

# **International Workshop on Quantum Gases in Synthetic Gauge Fields**

## **Second Announcement**

A workshop on “ quantum gases in synthetic gauge field ” will be held on Aug 25-27 (2010) in the Science building of Tsinghua University, Beijing, China. This workshop is organized by Alexander Fetter (Stanford), Tin-Lun (Jason) Ho (Ohio-State) and Hui Zhai (Tsinghua), hosted by Institute for Advanced Study at Tsinghua University. This workshop will focus on recent theory and experimental advances in studying ultracold atoms in abelian and non-abelian gauge fields. The topics and invited talks include:

### **I. General Overview:**

Ian Spielman (NIST):  
Experiments on Synthetic Gauge Fields

Tin-Lun Ho (Ohio-State):  
Macroscopic Quantum Phenomena of Quantum Gases in Abelian and Non-abelian Gauge fields

Gordon Baym (UIUC)  
Cold atoms, Quantum Chromodynamics, and Gauge Fields

### **II. Quantum Hall Physics in Cold Atoms**

Xiao-Gang Wen (MIT/Tsinghua):  
Introduction to Quantum Hall Effects

Nigel Cooper (Cambridge):  
Bose-Hubbard Models with Gauge Fields: Frustrated Quantum Spins

### **III. Scheme to Generate Gauge Field to Cold Atoms**

Kenneth Günter (ENS):  
Schemes to Generate Abelian Gauge Fields for Cold Atoms

Julius Ruseckas (Vilnius):  
Light-induced Abelian and non-Abelian Gauge Potentials for Cold Atoms

#### IV. Gauge Field with Optical Lattices

Mehmet Oktel (Bilkent):  
Ultracold Atoms in Rotating Optical Lattices

C. Morais Smith (Utrecht)  
Creating Staggered Magnetic Fields in Optical Lattices - New Insights into High-Tc Superconductivity

Erich Mueller (Cornell):  
Artificial Gauge Fields in Lattices

#### V. Quantum Gases in Non-abelian Gauge Field

Hui Zhai (Tsinghua):  
Bose-Einstein Condensate in a Non-abelian Gauge Field

Congjun Wu (UCSD):  
Spontaneous Generation of a Half-quantum Vortex in Spin-orbit Coupled Bose-Einstein Condensates

The workshop has five discussion sessions but no poster session.

The information of the workshop will be continuously updated on the website: <http://castu.tsinghua.edu.cn>. Travel and hotel information are also available on this website. For registration, please send e-mail to Lily at [castu03@mail.tsinghua.edu.cn](mailto:castu03@mail.tsinghua.edu.cn) with your name, occupation, institution, and contact information. For inquiries about the workshop, please contact Hui Zhai at [huizhai.physics@gmail.com](mailto:huizhai.physics@gmail.com)

No registration fee is required for the workshop; since we have limited human resources, please take care of your lodging and meal yourself.