Numerical Methods for Simulating Ginzburg-Landau Vortices

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Abstract

Numerical solution to the Ginzburg-Landau (GL) equation becomes infeasible as the GL parameter κ and the number of GL vortices increase to a physically interesting regime. It is in this regime that we focus our attention to design a simulated annealing approach for minimizing the associated renormalized energy to study the GL vortex configurations. This approach applied to a commonly used model produces vortex configurations which are of interest in recent studies.