ICM 1998, Berlin, Aug. 18–27

Abstracts of Plenary and Invited Lectures

Section:

0. Plenary Lectures

1991 MS Classification: 81, 82
Miwa, Tetsuji, RIMS, Kyoto University, Japan
Algebraic Analysis of Solvable Lattice Models

The study of solvable lattice models in statistical mechanics started with the pioneering works by Bethe and Onsager more than 50 years ago. Solvability of the models means that we can compute physical quantities in closed form. Models in statistical mechanics are systems of infinite degrees of freedom. The basic question was why such systems can be solvable. People gradually realized that the infinite dimensional symmetries of the models answer this question. The birth of quantum groups brought an appropriate tool to describe such symmetries, and gave a connection between the solvable lattice models and the representation theory. In this talk, I will explain how to solve "solvable" models by using the representation theory of the quantum affine algebras.
References: Michio Jimbo and Tetsuji Miwa, Algebraic Analysis of Solvable Lattice Models, *CBMS Regional Conference Series in Mathematics,* **85** 1995, AMS, Providence, Rhode Island.