1052-14-27 **Emma Previato*** (ep@bu.edu), Deapartment of Mathematics and Statistics, Boston University, Boston, MA 02215-4211. *Riemann surfaces with automorphisms: Aspects of dynamics.*

Moduli of Riemann surfaces, and of vector bundles over a fixed Riemann surface, have become essential objects of mathematical physics in recent decades, prompting in turn new algebro-geometric questions and techniques. The talk will present different aspects of this story: Solitons of Ordinary Differential Operators with elliptic coefficients; Ultra- and Co-elliptic solitons; Calogero-Moser-Krichever Hamiltonian systems; Hitchin systems. Firstly we will explore a related property for the Riemann Surface, being an elliptic cover; out of this we construct (ultra- and co-)elliptic solitons (joint work with R.Y. Donagi, J.C. Eilbeck, V.Z. Enolskii), which are non-linear waves. Secondly, we will show that elliptic solitons 'split' the Jacobian, and focus on the Klein quartic, $x_0^3x_2 + x_2^3x_1 + x_1^3x_0 = 0$ to construct explicit flows on the Jacobian in terms of elliptic functions (joint work with V.Z. Enolskii and A. Perelomov). Lastly, we will write polynomial Hamiltonians for the Hitchin system (joint work with B. van Geemen, R.M. Fedorov) and their evolution equations in spaces of vector bundles over Riemann Surfaces of genus two with automorphisms (using joint work with T. Shaska and S. Wijesiri). Several projects will be proposed to the audience. (Received July 14, 2009)