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Generalized exponents for the children of the spinor representation of B_n

To any representation $(\sigma,\, V)$ of a semisimple Lie algebra $\mathfrak{g}$. Author introduced in [1] a so-called classical family algebra $Cl_\sigma(\mathfrak{g}) = \big(S(\mathfrak{g})\otimes\operatorname{End}V\big)$. One of the goals was the computation of generalized exponents for irreducible $\mathfrak{g}$-submodules of $\operatorname{End}V$, which are called "children" of σ.

In my talk I'll speak about recent joint results with A.Rupinski, which suggests an explicit formula for the generalized exponents of all children of the spinor representation σ of the simple Lie group $\mathfrak{g}$ of type $\mathbf{B_n} \simeq so(2n+1)$. These children include all fundamental representations of $\mathfrak{g}$ except the last one and one representation with the highest weight $2\omega_n$. Note, that the known results allow only obtain a very beautiful but even more impractical formula for the generalized exponents (Hesselink formula), which reduced the problem to the summation of about $2^{(n-1)} \cdot n!$ polynomials in q with are defined by rather involved combinatorial procedure.

References

[1] Kirillov A.A. Introduction to Family Algebras, Moscow Math.J., vol.1, No1 (2001), 27-41.