Integrability in Condensed Matter Physics and Quantum Field Theory



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Talk: R-matrices, Howe duality and dynamical Weyl group

Howe duality, which will be reviewed in this talk, is a gl_M-gl_N duality generalizing the Schur-Weyl duality. It also has a quantum group version. We give a fermionic formula for R-matrices for exterior powers of vector representations of the quantum loop algebra U_q(Lgl_N) based on Howe duality. The formula is suitable for taking the large N limit and obtaining the R-matrix for Fock spaces. In the Yangian limit we recover a version of a formula proposed by A. Smirnov for instanton R-matrices. The duality relates R-matrices to the dynamical Weyl group of Etingof, Tarasov and Varchenko. One of the consequences is a dynamical action of the dynamical Weyl group on integrable U_q(gl_M)modules extending the known action on zero weight spaces. The talk is based on joint work with Rea Dalipi.

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