

## Vertex operator approach to semi-infinite lattice models

Vertex operator approach is a powerful method to study exactly solvable models directly in the thermodynamic limit. In this talk we review recent progresses of vertex operator approach to semi-infinite lattice models. (1) The first progress is a generalization of the boundary condition. We study the  $XXZ$  spin chain with a triangular boundary. Bosonizations of the boundary vacuum states are realized. Integral representations of correlation functions and form factors are proposed using bosonizations. As an application,  $q$ -series formulae of the boundary expectation values  $\langle \sigma_1^\pm \rangle$  are derived. Exploiting the spin reversal property, relations between  $n$ -fold integrals of elliptic theta functions are conjectured. (2) The second progress is a generalization of the symmetry. We study the elliptic  $U_{q,p}(\hat{sl}_N)$  lattice model with diagonal boundary condition, which gives an elliptic deformation of the higher-rank  $XXZ$  spin chain. Bosonizations of the boundary vacuum states are realized. Integral representations of correlation functions are proposed using bosonizations. Exploiting the spin reversal property, relations between  $n$ -fold integrals of double-infinite products are conjectured.

References :

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