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: 13:30-14:15, Wednesday, 17 October 2012

“Statistical dynamical-mean-field study of attractive Hubbard model with disorder”

Speaker: Mr. **Masaru Sakaida** (Condensed Matter Theory Group)

Abstract:
The analysis of correlated systems with disorder has been studied for decades in solid state physics, and even now has attracted much interest. Moreover, various experiments on above systems have been performed intensively. More recently, correlated disordered systems have been realized in cold atom [1], enabling us to systematically investigate effects of disorder and interaction. For this reason, it is necessary to analyze effects of disorder and interaction systematically and nonperturbatively.

In this study, we analyze the attractive Hubbard model with disorder within the statistical dynamical-mean-field theory (statistical DMFT) [2] using the iterative perturbation theory (IPT) as an impurity solver, and determine the grand state phase diagram at the half-filling and zero temperature. In this talk, I will explain the signature of each phase and discuss how effects of attractive interaction and disorder compete.

References:
[1] J.Billy *et al*.: Nature **453**, 891(2008).
[2] D.semmler *et al*.: Phys. Rev. B **84**, 115113(2011).