An unsolved problem about the self-shrinker in the mean curvature flow

Abstract:

The problem says that if $M$ is a smooth complete embedded self-shrinker with polynomial volume growth in Euclidean space and the squared norm of the second fundamental form $|A|^2 = \text{constant}$, then $M$ is a generalized cylinder. It has been verified in dimension 2 without the assumption of polynomial volume growth. Cao and Li had proved if $M$ is an $n$-dimensional complete self-shrinker with polynomial volume growth in $\mathbb{R}^n + q$, and if $|A|^2 \leq 1$, then $M$ is must be one of the generalize cylinders. But for the case $|A|^2 > 1$, they don’t know what it is. Therefore, Qingming Cheng and Guoxin Wei proved if the squared norm of the second fundamental form $|A|^2$ is constant and $|A|^2 \leq 10/7$, then $M$ is must be one of the generalize cylinders. So we guess that it may be true if the squared norm of the second fundamental form $|A|^2$ is constant.

This will be a continuation of the talk given on August 26th.