

The mean curvature flow by parallel hypersurfaces

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It is shown that a hypersurface of a space form is the initial data for a solution to the mean curvature flow by parallel hypersurfaces if, and only if, it is isoparametric. By solving an ordinary differential equation, explicit solutions are given for all isoparametric hypersurfaces of space forms. In particular, for such hypersurfaces of the sphere, the exact collapsing time into a focal submanifold is given in terms of its dimension, the principal curvatures and their multiplicities.

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