

1123-53-339

Thomas A Ivey* (iveyt@cofc.edu) and **Annalisa Calini**. *Integrable Flows for Curves in the Pseudoconformal 3-sphere*. Preliminary report.

The pseudoconformal group $SU(2, 1)$ preserves a mixed-signature Hermitian form on C^3 , and thus acts on the projectivized null cone, which is diffeomorphic to S^3 and carries an invariant CR-structure. In this preliminary report, we develop pseudoconformal moving frames and curvatures for Legendrian curves in the sphere, and for curves transverse to the contact distribution. One may define an invariant arclength for generic curves of either class, and in each case we give general forms for non-stretching geometric evolution equations. Moreover, for Legendrian curves we show that there is a sequence of local flows that induce the Kaup-Kuperschmidt hierarchy at the level of curvature.

This hierarchy was also realized in earlier work with Mari Beffa on curves in 3-dimensional centroaffine geometry (defined by the action of the related group $SL(3, R)$) as a special case of a family of flows inducing the Boussinesq hierarchy. Hence one expects the Boussinesq system to be realized in the pseudoconformal setting by a flow for transverse curves, which have a pair of functional invariants. In fact, we show that there exists at least one flow for such curves inducing an integrable evolution for the curvatures, but appearance of the Boussinesq is so far elusive. (Received August 29, 2016)