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Representations of the Drinfel'd Doubles of a Family of Hopf Algebras.

The “family” in the title consists of liftings of the nilpotent type of Quantum linear spaces. There is a body of work treating parametrization of simple modules of the Drinfel'd doubles of biproducts by the characters of its group of grouplikes reminiscent of the Curtis - Lusztig's theorems for the restricted envelops of classical Lie algebras and their (neo)classical quantum analogs. Our main concern, though, is with nontrivial liftings, i.e. the ones that are not biproducts. Representation theory of the doubles of these algebras requires new techniques.

We show that the simple modules are still in 1-1 correspondence with the characters of a suitable subalgebra of the double. Under a mild restriction on the underlying datum we determine dimension of every simple module. This is achieved via construction of a Verma - type modules for the double. We determine the Loewy and the socle series of the latter. For a subclass of liftings with the property that the sum of the cyclic subgroups generated by the grouplikes of the datum is direct we describe the lattice of submodules of every Verma - type module.

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