A STRONG STABILITY CONDITION ON MINIMAL SUBMANIFOLDS

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It is well known that the distance function to a totally geodesic submanifold of a negatively curved ambient manifold is a convex function. We identify a strong stability condition on minimal submanifolds that generalizes the above scenario. In particular, if a closed minimal submanifold Σ is strongly stable, then:

(1) The distance function to Σ satisfies a partial convex property in a neighborhood of Σ, which implies that Σ is the unique closed minimal submanifold in this neighborhood, up to a dimensional constraint.

(2) The mean curvature flow that starts with a closed submanifold in a C^1 neighborhood of Σ converges smoothly to Σ.

Many examples, including several well-known calibrated submanifolds, are shown to satisfy this strong stability condition. This is based on joint work with Chung-Jun Tsai.