



Weekly Seminar

Unconventional Superconductivity: Beyond the BCS Paradigm

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Time: 3:00pm, April. 21, 2021 (Wednesday)

时间: 2021年4月21日 (周三) 下午3:00

Venue: Room W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

It is well established that the formation and condensation of Cooper pairs are the two key factors to induce superconductivity in condensed matter, however the ways for the Cooper pairs to form and condense are very different in distinct material systems. I will start from the very basic knowledge of the BCS theory, then extend to the cuprate and iron based superconductors, main from the experimental point of view. In the cuprate system, the superconductivity may arise by doping to the Mott insulator, and the normal states shows many abnormal properties. In the iron based superconductors, moderate correlation exists and multiband physics are involved. But both systems show the pairing in the strong coupling limit. I will show some interesting points which are at odd with the BCS theory, and illustrate that the correlation effect and repulsive interaction may be the common strings to form high temperature superconductivity at ambient pressure. A picture concerning the evolution from BCS to BEC type condensation is proposed.

About the speaker

闻海虎, 南京大学教授, 博士生导师, 南京大学超导物理和材料研究中心主任, 国家杰出青年基金获得者(1996), 教育部“长江特聘”教授(2012), 国家“万人计划”领军人才(2016), 美国物理学会会士(2013)。曾获得国家自然科学一等奖(第四完成人)和二等奖(第一完成人)各一项。

长期从事超导和低温物理研究, 在高温超导体磁通动力学, 高温超导机理问题和非常规超导材料合成和物理性质研究方面获得一批重要成果。在SCI 杂志上发表论文 400 余篇, 包括Nature 子刊17篇, Science Advances 2 篇, Physical Review Letter/X 20篇, 文章被他人引用超过10000篇次, h-index 53, 在国内外重要学术会议上作邀请报告过百场。