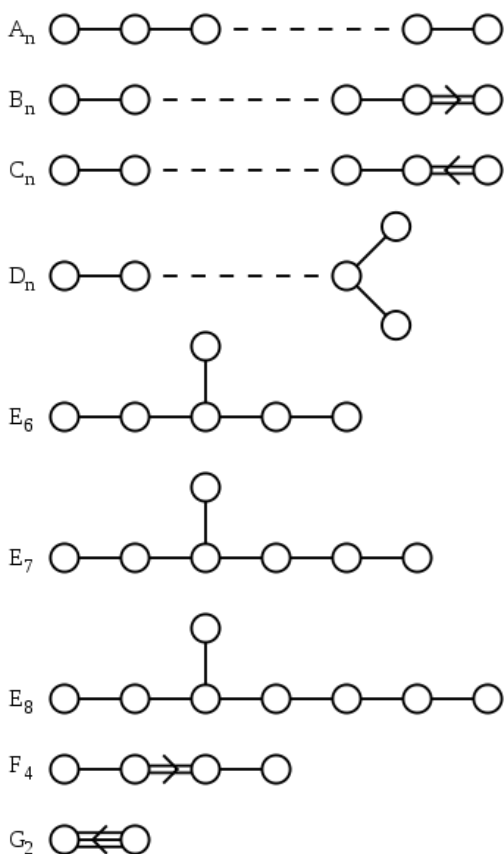# WILLIAM & MARY

DEPARTMENT OF MATHEMATICS

Math 410:
Introduction to Lie Algebras

Fall 2018

Meetings: Mondays at 3:30pm in Jones 131

Instructor: Dr. Pierre Clare (130 Jones Hall)

Lie algebras were introduced 150 years ago to investigate *infinitesimal transformations* and the symmetries of differential equations. They appear in fields such as:

- Group Theory
- Number Theory
- Classical Mechanics
- Quantum Mechanics
- ...

In this seminar, we will observe them in the wild, study their basic properties and classify the building blocks of the theory by means of diagrams.

Prerequisites: Math 307, fluent matrix multiplication skills, permission of the instructor.

The information below is given tentatively and subject to changes during the term. The course page can be found at `prclare.people.wm.edu/m410f18` and will be regularly updated.

General Organization

Last day to add/drop	Sep. 7
Fall Break	Oct. 13 - 16
Last day to withdraw	Oct. 26
Midterm papers due	Nov. 5
Thanksgiving Break	Nov. 21 - 25

References

- *Notes on Lie Algebras*, by H. Samelson

- *Introduction to Lie Groups and Lie Algebras*, by A. Kirillov Jr.

Course objectives and evaluation

The purpose of this course is to coordinate a collective effort by the participants to learn the basic theory of Lie Algebras. Every week's topic will be announced in advance for everyone to read ahead of time.

Each participant will be expected to present at least twice during the term. The instructor will be available for individual meetings in order to prepare the talks.

Final grades will be based on class participation and the quality of the presentations.

Schedule

Date	Speaker	Topic
Sep. 03	PC	Lie groups and infinitesimal transformations
Sep. 10	TBA	TBA
Sep. 17	TBA	TBA
Sep. 24	TBA	TBA
Oct. 01	TBA	TBA
Oct. 08	TBA	TBA
Oct. 15		**Fall Break**
Oct. 22	TBA	TBA
Oct. 29	TBA	TBA
Nov. 05	TBA	TBA
Nov. 12	TBA	TBA
Nov. 19	TBA	TBA
	Thanksgiving Break	
Nov. 26	TBA	TBA
Dec. 03	TBA	TBA

Academic Integrity

The **Honor Code** applies to all activities related to this course.The **Honor System** is responsible for resolving any suspected violations of the Honor Code. Do not hesitate to ask the instructor beforehand if you have any questions as to whether some action would be compatible with the Honor Code.

ADA Considerations

Students with disabilities who will be taking this course and may need disability-related accommodations are encouraged to make an appointment to see their instructor as soon as possible.

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis

should contact Student Accessibility Services staff at 757-221-2512 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. Visit **wm.edu/sas** for more information.