1061-14-199 **Maria Angelica Cueto*** (macueto@math.berkeley.edu), 970 Evans Hall #3840, Berkeley, CA 94720-3840, and **Shaowei Lin**. *Tropical secant graphs of monomial curves.*

The first secant variety of a monomial curve is a threefold with an action by a one-dimensional torus. Its tropicalization is a three-dimensional fan with one-dimensional lineality space, so the tropical threefold is represented by a balanced graph. Our main result is an explicit construction of that graph. As a consequence we obtain algorithms to effectively compute the multidegree and Chow polytope of an arbitrary monomial curve. This generalizes an earlier degree formula due to Ranestad. The combinatorics underlying our construction is rather delicate, and it is based on a refinement of the theory of geometric tropicalization due to Hacking, Keel and Tevelev.

The key step in the construction of the balanced graph involves finding a suitable compactification (a "tropical compactification") of the complement of a binomial arrangement in the 2-torus $(\mathbb{C}^*)^2$, whose boundary divisor has no three components intersecting at a point. Such compactification can be obtained by resolving all multiple intersections in $\mathbb{P}^2$ by blowups, and realizes the wonderful compactification of De Concini and Procesi.

This is joint work with Shaowei Lin. (Received April 13, 2010)