PHYSIKALISCHES KOLLOQUIUM

Sommersemester 2023

Das Kolloquium findet (soweit nicht anders angegeben) **jeweils montags um 17:15 Uhr in Präsenz im Röntgen-Hörsaal des Physikalischen Instituts, Hubland Campus Süd, Universität Würzburg statt.**

15.05.2023

Prof. Dr. Erik Van Heumen
Universität Amsterdam, Faculty of Science, Van der Waals-Zeeman Institute

Electrodynamics of high Tc superconductors: gaps, bosons and scaling

Abstract

In this talk I will discuss how optical experiments probe quantum matter using recent results from my group. Measuring how much light is reflected from a material provides a surprising wealth of information about the collective behaviour of electrons in a material and I will explain how to extract this from experiments.

Applying this technique to superconductors is probably the best demonstration of its power. Among the many interesting discoveries, optical spectroscopy has been used to determine the superconducting gap size, identify the fingerprints of the interaction responsible for superconductivity and even to demonstrate the viability of the Higgs mechanism, long before the corresponding boson was discovered at CERN. In a vein similar to the extreme precision of LHC experiments, I will show how recent work in my group points to a possible connection between the quantum theory of a near-infinite number of interacting electrons and the mathematical framework of Einstein's equation of gravity.

Für die Dozentinnen bzw. Dozenten der Fakultät

PD. Dr. Meyer, Prof. Dr. Klembt, Dr. Fromm, Dr. Feichtner und Hr. Kögel