Talk 6, 9:50–

Integrable particle systems on the lattice and the continuum: methods and results for thermodynamical properties

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We present results for the thermodynamical properties of graded quantum spin systems with $su(2|1)$ and $su(2|2)$ symmetry. We are particularly interested in the supersymmetric tJ-model and the EKS model describing interaction and hopping of single electrons and pairs.

The main focus of the presentation is on methods for "truncating" the infinitely many thermodynamical Bethe ansatz equations to a finite set of exact and useful integral equations. The alternative methods are based on a lattice path integral formulation and suitable algebraic properties of the quantum transfer matrix.

The methods as presented are directly applicable to lattice systems. In the latter part of the talk a strategy is suggested for including integrable continuum models. In detail, the well-known Bose gas with delta function interaction is studied as a continuum limit of the spin-1/2 Heisenberg chain. Here we rederive the expressions for the free energy of the Bose gas and present novel results on a generating function for correlations.