

Asymptotic convergence for a class of fully nonlinear inverse curvature flows in a cone

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Abstract. For a given smooth convex cone in the Euclidean $(n + 1)$ -space \mathbb{R}^{n+1} which is centered at the origin, we investigate the evolution of strictly mean convex hypersurfaces, which are star-shaped with respect to the center of the cone and which meet the cone perpendicularly, along an inverse curvature flow with the speed equal to $(f(r)H)^{-1}$, where f is a positive function of the radial distance parameter r , and H is the mean curvature of the evolving hypersurfaces. The evolution of those hypersurfaces inside the cone yields a fully nonlinear parabolic Neumann problem. Under suitable constraints on the first and the second derivatives of the radial function f , we can prove the long-time existence of this flow, and moreover, the evolving hypersurfaces converge smoothly to a piece of the round sphere.

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