



北京大学量子材料科学中心

International Center for Quantum Materials, PKU

北京大学海外名家讲座

Peking University Overseas Distinguished Scholars Lectures

Loop-currents in condensed matter

Chandra Varma

University of California, Riverside

University of California, Berkeley

Time: 10:00 am, Nov.14, 2025 (Friday)

时间: 2025年11月14日 (周五) 上午10:00

Venue: Room w301, Physics building, Peking University

地点: 北京大学物理楼, 西301思源报告厅

Abstract

I will briefly review the physical principles of loop-current order, with emphasis on its observation in cuprates, kagome lattice, and in various forms of graphene. The special conditions required to have an anomalous Hall effect in the normal state due to loop-currents which is inherited to get topological superconductivity will be discussed. How they are the central feature of the physics of the cuprate phase diagram will be emphasized.

About the speaker

Chandra Varma is a theoretical condensed matter physicist. He worked for 35 years in the theoretical physics department at Bell Laboratories, including 4 years as department head and 20 years as a distinguished member of staff. He also spent 14 years as Chancellor's Distinguished Professor at the University of California, Riverside. Varma is currently Emeritus Distinguished Professor at Riverside and visiting Professor at Berkeley. He has made the leading contributions to several important fields of condensed matter physics that he has worked on.

He is a member of the American Physical Society, an American Association for the Advancement of Science Fellow, a Fellow of World Academy of Sciences, a Fellow of American Academy of Arts and Sciences, Lorentz Professor 2000, and Professeur visitant, College de France 1997. He was also a Miller Professor at Berkeley in 2010. Varma was awarded the Bardeen prize in 2012 for his prediction of anisotropic superconductivity and theory of its promotion by antiferro-magnetic fluctuations.