Integrable flows for starlike curves in centroaffine spaces

A. Calini
Department of Mathematics, College of Charleston
Charleston, South Carolina, United States of America
calinia@cofc.edu

We construct integrable hierarchies of flows for curves in centroaffine $\mathbb{R}^3$ through a natural pre-symplectic structure on the space of closed unparametrized starlike curves. We show that the induced evolution equations for the differential invariants are closely connected with the Boussinesq hierarchy, and prove that the restricted hierarchy of flows on curves that project to conics in $\mathbb{RP}^2$ induces the Kaup-Kuperschmidt hierarchy at the curvature level.

This is joint work with Tom Ivey (College of Charleston), and Gloria Marí Beffa (University of Wisconsin-Madison).

References

[1] A. Calini, T. Ivey, and G. Marí Beffa, *Integrable Flows for Starlike Curves in Centroaffine Space*, SIGMA, 9 (2013), 022, 21pages.