

On (gl_k, gl_n) duality for the Gaudin model and the bispectral duality

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The direct sum of Lie algebras gl_k and gl_n acts naturally on the symmetric and exterior algebras of the space C^{kn} (the spaces of polynomials in kn (anti)commuting variables). This action gives rise to isomorphisms of algebras of commuting Hamiltonians of the gl_k Gaudin model and the gl_n Gaudin model. The Bethe ansatz computes the spectra of those commutative algebras via monodromy-free ordinary differential operators with appropriate regular singularities at finite points and an irregular singularity of order 1 at infinity. It turns out that the (gl_k, gl_n) duality corresponds to the bispectral duality for differential operators in the case of symmetric algebra. For the case of the exterior algebra, the bispectral duality is combined with a kind of inversion of differential operators.