

VORTICES IN THE GINZBURG-LANDAU MODEL OF SUPERCONDUCTIVITY

SYLVIA SERFATY

We will review a variety of mathematical results obtained recently on the Ginzburg-Landau model of superconductivity. Superconductors have the major property that they exhibit permanent currents without energy dissipation, and that vortices appear under an applied magnetic field, for a certain range of intensity of the applied field. Mathematical results include mathematical tools to describe vortices, their location and interaction; precise description of the critical fields for which they appear; description of local, global minimizers and general critical points, derivation of limiting models; study of the vortex-dynamics...