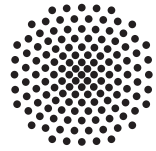


Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Festkörperforschung
Fachbereich Physik, Universität Stuttgart

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Hybrid

Login data will be announced by e-mail and on the colloquium webpage.

Dienstag, 24. Oktober 2023

16.15 Uhr

Lecture Hall 2D5

Max-Planck-Institut für Festkörperforschung, Heisenbergstraße 1, 70569 Stuttgart-Büsnau

Diverse Emergent Phenomena of Correlated Electrons in Organic Conductors

Kazushi Kanoda
University of Tokyo

Abstract

Coulomb interactions among electrons have huge impacts on their behavior through competition of charge localization/delocalization and spin order/disorder as well as their coupling to the lattice. Layered organic compounds host flexible lattice geometries and appreciable Coulomb interactions, both of which are varied by pressure or chemical substitution to display diverse emergent phenomena like a showcase of correlation physics. In this colloquium, I review a variety of electron correlation-derived phenomena that show up by only varying the geometry of the molecular lattice. These include quantum-critical Mott metal-insulator transition, quantum spin liquid under intense debate, unconventional superconductivity, altermagnetism, quantum charge glass, and velocity-renormalized massless Dirac electrons with dynamic mass generation. Some of these phenomena have links to soft-matter physics and particle physics beyond the conventional discipline of solid-state physics.