

Motion of curves with area constraint and applications

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Abstract

In the contribution we investigate the planar curvature flow of one or more curves with the area constraint. This type of curvature flow has been studied e.g. in [1, 2] for closed curves, in [3] for open curves, and in [4] for curves on a surface. The motion law is treated by means of the Allen-Cahn equation with non-local terms. We consider this motion within the context of applications such as reconstruction of falling-droplet shape, or in solid-phase recrystallization. For this purpose, the anisotropy is built into the evolution law as in [5]. In the discussion of computational results, we focus on the special case of motion of several curves whose motion has a competitive character.

References

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