

Γ -convergence of the Ginzburg-Landau functionals and applications to superconductivity and B.E.C.

Sisto BALDO

Dipartimento di Informatica, Università di Verona

ABSTRACT: In recent years, a great effort has been devoted to study the asymptotic behaviour of the Ginzburg-Landau functionals by means of Γ -convergence techniques. This involves an intriguing mix of calculus of variations, P.D.E. machinery and geometric measure theory.

After a survey of some of the most relevant results in the literature, I will focus on a recent joint work with R.L. Jerrard (Toronto), G. Orlandi (Trento) and H.M. Soner (İstanbul), where we study the Γ -limit of the Ginzburg-Landau functionals in quite general energetic regimes. I will also give some applications of the main result to superconductivity (distribution of vortices in type II superconductors, characterization of the first critical magnetic field...) and to B.E.C.