

Abstract Submitted
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Dynamical Response of the Abrikosov Vortex Lattice in superconductor with an alternative oscillating field FAREH PEIJEN LIN, National Center for Theoretical Sciences — The time-dependent Ginzburg Landau Equation is solved analytically to find the response function of the dense vortex system, the order parameter Ψ , when the vortices in a superconductor are forced into motion by an alternative transport current results from an sinusoidal electric field with amplitude E and frequency Ω . Base on the solution, motion and configuration of the moving vortices, temporal current density, energy dissipation and other dynamical properties are studied. With large input signal, response function can go beyond simple the ohmic behavior and higher harmonic mode is generated. Analog to static superconducting-normal phase transition line, the dynamical phase transition surface in 4-dimensional space, T, H, E and Ω , are determined. Comparison with optical measurement on NbN is made.

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