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Tobias Pecher* (pecher@mi.uni-erlangen.de). *Multiplicity-free Super Vector Spaces.*

The action of a reductive group G over \mathbb{C} on a super vector space V is called (G, V) *multiplicity-free (MF)* if the G -module decomposition of the supersymmetric algebra on V contains all irreducible representations of G with multiplicity ≤ 1 .

Algebraically, this definition is just the supersymmetric generalization of a MF vector space. These spaces are exactly the *spherical* G -modules, i.e. those representations of G that possess an open orbit of a Borel subgroup. For arbitrary super vector spaces, this criterion fails. What remains true is their characterization in terms of the G -invariant differential operators $\mathbb{P}\mathbb{D}(V)^G$: The multiplicity-freeness of V is equivalent to the commutativity of $\mathbb{P}\mathbb{D}(V)^G$.

Our investigations of MF super vector spaces are motivated by the relative simple description of these operators in this case. In this talk we indicate the relevance of MF super vector spaces in invariant theory and also present their classification. This list shows a certain duality between symmetric and exterior algebras and thus MF super vector spaces seem to be much more related to spherical varieties than one might expect a priori. The main aim of our talk is to give attention to this phenomenon. (Received February 28, 2011)