Mathematical Physics

Generalized q-Onsager Algebras and Dynamical K-matrices

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A procedure to construct K-matrices from the generalized q-Onsager algebra $\cO_{q}(\hat{g})$ is proposed. This procedure extends the intertwiner techniques used to obtain scalar (c-number) solutions of the reflection equation to dynamical (non-c-number) solutions. It shows the relation between soliton non-preserving reflection equations or twisted reflection equations and the generalized q-Onsager algebras. These dynamical K-matrices are important to quantum integrable models with extra degrees of freedom located at the boundaries: for instance, in the quantum affine Toda field theories on the half-line they yield the boundary amplitudes. As examples, the cases of $\cO_{q}(a^{(2)}_{2})$ and $\cO_{q}(a^{(1)}_{2})$ are treated in details.

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