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Solving the Ginzburg-Landau Equation of Superconductivity Using a Galerkin Method[1] ALDEN PACK, MARK TRANSTRUM, Brigham Young University — A hallmark feature of superconductors, known as the Meissner effect, is the expulsion of applied magnetic fields from the superconducting material. This phenomenon can be modeled by the Ginzburg-Landau equations of superconductivity. These equations are a set of nonlinear, partial differential equations relating the magnetic vector potential and the superconducting order parameter. Assuming a transverse symmetry and a steady state, these equations reduce to one-dimensional, ordinary differential equations. We solve these differential equations using a Galerkin method which projects the solution onto a finite set of basis function. We explore convergence properties for different choices of bases.

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Alden Pack
Brigham Young University

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