1135-53-652 **Jinjin Liang*** (`jliang@math.arizona.edu`), 617 N. Santa Rita Ave., Tucson, AZ 85721.
Asymptotic behavior of β-polygon flows. Preliminary report.

We investigate a family of nonlinear evolutions of polygons in the plane called the β-polygon flow and obtain some results analogous to results for the smooth curve shortening flow: (1) any planar polygon shrinks to a point and (2) a regular polygon with five or more vertices is asymptotically stable in the sense that nearby polygons shrink to points that rescale to a regular polygon. In dimension four we show that the shape of a square is locally stable under perturbations along a hypersurface of all possible perturbations. Furthermore, we are able to show that under a lower bound on angles there exists a rescaled sequence extracted from the evolution that converges to a limiting polygon that is a self-similar solution of the flow. The last result uses a monotonicity formula analogous to Huisken's for the curve shortening flow. (Received September 12, 2017)