

Séminaire de physique mathématique

Lundi 24/06/2019, 11h00-12h00

Orme des Merisiers Salle Claude Itzykson, Bât. 774

On quantum separation of variables

Jean-Michel Maillet

A new approach to construct the separate variables basis leading to the full characterization of the transfer matrix spectrum of quantum integrable lattice models will be presented. The basis is generated by the repeated action of the transfer matrix itself on a generically chosen state of the Hilbert space. The fusion relations satisfied by the transfer matrix, stemming from the Yang-Baxter algebra properties, provide the necessary closure relations to define the action of the transfer matrix on such a basis, leading to a separate transfer matrix spectral problem. As a first example of this approach, the construction of such a basis for models associated to $Y(\mathfrak{g} | \mathfrak{n})$ will be given. Then this general scheme will be applied concretely to fundamental models associated to the $Y(\mathfrak{g} | 2)$ and $Y(\mathfrak{g} | 3)$ R-matrices leading to the full characterization of their spectrum. Other examples that can be treated by this method like trigonometric spin chains, open chains with general integrable boundaries, and further higher rank cases will be briefly discussed.
