Subject: Corrected MSD Colloquium, Halperin, Thurs, 2/8, 11am, 212, A-157
From: Suzanne Kokosz <kokosz@anl.gov>
Date: Thu, 18 Jan 2007 14:41:37 -0600
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SPEAKER: Prof. W. P. Halperin
Dept. of Physics & Astronomy
Northwestern University
Evanston, IL

TITLE: Vortex Structures in Very High Magnetic Fields

DATE: Thursday, February 8, 2007

TIME: 11:00 a.m.

PLACE: Building 212, Room A157

HOST: Maria Iavarone

Refreshments will be available at 10:45 a.m.

Abstract:

Magnetic resonance has been extensively used to probe the vortex structure in superconductors. From interpretation of the NMR or μSR lineshape the penetration depth can be inferred and in principle one can deduce the symmetry of the vortex solid. In the case of high temperature superconductors the NMR resonance width shows changes that indicate phase transitions in the vortex matter from vortex liquid to vortex solid. In this talk I will concentrate on the use of 17O NMR as a probe of vortex structures in cuprates: YBCO and BSCCO, and 11B NMR as a probe of MgB2. We have performed NMR in magnetic fields up to 42 T in YBCO to study the electronic excitations in the vortex core. The phase diagram for vortex liquid-to-solid transitions at high fields, up to 30 T, in BSCCO will be discussed and evidence will be presented for intrinsic magnetic impurities in BSCCO.