The surface diffusion flow

\[ V = -\Delta_\Gamma H \]

is a fourth-order geometric flow for an evolving hypersurface \( \Gamma = \{ \Gamma_t \}_{t \geq 0} \). The motion driven by surface diffusion is area decreasing (as in MCF) and volume preserving (in contrast to MCF). Constant-mean-curvature surfaces are the stationary solutions of the flow.

In this talk, I will discuss the proof of the stability of the standard planar double bubbles under surface diffusion. Our recent result (with H. Abels and H. Garcke, arXiv:1403.4526) on the generalized principle of linearized stability in the parabolic Hölder spaces will be used as a tool to prove the stability. This is a joint work with H. Abels and H. Garcke.

\[ \Gamma_1 \quad \Gamma_2 \quad \Gamma_3 \]

Figure 1: The standard planar double bubble