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Birgit Speh* (bes12@cornell.edu). *Branching laws for representations of a non compact orthogonal group.*

Finite dimensional representations of classical groups were first treated systematically by Hermann Weyl in his famous book “The classical groups, their Invariants and Representations” 80 years ago. He classified in this book the irreducible representations $\Pi : SO(n) \rightarrow \text{Aut}(V)$ for finite dimensional vector space V . H. Weyl also considered the restriction of an irreducible representation to a subgroup and proved that the restriction of a finite dimensional representation is direct sum of finite dimensional representations. In 1938 famous branching rules describing for an irreducible representation Π of $SO(n)$ and an irreducible representation π of $SO(n-1)$ the multiplicity $\dim \text{Hom}_{SO(n-1)}(\Pi, \pi)$ were proved. A noncompact orthogonal group $SO(p, q)$ has also infinite dimensional irreducible representations. Unfortunately the restriction of an infinite dimensional representation of $SO(p, q)$ to a subgroup $SO(r, s)$ is often not a direct sum of irreducible representations. In this talk I will show that for infinite dimensional representations Π of $SO(n, 1)$ and infinite dimensional representations π of $SO(n-1, 1)$ we obtain very similar branching laws for $\dim \text{Hom}_{SO(n-1)}(\pi, \Pi)$ although the restriction of the representations is not a direct sum of irreducible representations. (Received September 18, 2019)