Stability of the vortex lattice in d-wave superconductors

J. Shiraishi[1], M. Kohmoto[1] and K. Maki[2]

[1] *Institute for Solid State Physics, University of Tokyo, Roppongi, Minato-ku, Tokyo 106, Japan*

[2] *Department of Physics and Astronomy, University of Southern Calfornia Los Angeles, Cal. 90089-0484, USA*

Abstract

Use is made of Onsager's hydrodynamic equation to derive the vibration spectrum of the vortex lattice in d-wave superconductor. In particular the rhombic lattice (*i.e.* the 45° tilted square lattice) is found to be stable for $B > H_{cr}(t)$. Here $H_{cr}(t)$ denotes the critical field at which the vortex lattice transition takes place.