Grupo de Física Matemática
da Universidade de Lisboa

SEMINÁRIO DE FÍSICA-MATEMÁTICA

Dia **28 de Maio de 2010** (sexta-feira), às **15h15m**, na **Sala B1-01**

"Generalized Schur-Weyl duality and symmetries of integrable spin chains"

Nenad Manojlović
(GFMUL / Universidade do Algarve, Portugal)

Abstract

Important properties of quantum integrable systems are related with their symmetry algebra and are defined by a bigger algebra which gives the main relations underlining integrability, the so-called RLL-relations. In the case of isotropic Heisenberg chain of spin 1/2 (XXX-model) the symmetry algebra is Lie algebra sl_2, the Hamiltonian is an element of the group algebra $\mathbb{C}[\mathfrak{S}_N]$ of the symmetric group $\mathfrak{S}_N$. The fundamental relations of the auxiliary L-matrix entries generate an infinite dimensional quantum algebra – the Yangian $\mathcal{Y}(sl_2)$. The actions of sl_2 and $\mathfrak{S}_N$ on the space of states $\mathcal{H} = \otimes_1^N \mathbb{C}^2$ are mutually commuting (the Schur-Weyl duality). Extension of this scheme to a particular case of the Hecke algebra – the Temperley-Lieb algebra, instead of the symmetric group and corresponding new quantum algebras we proposed previously. Here we consider a further generalization – the case of the Birman-Wenzl-Murakami algebra. In many cases the two algebras give multiplicity free decomposition of the space of states into irreducible representations of these algebras. As a consequence one gets the structure of the multiplets and degeneracy of the spectra of the Hamiltonians.

Local:

INSTITUTO PARA A INVESTIGAÇÃO INTERDISCIPLINAR

DA UNIVERSIDADE DE LISBOA

Av. Prof. Gama Pinto, 2

1649-003 Lisboa, Portugal

HOSP.
SANTA
MARIA

Av. Prof. Gama Pinto

Entrada

ENTRECAMPOS