Bounded modules for finite-dimensional Lie superalgebras.

Abstract:

Let $g$ be a basic classical Lie superalgebra. A weight module is called bounded if the dimensions of its weight spaces are uniformly bounded. Theorems of Fernando-Futorny and Dimitrov-Matheiu-Penkov reduce the classification of irreducible bounded modules to the classification of irreducible bounded highest weight modules $L(\lambda)$. For Lie algebras the bounded modules $L(\lambda)$ were classified by O. Mathieu. They exist only for the series $A$ and $C$. For Lie superalgebras $L(\lambda)$ have been classified in all cases except for five series of low-rank orthosymplectic superalgebras. Using the Enright functor, I will show how the boundness of $L(\lambda)$ over $g$ can be reduced to the boundness over simple Lie algebras and the orthosymplectic algebra $osp(1|2n)$. This work is a joint project with D. Grantcharov.