

Representations of Lie Groups 18.757

This will be an introduction to representation theory, intended for tourists as well as for prospective citizens. You will need only a good undergraduate background in algebra and analysis; no previous courses in Lie groups or Lie algebras are necessary if you are willing to believe a few things. A central goal of the course will be the theorems of Peter-Weyl and Cartan-Weyl describing the representations of compact Lie groups and what to do with them. I hope also to include some excursions (abelian groups and Pontriagin duality, groups over local fields, and harmonic analysis, for example). The text will be Anthony Knapp's *Lie Groups Beyond an Introduction*, with emphasis on Chapters IV, V, and IX. Three other nice references are the Springer Graduate Texts in Mathematics *Representations of compact Lie groups* by Bröcker and tom Dieck, *Representation Theory* by Fulton and Harris, and *Introduction to Lie algebras and representation theory* by Humphreys.

I will assign a few problems in the course of each week, generally to be collected the following Tuesday.

Time: Tuesday and Thursday 1:00–2:30, 2-143

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Office hours: Monday and Tuesday 3:00–4:00 (or any time).