

1058-35-124

Annalisa Calini and **Thomas Ivey***, Dept. of Mathematics, College of Charleston, 66 George St., Charleston, SC 29424, and **Gloria Marí Beffa**. *Integrable Curve Flows in Centro-Affine Space*. Preliminary report.

Inspired by the well-known correspondence between the nonlinear Schrödinger equation and the vortex filament flow, we explore the relationship between certain geometric evolution equations for curves in 3-dimensional centro-affine geometry and solutions for KdV equation and a two-component system which is a 5th-order member of the Boussinesq hierarchy. (In the case of the scalar KdV, the corresponding flow in 3 dimensions was first studied by Chou-Qu and Huang-Singer.) We show that a bi-Hamiltonian structure for the 5th-order flow arises naturally from the operator that computes the evolution of the curvatures induced by a given invariant flow. We also outline how to use solutions of the scalar Lax pairs for these integrable systems to obtain evolving curves which are solutions for the corresponding flows. (Received February 10, 2010)