Abstract:

Consider two straightline planar drawings $G$ and $H$ of the same planar triangulation, in which the outer face is fixed. A morph between $G$ and $H$ is a continuous family of drawings of the triangulation, beginning with $G$ and ending with $H$. We say a morph between $G$ and $H$ is planar if each intermediate drawing is a straightline planar drawing of the triangulation. A morph is called linear if each vertex moves from its initial position in $G$ to its final position in $H$ along a line segment at constant speed. It is easy to see that in general the linear morph from $G$ to $H$ will not be planar.

Here we consider the algorithmic problem of finding a planar morph between two given drawings $G$ and $H$ with fixed outer face. For various reasons it is desirable to find morphs in which each vertex trajectory is fairly simple. Thus we focus on the problem of constructing a planar morph consisting of a polynomial number of steps, in which each step is a planar linear morph.

(Joint work with Fidel Barrera-Cruz and Anna Lubiw)