



Special Seminar

Beyond Electrical Transport: Probing Charge-Neutral Quantum Matter

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Time: 15:00 pm, Jan.19, 2026 (Monday)

时间: 2026年1月19日 (周一) 下午15:00

Venue: Room w563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

Many of the most intriguing phenomena in condensed matter physics emerge in charge-neutral systems. In these systems, the governing dynamics arise from emergent, charge-neutral quasiparticles in the spin or lattice sectors, rather than from electrons alone. Consequently, their defining features cannot be accessed using conventional electrical transport techniques, motivating the development of alternative transport approaches. In this talk, I will showcase three of my previous works along these lines, covering a broad range of physical platforms—topological magnons in a van der Waals ferromagnet, chiral phonons in an elemental semiconductor, and the Kitaev spin liquid in a Mott insulator—with a unifying theme that transport methods beyond electrical conduction provide unique and powerful probes of charge-neutral quantum matter.

About the speaker

张和达于 2012 - 2016 年在中国科学技术大学取得物理学学士学位，随后前往美国密歇根州立大学攻读并获得物理学博士学位。自 2022 年起，他在美国橡树岭国家实验室从事实验凝聚态物理研究，工作方向涵盖范德华二维超导体、量子自旋液体以及凝聚态体系中的手性相关物性等。当前，他在马克斯·普朗克化学物理固体研究所担任博士后研究科学家，继续并拓展其在手性材料与新奇量子态方面的研究。他作为第一作者或通讯作者身份在 *Nature Physics*、*Nature Communications* 以及 *Physical Review Letters* 等一流期刊发表了多篇科研论文。