

## MTH641A: FCH

INSTRUCTOR: SANTOSH NADIMPALLI

### 1. COURSE DETAILS

1.1. **Objective.** This course will be about Lie groups and Lie algebras. We will essentially cover first 2-3 chapters of Helgason and then some representation theory of complex semisimple Lie algebras.

1.2. **Books.** I suggest the following books: Serre: Complex semisimple Lie algebras.

Helgason: Differential geometry, Lie groups, and symmetric spaces.

Kirillov's book on Lie groups and Lie algebras.

For future use and your own good, please refer to Bourbaki Lie groups and Lie algebras. Exercises are highly recommended.

1.3. **Timing.** Timings will be decided after the first meeting, which will be on Thursday 4PM-5PM in the lecture hall designated to us, i.e., T209. I need 2 hours for a lecture.

1.4. **Lecture notes.** I will post handouts and notes on my webpage.

1.5. **Tutorials.** Please solve all the exercises in the lecture notes and you may ask your questions on these exercises during office hours and at the beginning of each lecture.

1.6. **Office Hours.** Will be decided once we fix lecture schedule.

1.7. **Exams.** There will be a midsem and an endsem exam (40:60). Midsem will be a take home exam and the Endsem will be a written exam perhaps of 3-4 hours duration. Grades will be decided based on final performance. However,  $A^*$  will only be given to students who score above 94, and  $A$  above 84. Grades will be based on relative performance. To pass the score you will need 30 points.