

Lecturer: David Vogan (Massachusetts Institute of Technology)

Title: Representations of simple Lie groups

Abstract: The most powerful idea for studying representations of a group is to study restriction to a normal subgroup. A simple Lie group G has (almost) no normal subgroups, so one needs to modify this idea. The next best thing is to find some large subgroup H of G , and to study both the restriction of the representation to H , and the collection of all conjugates of H in G .

Two examples of such subgroups are a maximal compact subgroup K , and a parabolic subgroup P . I will emphasize the first: how to study representations of G using their restriction to K . But parabolic subgroups inevitably appear along the way.

One goal of the subject is to describe irreducible unitary representations of G in geometric terms. I will describe some of what is known about that, and what still remains to be understood.