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On the unitary dual of the classical Lie groups. II: Representations of $SO(n, m)$ inside the dominant Weyl chamber. (English) Zbl 0782.22010

Compos. Math. 86, No. 2, 127-146 (1993).

There is the conjecture due to Vogan that a unitary representation of a real reductive Lie group can be obtained by cohomological parabolic induction from a special unipotent representation of a subgroup. If the integral infinitesimal character is regular then the special unipotent representations involved are one dimensional, and the conjecture says: Suppose X is an irreducible unitary Harish-Chandra module of G whose infinitesimal character minus half the sum of the positive roots is dominant. Then there are a θ -stable parabolic subalgebra \mathfrak{q} of the complexified Lie algebra \mathfrak{g} and a unitary one dimensional character λ of the Levi subgroup L of \mathfrak{q} such that X is isomorphic to the Zuckerman module $R_{\mathfrak{q}}^{\theta}(\mathbb{C}_{\lambda})$.

In part I [ibid. 68, 251-303 (1988; [Zbl 0692.22007](#))] this conjecture was proved when G is $SL_n(\mathbb{R})$, $Sp_n(\mathbb{R})$ or $SU(p, q)$. The paper under review deals with the case $SO(n, m)$. The proof is by reduction to a subgroup of G of smaller dimension. The main tool used is the Dirac operator inequality as e.g., stated in Part I.

Reviewer: [J.Schwermer \(Eichstätt\)](#)

MSC:

- [22E46](#) Semisimple Lie groups and their representations
- [22E30](#) Analysis on real and complex Lie groups
- [22E15](#) General properties and structure of real Lie groups

Cited in **2** Documents

Keywords:

unitary representation; real reductive Lie group; cohomological parabolic induction; special unipotent representations; irreducible unitary Harish-Chandra module; positive roots; complexified Lie algebra; Zuckerman module; Dirac operator inequality

Full Text: [Numdam](#) [EuDML](#)

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