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Letter to Editor

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Matchings in Abelian Groups and Vector Subspaces of Fields: Results and Questions

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Letter to Editor

We develop a super representation for the quantum queer supergroup using particular quantum differential operators Uυ(qn). This representation's underlying space is a deformed polynomial superalgebra in 2n2 variables, the homogeneous components of which can be utilised as the underlying spaces of queer q-Schur superalgebras. The representation is then extended to its formal power series algebra, which includes a (super) submodule that is isomorphic to regular representation Uυ(qn). The proof of the isomorphism relies heavily on a monomial basis M for Uυ(qn). We can express the quantum queer supergroup Uυ(qn) in this fashion, using a new basis L and some explicit multiplication formulas from the generators. Using the above-mentioned homogeneous components, analogous presentations may be generated for queer q-Schur superalgebras.

The presence of the bases M and L, as well as the new presentation, demonstrate that Beilinson–Lusztig–fundamental MacPherson's construction of quantum gln, which was established thirty years ago, extends to this "queer" quantum supergroup via an entirely different technique.

Other authors recently presented a construction of a class of algebraic structures with features remarkably similar to the Hopf algebroids H over a noncommutative base A. His examples include a balancing subalgebra B of H⊗H, which contains the image of the coproduct and is such that the intersection of B with the kernel of the projection H⊗H→H⊗AH is a two-sided ideal in B that is also well behaved with respect to the antipode. We present a set of abstract axioms that cover this construction and compare it to Lu's Hopf algebroids in detail. We show that this new set of axioms can be transformed into any scalar extension Hopf algebroid. We show how G. Böhm's insight that Hopf algebroids generated from weak Hopf algebras fit into our framework. Finally, we look at how the balancing subalgebra changes when associative bialgebroids are twisted by invertible 2-cocycles using the Drinfeld-Xu approach.

The Houghton bunches H1,H2,… are a group of boundless gatherings. In 1977 Wiegold showed that H3 was invariably generated (IG) however H1⩽H3 was not. A natural inquiry is then whether the bunches H2,H3,… are all IG. Wiegold additionally finishes by saying that, in the models he had found of an IG bunch with a subgroup that isn't IG, the subgroup was never of limited list. Another regular inquiry is then whether there is a subgroup of limited file in H3 that isn't IG. In this note we demonstrate, for each n∈{2,3,… }, that Hn and all of its limited record subgroups are IG. The free work of Minasyan and Goffer-Lazarovich casings this note pleasantly: they showed that an IG gathering can have a limited file subgroup that isn't IG.

A matching from a limited subset An of an abelian gathering to another subset B is a bijection f:A→B with the property that a+f(a) never lies in A. A matching is called non-cyclic in the event that it not entirely settled by its assortment work. Inspired by an issue of E. K. Wakeford on sanctioned structures for symmetric tensors, the investigation of matchings and non-cyclic matchings in abelian bunches was started by C. K. Fan and J. Losonczy in, and was subsequently summed up to the setting of vector subspaces in a field augmentation. We talk about the non-cyclic coordinating and feeble non-cyclic matching properties and we give results on the presence of non-cyclic matchings in limited cyclic gatherings. Concerning field augmentations, we totally arrange field expansions with the direct non-cyclic matching property. The similarity between matchings in abelian gatherings and in field augmentations is featured all through the paper and various open inquiries are introduced for additional request.

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