

- Milen Yakimov (Northeastern) - Quantum supergroups at roots of unity

Abstract: In a fundamental sequence of works from the 1990s, De Concini, Kac and Procesi constructed a Poisson geometric framework for the study of the irreducible representations of big quantum groups at roots of unity. We will describe an extension of this framework to all contragredient quantum supergroups at roots of unity. The approach of De Concini, Kac, and Procesi relied on a reduction to rank two cases, which is not possible in the super case since there are 13 kinds of additional Serre relations on up to 4 generators. We use a new approach that relies on Nichols algebras and perfect pairings between restricted and non-restricted integral forms. In particular, this gives new proofs of the classical results, independent on Serre relations. The methods apply to a larger, axiomatically defined class of algebras (consisting of the Drinfeld doubles of diagonal pre-Nichols algebras that have 1-parameter deformations). This class includes the quantizations in characteristic 0 of the 34-dimensional Kac-Weisfeiler Lie algebra in characteristic 2 and the 10-dimensional Brown Lie algebra in characteristic 3. This is a joint work with Nicolas Andruskiewitsch and Ivan Angiono (University of Cordoba).