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Title: Quantization of Lax integrable systems

Abstract: We consider a general formalism for a wide range of finite-dimensional integrable systems possessing a Lax representation, and give a general procedure of prequantization of such systems. Our procedure can also be interpreted as a correspondence between Lax integrable systems and Conformal Field Theories. To be more specific, we will construct a unitary projective representation of the Lie algebra of Hamiltonian vector fields of the system by means of covariant derivatives by virtue of a kind of high genus Knizhnik-Zamolodchikov connection. For example, in the case of Hitchin systems our approach is an alternative of the quantization by means of the Hitchin connection in the same sense as Knizhnik-Zamolodchikov connection is an alternative for the Hitchin connection. The deformation theme is involved in the subject via “deformation of Tyurin parameters” providing missing parameters for the Lax equations with the spectral parameter on a Riemann surface. In the case of Hitchin systems, contraction of this deformation gives interesting integrable systems of algebraic origin.