

© 2004 Heldermann Verlag

Journal of Lie Theory 14 (2004) 523–535

E. M. Moens, Joris Van der Jeugt

On Dimension Formulas for $\mathfrak{gl}(m|n)$ Representations

We investigate new formulas for the dimension and superdimension of covariant representations V_λ of the Lie superalgebra $\mathfrak{gl}(m|n)$. The notion of t -dimension is introduced, where the parameter t keeps track of the \mathbb{Z} -grading of V_λ . Thus when $t = 1$, the t -dimension reduces to the ordinary dimension, and when $t = -1$ it reduces to the superdimension. An interesting formula for the t -dimension is derived from a recently obtained new formula for the supersymmetric Schur polynomial $s_\lambda(x/y)$, which yields the character of V_λ . It expresses the t -dimension as a simple determinant. For a special choice of λ , the new t -dimension formula gives rise to a Hankel determinant identity.