

"Baxter Q-operators and tau-function for quantum integrable spin chains"  
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Abstract

The Baxter Q-operators were introduced by Baxter when he solved the 8-vertex model. His method of the Q-operators is recognized as one of the most powerful tools in quantum integrable systems.

Our goal is to construct the Q-operators systematically. For this purpose, we consider an embedding of the quantum integrable system into the soliton theory. The key object is the master T-operator (tau-function in the soliton theory), which is a sort of a generating function of the transfer matrices. The Q-operators are defined as residues of the master T-operator.

The Q-operators can also be defined as the trace of monodromy matrices, which are product of some L-operators. In general, such L-operators are image of the universal R-matrix for q-oscillator representations of a Borel subalgebra of the quantum affine algebra. I will also talk about the construction of such L-operators for the Q-operators for the quantum affine superalgebra  $U_q(\mathfrak{gl}(M|N)^\wedge)$ .

References:

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