

Meeting: 1000, Albuquerque, New Mexico, SS 11A, Special Session on Nonlinear Partial Differential Equations Applied to Materials Science

1000-35-86 **Fridolin S.T. Ting*** (fting@lakeheadu.ca), Lakehead University, Department of Mathematical Sciences, Thunder Bay, Ontario P7B 5E1, Canada. *Stability of Pinned Fundamental Vortices*. Preliminary report.

We study the stability and instability of pinned fundamental ± 1 vortex solutions to the Ginzburg-Landau equations with external potentials in \mathbb{R}^2 . For smooth and sufficiently small external potentials, there exists a perturbed vortex solution centered near each critical point of the potential. We show that perturbed vortex solutions which are concentrated near maxima (resp. minima) are orbitally stable (resp. unstable). This confirms the reduced energy characterization of critical points established previously. This is joint work with I.M. Sigal. (Received August 17, 2004)