Abstract

We study the branching laws when representations given by the analytic continuation of the scalar holomorphic discrete series for a semisimple Hermitian Lie group, G, are restricted to a symmetric subgroup. The symmetric subgroups we consider are the fixed point groups for the lifts to G of antiholomorphic involutions on the corresponding bounded symmetric domain G/K. We prove a general theorem stating that a multiplicity free direct integral decomposition always exists. Explicit decomposition theorems are given for some of the given representations for three of the four types of classical bounded symmetric domains. The methods that are used include explicit intertwining operators and the spectral decomposition of an associated Casimir operator.

We also consider the quaternionic discrete series for the group $Sp(1,1)$. A generalised Szegö map is used to compute highest weight vectors for K-types in a homogeneous vector bundle model.

Keywords: Lie groups, unitary representations, branching law, bounded symmetric domains, hypergeometric functions, quaternionic structure, discrete series representations, Szegö map

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