



Seminar

# Topological Superfluidity of Dirac Fermions: Exact Solutions and Applications



**Prof. Zidan Wang (汪子丹)**

**Department of Physics,**

**Hong Kong University**

- **Time: 4:00pm, Apr. 19, 2011 (Tuesday)**
- **时间: 2011年4月19日 (周二)**
- **Venue: Room 607, Conference Room A, Science Building 5**
- **地点: 理科五号楼607会议室**

### Abstract

Topological superconductors are expected to be potential platforms for topological quantum computation. In this talk, I will present our exact solutions for a BCS model of Dirac fermions in two and three dimensions. Based on the solutions, it will be shown rigorously that 2D and 3D s-wave superconductors with spin-orbit interactions are equivalent to chiral p-wave ones. Intriguing applications to the emergence of Majorana fermions and a new type of FFLO ground state will also be addressed. This work was supported by the RGC of Hong Kong, a CRF of Hong Kong, and the SKPBR of China (No.2011CB922104).

References:

J. Liu, Q. Han, L. B. Shao, and Z. D. Wang, arXiv:1101.3740 (2011).

Q. Han, J. Liu, and Z. D. Wang, arXiv:1104.0477 (2011).