

KONDO PHENOMENA OF STRUCTURAL DEFECTS IN USbTe FERROMAGNET

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USbTe is a ferromagnet ($T_C = 123.4$ K) crystallising in tetragonal PbFCl-type structure. Its isostructural compounds UPS and UAsSe, showing low-T turn-up of electrical resistivity, were found to be two-level-system Kondo (i.e. orbital-Kondo, OK) ferromagnets. We have shown previously (phys. stat. sol. (a) **196** (2003) 352) that resistivity along a-axis - $^a\rho(T)$ - for USbTe, unlike that for UPS and UAsSe revealed coherent low-T electronic scattering and unlike typical ferromagnetic metal shows unusually convex shape between 50 K and T_C .

To explain this unusual behaviour we have measured resistivity along c-axis - $^c\rho(T)$ - for USbTe and showed that having $^a\rho(T)$ and $^c\rho(T)$ we can resolve the temperature dependent resistivity of USbTe into components corresponding to particular mechanism of electronic scattering. It occurred that OK effect is responsible for unusual transport properties of USbTe ferromagnet. The OK electronic scattering contributes to the resistivity component $\rho_K(T)$. It reaches maximum at $T^* = 78$ K and goes to zero at the lowest temperatures. Such temperature is assumed to be the Kondo temperature in case of Kondo paramagnetic systems showing transition to coherent electronic scattering and we propose to classify the USbTe as the coherent orbital-Kondo ferromagnet.

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13.4 cm

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9.7 cm