1135-14-2615 **Andrew Scharf*** (als6@williams.edu), **Ralph Morrison**, **Sifan Jiang**, **Desmond Coles** and **Neelav Dutta**. *Degrees of freedom in constructing algebraic and tropical curves in the plane.*

In algebraic geometry, one of the most important objects of study is M_g, the space of algebraic curves of genus g. In 2009, Castryck and Voigt introduced M_P, the locus inside of M_g of all curves with a given Newton polygon P, where P has g interior lattice points. This space has dimension at most $2g+1$, although this upper bound is not achieved for all polygons.

In 2015, Brodsky et al introduced the space $\mathbb{M}_P$ as a tropical analog of M_P; this polyhedral space parametrizes the metric graphs with g loops that appear in tropical curves with Newton polygon P. We prove that $\dim(M_P) = \dim(\mathbb{M}_P)$ for maximal polygons, positively answering an open question by Brodsky et al. Our proof is constructive, and involves an explicit method of triangulating polygons to give rise to this equality. We also draw on previous work of Koelman (1991) on toric varieties to connect the algebraic and tropical dimensions. We apply our result to completely characterize which polygons P give the maximal $2g+1$ degrees of freedom when constructing a curve, answering another open question of Brodsky et al. The key players here are trigonal curves, curves of genus 6, and sextics with a decreasing number of nodal singularities. (Received September 26, 2017)