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Some results on self-shrinkers

Abstract

We consider the mean curvature flow for an isometric immersion of an n-dimensional manifold M into a Euclidean space, $X\colon M \to \mathbb{R}^{m+n}$. Namely, consider a one-parameter family $X_t = X(\cdot, t)$ of immersions $X_t\colon M \to \mathbb{R}^{m+n}$ with corresponding images $M_t = X_t(M)$ such that $\frac{d}{dt}X(x,t) = H(x,t)$ and $X(x,0) = X(x)$ $(x \in M)$, where $H(x,t)$ is the mean curvature vector of M_t at $X(x,t)$ in $\mathbb{R}^{m+n}$.

The simplest but important solutions to the above mean curvature flow equations are self-shrinkers which satisfy a system of quasi-linear elliptic PDE of the second order $H = -X^N/2$, where H is the mean curvature of the submanifold and X^N is the projection of X to the normal bundle of X.

In this talk I will present some results on volume growth, eigenvalue estimates for weighted Laplacian operator and compactness results for self-shrinkers.