1019-35-16   **Yan Guo** and **Chris Hallstrom*** (`hallstro@up.edu`), 5000 N. Willamette, Portland, OR 97214, and **Daniel Spirn**. *Dynamics of Unstable Fluid Interfaces.*

The nonlinear dynamics of an unstable vortex sheet with surface tension is shown to be characterized by the fastest linear growing mode up to the time scale of $\log 1/\delta$ where δ is the magnitude of the initial perturbation. The analysis is based on a framework that includes precise bounds on the growth of a linearized operator, given by an explicit solution formula, as well as sharp nonlinear growth estimates in certain high energy norms. These methods have also be applied to other examples of fluid interfaces, such as Hele-Shaw flow with surface tension, and vortex patches. (Received June 20, 2006)

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