Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme
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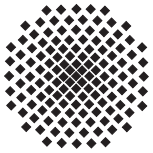

Dienstag, 9. Juni 2015 | **17.15 Uhr** | **Hörsaal 2 D5**

Stuttgarter Max-Planck-Institute, Heisenbergstraße 1, 70569 Stuttgart-Büsnau

The rise and fall of superconductivity in copper oxides

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Abstract

Electrons in copper oxides called cuprates can be tuned to go from a metallic state to an insulating state. In between, they form an exceptionally strong superconducting state, below a critical temperature T_c that rises and then falls. After nearly three decades of research, the mechanisms responsible for this T_c domeare still unclear.

In analogy with other families of superconductors – such as organic, heavy-fermion and iron-based superconductors – where a T_c dome is linked to an underlying quantum critical point at which an antiferromagnetic phase sets in, some underlying critical point may be the organizing principle of hightemperature superconductivity in cuprates. But a critical point for what phase ? A magnetic phase ? The enigmagic “pseudogap” phase ? Or the recently discovered phase with charge order ?

I will present some of the new experimental information and discuss some of the new ideas that are fuelling our quest to solve the long-standing “high-T_c problem”. A story of electrons, featuring very low temperatures, huge magnetic fields, high pressures, powerful spectroscopies and pristine crystals.