



# 清华大学高等研究院

Institute for Advanced Study, Tsinghua University

## 学术报告

- Title:** Bayesian Statistics for Many-Body Systems
- Speaker:** Jianzhong Wu  
(*University of California, Riverside*)
- Time:** 3:30pm, Tuesday, 2016-09-13
- Venue:** Conference Hall 322, Science Building, Tsinghua University

### Abstract

Both classical and quantum mechanics have been well established in terms of the temporal evolutions of the dynamic variables of individual particles. Whereas the equations of motion are equally applicable to one-body as well as many-body systems, the numerical complexity rises rapidly as the number of particles increases yet dynamic uncertainty makes it imperative to describe the properties of many-body systems from a statistical perspective. In this lecture, I outline a generic and computationally efficient procedure to predict the properties of many-body systems based on Bayesian statistics in conjunction with the Hohenberg-Kohn-Mermin theorem. Illustrative examples will be discussed for many-body systems consisting of the Langevin particles, hard spheres, fermions, and hybrid mixtures with both quantum and classical components.

**Short Biography:** Jianzhong Wu is Professor of Chemical and Environmental Engineering and a cooperating faculty member of Applied Mathematics at the University of California, Riverside. He received Ph.D. in Chemical Engineering from the University of California, Berkeley, M.S. and B.E. in Chemical Engineering and B.S. in Applied Mathematics from Tsinghua University. His research is focused on development and application of statistical-mechanical methods, in particular density functional theory, for describing the microscopic structure and physiochemical properties of confined fluids, soft materials and biological systems.