



Weekly Seminar

Topological Odd-Parity Superconductivity at Type-II 2D Van Hove Singularity

Hong Yao
清华大学

Time: 4:00 pm, Dec. 18th, 2013 (Wednesday)

时间: 2013年12月18日 (周三) 下午 4:00

Venue: Conference Room A (607), No. 5 Science Building

地点: 理科五号楼607会议室

Abstract

We study unconventional superconductivity induced by weak repulsive interactions in 2D electronic systems at Van Hove singularity (VHS) where density of states is logarithmically divergent. We define two types of VHS. For systems at type-I VHS, weak repulsive interactions generically induce unconventional singlet pairing. However and more interestingly, for type-II VHS renormalization group (RG) analysis shows that weak repulsive interactions favor triplet pairing (e.g. p-wave) when the Fermi surface is not sufficiently nested. For type-II VHS systems respecting tetragonal symmetry, topological superconductivity (either chiral $p+ip$ pairing or time-reversal invariant $p+ip$ pairing) occurs generally. I will also discuss relevance of our study to materials including recently discovered superconductors LaOFBiS which can be tuned to type-II VHS by doping.

About the Speaker

2001 年获南京大学学士学位， 2004年获约翰霍普金斯大学获物理学硕士学位， 2009 年获斯坦福大学获物理学博士学位。 2009 年 ~2011年在加州大学伯克利分校及劳伦斯伯克利国家实验室从事博士后研究， 2011 年 ~2012 年在斯坦福大学从事博士后研究， 2012 年起任清华大学高等研究院研究员。 2012 年入选国家 “青年千人计划”。主要研究兴趣是强关联电子体系和量子拓扑物态。