

You are welcome to nominate speakers to [colloquium@nao.cas.cn](mailto:colloquium@nao.cas.cn). The video and slides of previous colloquia and more information can be found at <http://colloquium.bao.ac.cn/>.

# 国台学术报告 NAOC COLLOQUIUM

2015 年 第 41 次 / No. 41 2015

**Time: Wednesday 2:30 PM, Dec. 23th**      **Location: A601 NAOC**

## ELUCID: Exploring the Local Universe

### with reConstructed Initial Density field

**Prof. Houjun Mo**

**Tsinghua University, University of Massachusetts**



Houjun Mo is professor of astronomy at University of Massachusetts. His research has been focused on galaxy formation, large-scale structure of the universe, and cosmology. He constructs models for the formation of disk galaxies, the formation and structure of dark matter halos, the connection between galaxies and dark matter halos, the structure of gaseous halos, and physical processes related to galaxy formation and evolution. He uses galaxies and galaxy systems from observations and from simulations to understand the properties of dark matter halos and the distribution of dark matter in the Universe, as well as to reconstruct the current and initial density fields for the local Universe. He has coauthored a textbook on 'Galaxy formation and evolution' which was published by Cambridge University Press.

### **Abstract**

Simulating the evolution of the local universe is important for studying galaxies and the intergalactic medium in a way free of cosmic variance. I will describe a method to reconstruct the initial linear density field from an input non-linear density field, employing the Hamiltonian Markov Chain Monte Carlo (HMC) algorithm combined with Particle Mesh (PM) dynamics. The power of this method is tested using high-resolution cosmological simulations. Preliminary results obtained from applying the method to real observational data are described.

*All are welcome! Tea, coffee, biscuits will be served at 2:15 PM.*