

Title: Integrable representations of root-graded Lie algebras

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Abstract: The essential feature of a root-graded Lie algebra L is the existence of a finite-dimensional split semisimple subalgebra \mathfrak{g} with respect to which L is an integrable module, thus inducing a grading of L by the weight lattice of \mathfrak{g} . One further assumes that the weights of L are "not too far away" from the roots of \mathfrak{g} . Examples are map algebras (tensor products of \mathfrak{g} and a commutative associative algebra), Lie algebras of matrices over not necessarily commutative associative algebras and finite-dimensional isotropic central-simple Lie algebras.

The category of integrable representations of L , whose weights are bounded by an integral dominant weight of \mathfrak{g} , are closely related to the module category of an associative algebra. I will describe this algebra for some of the examples mentioned above. The results unify previous work of Vyjayanthi Chari and her collaborators on map algebras and of George Seligman on isotropic central-simple Lie algebras.

The talk is based on joint work with Nathan Manning and Hadi Salmasian.