北京大学量子材料科学中心
International Center for Quantum Materials, PKU

Weekly Seminar

Unconventional Electronic Instabilities in Kagome Superconductors

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Center for Correlated Matter and School of Physics, Zhejiang University

Time: 3:00 pm, June. 5, 2024 (Wednesday)

时间：2024年6月5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

Exploring exotic electronic orders and their underlying driving forces remains a central pursuit in the field of quantum materials. Within this context, the kagome lattice, a corner-sharing triangle network, has emerged as a versatile platform for exploring unconventional correlated and topological quantum states. Due to the unique correlation effects and frustrated lattice geometry inherent to kagome lattices, several families of kagome metals have been found to display a variety of exotic electronic instabilities and nontrivial topologies, including unconventional superconductivity, charge density wave orders, and electronic nematicity, reminiscent of the complex competing orders observed in high-temperature superconductors. Against this backdrop, kagome systems offer an exceptional quantum playground for delving into the origins of the unconventional electronic instabilities. In this talk, I will present our recent work, focusing on two notable kagome superconductors: the unconventional CDW in AV_3Sb_5 (A = K, Rb, Cs), and the electronic nematicity observed in ATi_3Bi_5. Drawing particularly from the insights derived from angle-resolved photoemission spectroscopy (ARPES), I will highlight the unique characteristics of these systems, shedding light on their intriguing electronic behavior and elucidating their underlying mechanisms.

About the speaker

Ming Shi(史明)，浙江大学关联物质研究中心和物理学院教授、博士生导师。1996年在瑞士日内瓦大学取得物理博士学位。曾长期在瑞士国家研究所Paul Scherrer Institute (PSI) 工作 (1997 - 2023)，历任研究员，高级研究员和所长特别顾问，主要从事大科学装置的建设和发展，主持建立了国际领先的同步辐射角分辨光电子能谱光学线，并利用这些实验装置作为实验平台进行凝聚态物理前沿研究。在PSI期间曾在University of Ilinois at Chicago作访问教授（2004-2005），中科院物理所特聘教授（2012-2018），中科院合肥强磁场中心特聘研究员（2018-2021）。科研兴趣包括研究（强）关联体系的电子能带结构，自旋态以及激发谱，并建立他们与宏观量子现象和输运性质的联系。近年来，在非常规高温超导、拓扑量子态等方面取得了多项重要成果，共发表SCI论文210余篇。2022年入选国家级海外高层次人才计划，2023年10月被聘为浙江大学求是讲席教授。