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Towards covariant particle exchange in kappa-deformed quantum field theory

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Abstract:

In seeking to construct quantum field theories with kappa-deformed Poincare symmetry, one important ingredient is a notion of particle exchange, and hence of identical particles. Such a notion will encode the correct modification to the usual algebra of creation/annihilation operators acting on the Fock vacuum, and is necessary if the counting of states is to agree with the undeformed case. Defining the exchange of identical particles in a covariant fashion amounts to finding certain intertwiners of tensor products of single-particle representations, and the noncocommutative coalgebra of kappa-Poincare means that this poses an interesting challenge. I will discuss some recent work on this topic, and argue that it is possible to realize the symmetric group S_N on the N-fold tensor product of single-particle states.

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