1139-37-561   **Annalisa M Calini*** (`calinia@cofc.edu`) and **Gloria Marí-Beffa**. *Integrable evolution of twisted polygons in centro-affine $\mathbb{R}^n$*. Preliminary report.

The so-called $m/m + 1$ Adler-Gel'fand-Dikii (AGD) flows can be realized as local evolutions of curves in real projective spaces. Marí-Beffa and Wang (Nonlinearity, 2013) introduced a discretization of the AGD flows realizing local evolutions of twisted polygons in $\mathbb{RP}^m$ and used the geometric group to define a pair of Hamiltonian structures. In their article, they left open the question of compatibility of such structures, and its implications on integrability. We prove that the two Hamiltonian structures are indeed compatible by lifting them to a pair of pre-symplectic forms on the space of arc length parametrized twisted polygons in centro-affine $\mathbb{R}^{m+1}$. The simplicity of the expressions of the pre-symplectic forms makes checking compatibility a relatively easy task. We also study their kernels and possible integrable systems associated to the pair. (Received February 19, 2018)