

Physics 242: Homework Problem Set 3

Due: March 7, 2011

1 Exploring the Ginzburg-Landau Model for a Square Superconductor.

The computer files (thanks to former student Alan Kyker) that solve the G-L equations for a square 2D type-II superconductor have been sent to you. Your task is to explore this system by running the program 'vortex' and interpreting what you observe.

A well written description is required. At least 2 pages of mostly single-spaced text. Begin by explaining the parameters that Alan gives you to work with: what they represent in the G-L free energy, and how those parameters are connected to physical quantities (coherence length, penetration depth, ..., whatever there is).

Your writeup should consist of the description and interpretation of a few interesting results that you observe, of length 1-2 paragraphs each. Please give attention to your writing; students usually do not get enough opportunities to practice clear, explanatory scientific writing as they proceed toward their degrees.