

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

1000-35-208 **Stephen J Gustafson*** (gustaf@math.ubc.ca), Dept. of Mathematics, University of British Columbia, 1984 Mathematics Rd., Vancouver, BC V6T 1Z2, Canada, and **Kenji Nakanishi** and **Tai-Peng Tsai**. *Scattering in Ginzburg-Landau equations.*

The Ginzburg-Landau Schroedinger (or Gross-Pitaevskii) equation models superfluids and superconductors. Recent mathematical work has focused on the finite-time dynamics of vortex solutions, and existence of vortex-pair traveling waves. However, little seems to be known about the long-time behavior (eg. scattering theory, and the asymptotic stability of vortices). We address the simplest such problem – scattering around the "vacuum" state – which is already tricky due to the non-self-adjointness of the linearized operator, and "long-range" nonlinearity (in particular, our present methods are limited to higher dimensions). Time permitting, we will discuss related questions for the Landau-Lifshitz equations of ferromagnetism. (Received August 24, 2004)