FERMIONIC BASIS OF LOCAL OPERATORS IN QUANTUM INTEGRABLE MODELS

Michio Jimbo
Rikkyo University

For the integrable 6 vertex model, the expectation values of local operators are known to be given by complicated multiple integrals. We show that there exists a basis of (quasi-)local operators for which the expectation values simplify drastically. Such a basis is constructed out of a simple 'tail' operator (analogous to the disorder field in the Ising model) by acting with integrals of motion and a newly introduced set of fermions. The expectation values for their generating functions are given by determinants with explicit entries. This fermionic structure is present at a *generic* coupling, away from the usual 'free fermion point'.

Taking the continuum limit to CFT and the sine-Gordon model, we formulate conjectural explicit formulas for the one-point functions of all descendant fields in both cases, generalizing the remarkable formulas due to Lukyanov, Zamolodchikov and others. We argue also that at the level of form factors our fermions coincide with yet another fermions which have been introduced some time ago by Babelon, Bernard and Smirnov.

This talk is based on a series of joint works with H. Boos, T. Miwa, F. Smirnov and T. Takeyama.

Keywords: XXZ model, sine-Gordon model, one-point function