

Compactification of the space of pairs of commuting ordinary differential equations

Dmitry V. Zakharov¹ Igor Krichever¹

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1. Mathematics Department, Columbia University. New York, USA, 10025

The algebro-geometric solutions of an integrable system are often parametrized by points of a moduli space of Riemann surfaces together with some additional data, such as a meromorphic differential defined on the surface. A fundamental problem is the construction of a compactification of this moduli space. A particular case is the Krichever correspondence, which associates to a pair of commuting ordinary differential operators a Riemann surface together with a meromorphic function on the surface. The conditions of commutativity are equivalent to a finite dimensional integrable system whose analytic solutions define an affine chart on the corresponding moduli space. We construct a compactification of this moduli space by considering meromorphic solutions of the integrable system.