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TECHNISCHE UNIVERSITÄT WIEN Vienna University of Technology

Fermi surface reconstruction and drop of Hall number due to spiral antiferromagnetism in high-Tc cuprates

A talk by Andreas Eberlein Harvard University, Department of Physics, Cambridge, USA

DATE / TIME: Monday, 10th of October 2016, 04:00 p.m.

LOCATION: **Seminar Room DB gelb 09**, Vienna University of Technology, "Freihaus"- building, 9th floor, "yellow" – Wiedner Hauptstraße 8-10

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We show that a Fermi surface reconstruction due to spiral antiferromagnetic order may explain the rapid change in the Hall number as recently observed near optimal doping in cuprate superconductors [Badoux et al., Nature 531, 210 (2016)]. The single-particle spectral function in the spiral state exhibits hole pockets which look like Fermi arcs due to a strong momentum dependence of the spectral weight. Adding charge-density wave order further reduces the Fermi surface to a single electron pocket. We propose quantum oscillation measurements to distinguish between commensurate and spiral antiferromagnetic order. Similar results apply to certain metals in which topological order replaces antiferromagnetic order.