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Generalized reduction algebras

Reduction algebras are known by many names, including step algebras, Mickelsson algebras, Zhelobenko algebras, and transvector algebras. They are constructed out of an algebra map $U(\mathfrak{g}) \to A$ from an enveloping algebra of a reductive Lie algebra to an associative algebra. There are also super and quantum analogs. Their defining property is that they act on the space of singular vectors V^+ in any A-modules V. They are therefore closely related to the branching rule $A \downarrow U(\mathfrak{g})$ and intertwining operators.

In this talk we present some recent work on a generalization of the notion of reduction algebras where the enveloping algebra can be replaced by some other algebra without a triangular decomposition, such as the $\imath$quantum group $U_q'(\mathfrak{so}_n)$.