Stuttgarter Physikalisches Kolloquium

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

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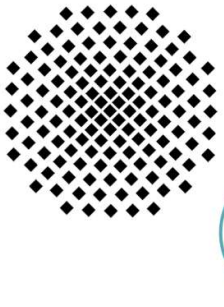

Dienstag, 19. Mai 2020	16:15 Uhr	Hörsaal V 57.01

Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Gastgeber: Prof. Dr. Martin Dressel, Universität Stuttgart, Telefon: 0711 - 685-64946

New Perspective on Disorder-Driven Metal-Insulator Transitions

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Abstract

Disorder driven metal-insulator transitions have long defied proper understanding, despite representing one of the basic phenomena in solid state physics. Here we provide a broad overview of the available theoretical ideas and methods, as well as the experimental results providing guidance. We then present a new theoretical approach that makes it possible to formulate Landau-like order parameter theory at the saddle-point level, capturing most experimental puzzles. It also allows an investigation of systematic fluctuation corrections, suggesting a finite upper critical dimension, and a formulation of an appropriate Landau-Ginzburg description of spatial correlations currently studied by scanning probes.