

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

1000-35-96      **Daniel Spirn\*** ([spirn@math.umn.edu](mailto:spirn@math.umn.edu)), Dept. of Math., U. Minnesota, 127 Vincent Hall, 206 Church St. S.E. Minneapolis, MN 55455. *Localization of vortices for the Ginzburg-Landau energy functional.*

The Ginzburg-Landau energy functional arises in a large number of applications in superfluids and superconductivity models. There is an important nondimensional Ginzburg-Landau parameter,  $\kappa$ , that describes the relative strength of concentrations. There have been a number of recent results that characterize the  $\kappa \rightarrow \infty$  limit of this functional via Gamma-convergence methods. In this talk I will describe some new variational results that offer quantitative estimates for small, but finite, Ginzburg-Landau parameter. These estimates allow for the proof of finite  $\kappa$  vortex dynamics for dispersive Ginzburg-Landau equations. This is joint work with Robert Jerrard (U. Toronto). (Received August 19, 2004)