

Stability of vortex sheet roll-up

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The stability of vortex sheet roll-up is studied using a Lagrangian vortex method. We consider an initially unstable (Kelvin-Helmholtz) vortex sheet. During its non-linear evolution, a perturbation is added to test it for a secondary instability. The growth of the perturbation depends on its phase and on the local strain rate. In the linear stage of this secondary instability, the dispersion relation is calculated. It is found that the growth rate and the cut-off wave number are fixed by the regularisation parameter of the Birkhoff-Rott equation.