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ARPES study of spin-density wave order in FeTe single crystals & FeTeOx Films

Friday, 16 September 2011 12:39 (2 minutes)

We have performed an ARPES investigation of FeTe single crystals/films, as well as thin fims of the the novel superconductor FeTeOx [Y.F. Nie et al., Phys. Rev. B 82, 020508(R) (2010)]. Our results from the single crystals reflect the previously reported Fermi surface pocket around the X-point [(pi, 0)], possibly connected to a spin-density wave (SDW) order [Y. Xia, PRL 103, 037002 (2009)]. Unlike this previous report, our results also reveal the presence of an energy gap, which would be expected from the SDW order. The temperature dependence shows that the gap closes in the rough vicinity of the magnetic transition temperature, supporting it's interpretation as reflecting the SDW state. Finally, we were also able to acquire ARPES data from cleaved FeTe and FeTeOx thin films, where the FeTe films display similar features as the bulk samples.

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Multiple order parameter system

Primary author: Dr MANSSON, Martin (Laboratory for Solid State Physics, ETH Zurich)

Co-authors: Prof. WELLS, Barrett O. (Department of Physics, University of Connecticut, USA); Dr NIEDERMAYER, Christof (LNS, PSI); Dr GU, Genda (Brookhaven National Laboratory, Upton, NY, USA); Prof. BUDNICK, Joseph I. (Department of Physics, University of Connecticut, USA); Dr SASSA, Yasmine (Laboratory for Solid State Physics, ETH Zurich); Dr NIE, Yuefeng (Department of Physics, University of Connecticut, USA)

Presenter: Dr MANSSON, Martin (Laboratory for Solid State Physics, ETH Zurich)

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