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Almgren, Fred; **Taylor, Jean E.**; **Wang, Lihe**
Curvature-driven flows: a variational approach. (English) Zbl 0783.35002
SIAM J. Control Optimization 31, No. 2, 387-438 (1993).

The authors study curvature flows for solids. When the solids have smooth surfaces, this flow can be described as that generated by the vector field which, at each point on the surface, equals the mean curvature vector of the surface at that point. The interest here is in solids which do not have smooth surfaces, such as polyhedra. In addition, the flow needs not to be generated by the (appropriate generalization of the) mean curvature; in general the mean curvature, which comes from the variational function $f(p) = |p|$ (where p denotes the normal to the surface), is replaced by a curvature generated from a function f which is continuous, even, positively homogeneous of degree 1, and smooth on $\mathbb{R}^{n+1}\backslash\{0\}$.

Reviewer: G.M.Lieberman (Ames)

MSC:

35A15 Variational methods applied to PDEs
35K99 Parabolic equations and parabolic systems
49Q20 Variational problems in a geometric measure-theoretic setting
58E99 Variational problems in infinite-dimensional spaces

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Keywords:

solids with non-smooth surfaces; curvature evolution; flat curvature flow; motion-by-mean curvature; weighted mean curvature; currents; calculus of variations; geometric measure theory; mean curvature; curvature flows for solids

Full Text: DOI

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