A new Fischer decomposition for symplectic spinor-valued polynomials and branching rules

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March 09, 2022
16:00-17:00h on campus in M.G.005
Analysis & Geometry Seminar, Antwerpen

An important tool in understanding the representation theory for a Lie algebra g is the study of restrictions of an irreducible representation for g to a Lie sub algebra h. This so-called *restricted representation* will in general no longer be irreducible as it decomposes into a direct sum of h-irreducible representations for the sub algebra. The algebraic tool which allows us to describe which irreducible summands show up and what their multiplicities are, is called a branching rule.

In this talk we will in particular focus on the spaces of homogeneous solutions for the symplectic Dirac operator (known as symplectic monogenics) as they provide models for irreducible sp(2m)-representations of infinite dimension. In detail, we will focus on the k = 1 case and derive the branching of these modules with respect to the sub algebra so(m). To arrive at this result we will use the notion of a transvector algebra and tensor products of Verma modules.