

LUNCH SEMINAR FOR GRADUATE STUDENTS

Unitary Group Representations

DAVID VOGAN
(MIT)

ABSTRACT:

One of the basic questions in abstract harmonic analysis is the *unitary dual problem*: given a group G , what are all the possible ways that G can act by unitary operators on a Hilbert space? In this lecture I'll try to explain four things, concentrating on the special case of the group $GL(n, \mathbb{R})$ of invertible real matrices.

First, why this is an interesting problem.

Second, Kostant and Kirillov's explanation of why this problem ought to have (more or less) the same answer as the linear algebra problem of classifying similarity classes of $n \times n$ real matrices.

Third, the unitary representations of $GL(n, \mathbb{R})$ associated to the nilpotent matrices corresponding to any partition of n .

Fourth, I'll explain why (to wit, the failures of generations of your predecessors) I can *only* give this talk about $GL(n)$, and not about other simple Lie groups.

MONDAY OCTOBER 4, 2010

12:00 Noon

Building 2, Room 147

*Pizza and beverages at 1:00 PM
Building 2, Room 290*

<http://math.mit.edu/seminars/lunchseminar>