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Integrability of geometric evolution equations using Hasimoto variables. Preliminary report.

Wave maps and Schrodinger maps are examples of geometric nonlinear evolution equations for a map from space-time into a Riemannian manifold or a Hermitian manifold. In this talk, I will describe a formulation of such equations using Hasimoto-type variables that arise from the introduction of a moving parallel frame. As applications, integrable mKdV versions of Schrodinger maps will be obtained, and the bi-Hamiltonian structure for these maps will be derived geometrically in the case when the manifold is a symmetric space or a Lie group. (Received September 22, 2011)