

# KONDO SCREENING EFFECT AND FERROMAGNETIC ORDER IN $UCu_2Si_2$

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Previous bulk experiments showed that orthorhombic  $UCu_2Si_2$  exhibits two magnetic phase transitions: it becomes a ferromagnet at  $T_C = 103$  K with the moment of  $1.6 \mu_B/U$  at. [1] and above  $T_C$  it transforms to a long-period, amplitude-modulated antiferromagnet having a spin density wave-like order vanishing at  $T_N = 106$  K [2]. We present here the transport properties probed on a single-crystalline sample in magnetic fields 0 and up to 8 T. To find the Kondo-like parameters, we used  $ThCu_2Si_2$  as a reference of the phonon contribution into the measured  $\rho(T)$  dependence. The transverse magnetoresistivity  $\Delta\rho(T)/\rho_0$  shows similar anomalies as those previously observed in  $UGe_2$  [3], pointing to a presence of strong magnetic fluctuations just around  $T_C/2$ . Our ferromagnetic Fermi surface calculated for  $UCu_2Si_2$ , based on spin- and orbital-polarized results of [4], using a relativistic FPLO code [5], has some quasi-2D sheets with nesting. It supports a possibility of arising superconductivity mediated by the magnetic fluctuations, like it was supposed in  $UGe_2$  [6]. **References:** [1] R. Troć, Z. Bukowski, pssb **243**, 290 ('06); [2] F. Honda et al., J. Phys.:CM **18**, 479 ('06); [3] R. Troć, Acta Phys. Pol. B **34**, 407 ('03); [4] J.A. Morkowski et al., JAC, in print; [5] K. Koepernik, H. Eschrig, PRB **59**, 1743 ('99); [6] A.B. Shick, W.E. Picket, PRL **86**, 300 ('01).

9.7 cm

13.4 cm

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