



清华大学高等研究院

Institute for Advanced Study, Tsinghua University

物理学学术报告 Physics Seminars (biweekly)

- Title:** Worm-type Monte Carlo Algorithms for Classical and Quantum Lattice Models
- Speaker:** Prof. Yonjin Deng (*University of Science and Technology of China*)
- Time:** 3:15pm, Wednesday, Oct. 9, 2013
(2:45~3:15pm, Tea, Coffee, and Cookie)
- Venue:** Conference Hall 322, Science Building, Tsinghua University

Abstract

In the first part of this talk, using the examples of Ising, XY, and quantum Bose-Hubbard models, I shall explain some basic ingredients in worm-type Monte Carlo algorithms for classical and quantum lattice models of which the configuration space can be represented in terms of closed paths or flows. The second part of the talk shall discuss two applications for the classical and the quantum cases, respectively. Hereby, I shall particularly spend some effort on describing how the high-precision Monte Carlo data near quantum critical point can be used to study quantum dynamics via analytical continuation--e.g., observation of universal properties of Higgs resonance and conductivity, of which the latter can be used to test the AdS/CFT correspondence.

References:

- [1] arXiv:1112.5647 [2] arXiv:1011.1980
[3] arXiv:1301.3139 [4] arXiv:1309.5635