

The higher rank q -deformed Bannai-Ito and Askey-Wilson algebra

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The q -deformed Bannai-Ito algebra was recently constructed in the threefold tensor product of the quantum superalgebra $\mathfrak{osp}_q(1|2)$. It is isomorphic to the Askey-Wilson algebra under suitable transformation of the parameter q . In this talk I will extend these results to higher rank using the Hopf algebraic structure and some additional morphisms. The proposed algorithm embeds the higher rank q -Bannai-Ito algebra in the tensor product of n copies of $\mathfrak{osp}_q(1|2)$. By the established isomorphism in the rank one case, this equally yields a higher rank version of the Askey-Wilson algebra. We will consider an explicit realization in terms of q -shift operators and reflections, which we will call the \mathbb{Z}_2^n q -Dirac-Dunkl model. The higher rank q -Bannai-Ito algebra arises as the symmetry algebra of a \mathbb{Z}_2^n q -Dirac-Dunkl operator and acts irreducibly on modules of its polynomial null-solutions. An explicit basis for these modules can be constructed using a q -deformed CK-extension and Fischer decomposition.

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