

Title : Geometric invariants of the time-slice of the mean curvature flow

Abstract

Let Σ be a submanifold of a Riemannian manifold M . The evolution equations of some extrinsic geometric quantities such as the norm of the second fundamental form, the norm of the mean curvature, etc., have been computed along the mean curvature flow and then used to investigate either the long-time existence of the flow or some extrinsic geometrical properties (minimality, totally geodesic, umbilicity, etc.) of the limiting submanifold (see e.g. [1, 2, 4, 5]). But few results are known about the intrinsic geometry of the evolving submanifold along the flow [3]. In this talk, assuming that the mean curvature flow exists, we compute for a submanifold of a Riemannian manifold, the evolution equations of the Riemannian curvature, the Ricci curvature and the scalar curvature which are intrinsic geometrical invariants of the submanifold. From the evolution equation of the scalar curvature, we derived that the graphical mean curvature flow favours positive scalar curvature.

References

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