DOCTORAL PROGRAM
DISCRETE MATHEMATICS
TU & KFU GRAZ · MU LEOBEN
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Institut für Optimierung und Diskrete Mathematik

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Morphing planar graphs

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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 not difficult 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.)

Mihyun Kang