

§ MCF

MCF is a process where a surface evolves over time such that each point on the surface moves in the direction of the mean curvature vector .

The surfaces evolve to minimize their area , kind of like how heat equation smooths out temperature distribution .

$$\frac{\partial \mathbf{X}}{\partial t} = -H\mathbf{n} , \text{ where } \mathbf{n} \text{ is the unit normal vector .}$$

(曲面表面沿著法向以 H 速度變形，此時面積變化率與 H (即散度)直接相關。)

$\mathbf{X} : M \rightarrow \mathbf{R}^{n+1}$ 是曲面的參數化。

MCF 讓曲面沿著平均曲率方向收縮，最終可能形成特異點。

§ Soliton of a MCF

1. Shrinking solitons 例如 圓球 圓柱
2. Expanding solitons
3. Translating solitons 例如 碗狀解(bowl solution)