

The Low-Field Critical End Point of the First-Order Transition Line in $YBa_2Cu_3O_7$

A.K.Kienappel and M.A.Moore

Department of Physics, University of Manchester, Manchester, M13 9PL, United Kingdom.

Abstract

We report on simulations of the first order phase transition in $YBa_2Cu_3O_7$ using the Lawrence-Doniach model. We find that the magnetization discontinuity vanishes and the first order transition line ends at a critical end point for low magnetic fields in agreement with experiment. The transition is not associated with vortex lattice melting, but is a liquid-liquid transition; the length scale of short range crystalline order increases discontinuously at the transition, but remains finite below it.