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Einladung zum CMS/FunMat/IFP Seminar

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" Unconventional superconductivity originating from disconnected Fermi surfaces in the iron-based oxypnictide "

The iron-based oxypnictide compound recently discovered by Hosono is theoretically challenging as a new class of superconductors.

Here we study the pairing mechanism in two steps: We first construct an effective model for $\text{LaO}_{1-x}\text{F}_x\text{FeAs}$ from first principles by using the maximally localized Wannier functions, where the model turns out to involve all of the five Fe 3d bands. We then examine the Eliashberg equation, where the spin and charge susceptibilities calculated with the five-band RPA are plugged. A disconnected Fermi surface, which comprises two sets (α , β) of Fermi pockets, acts to develop multiple nesting vectors. This in turn gives rise to an unconventional pairing, where the superconducting gap changes sign across α and β pockets leaving α fully gapped, but β has nodes. We also discuss other possible pairing symmetries according as the interaction parameter is varied.

This work is a collaboration with K. Kuroki, S. Onari, R. Arita, H. Usui, Y. Tanaka and H. Kontani.

Host: K. Held

Montag, 04. August 2008, 15:00 Uhr
Seminarraum 138B, 7. OG, Turm C (rot)
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