

Generalized Schur –Weyl duality and symmetries of integrable spin chains

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Abstract

Quantum integrable spin chains usually have an underlying dynamical symmetry algebra. This can be just a Lie algebra, for isotropic models, or a quantum group, for anisotropic spin chains. Since corresponding Hamiltonians commute with global generators of the symmetry algebra, they belong to a centralizer algebra of the symmetry algebra. In many cases these two algebras give multiplicity free decomposition of the state space into irreducible representations of these algebras. As a consequence one gets the structure of the multiplets and degeneracy of the spectra of the Hamiltonians. Examples of the centralizer algebras are: group algebra of the symmetric group, its deformation - Hecke algebra, the Brauer algebra and its deformation - Birman-Wenzl-Murakami algebra.