Vol. 49, No. 4 DUKE MATHEMATICAL JOURNAL © December 1982

IRREDUCIBLE CHARACTERS OF SEMISIMPLE LIE GROUPS IV. CHARACTER-MULTIPLICITY DUALITY

DAVID A. VOGAN, JR.

CONTENTS

1. Introduction. Let G be a real linear reductive Lie group. (It is important to allow G to be disconnected; precise hypotheses on G are formulated in section 2.) To each irreducible admissible representation of G, Langlands in [17] has associated a natural induced representation, of a kind we will call *standard*. Roughly speaking, the standard representations are non-unitarily induced from discrete series representations. This association sets up a bijection between the irreducible representations and the standard ones. Write $\bar{\pi}$ for the irreducible representation corresponding to the standard representation π. The standard representations are fairly well understood—much better, at least, than the irreducible representations. One way to describe irreducible representations is to write them as (finite) integer combinations of standard representations, in an appropriate Grothendieck group. That is, we look for an expression

$$\bar{\pi} = \sum_{\rho \text{ standard}} M(\rho, \bar{\pi})\rho \qquad (M(\rho, \bar{\pi}) \in \mathbf{Z}). \tag{1.1}$$

Received June 14, 1982. Supported in part by an NSF grant MCS-8202127.