凝縮系物理学ゼミナール

Condensed Matter Seminar

Location: Room 413, School of Science Bldg. 5 (理学5号館413号室)
Date: 14:15-15:00, Wednesday, 24 October 2012

"Electromagnetic response of the superconductor with strong antiferromagnetic fluctuations"

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Abstract: Heavy-fermion superconductor $CeCoIn_5$ exhibits an additional high-field low-temperature superconducting phase in a magnetic field parallel to the basal plane. It is expected to be a Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) state and has been studied widely in both theoretical and experimental methods. A strong antiferromagnetic fluctuation is also reported in this material in a magnetic field perpendicular to the basal plane [1]. This indicates the existence of a quantum critical point (QCP) near the upper critical field $H_{c2}(0)$. Recently, an anomalous increase of the flux flow resistivity with decreasing the temperature and magnetic field has been observed in this system [2]. We present our investigations on the electromagnetic transport of the superconductor with strong antiferromagnetic fluctuations. We show that a resistivity increase occurs in our model.

References:
[1] Y. Kasahara *et al*., Phys. Rev. B **72**, 214515(R) (2005).
[2] T. Hu *et al*., Phys. Rev. Lett. **108**, 056401 (2012).