

Magnetic order and SdH effect in half-Heusler phase ErPdBi

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It has recently been reported that superconductivity and magnetic order coexist in ErPdBi [1]. Single crystals of this compound were grown from Bi-flux, with crystal structure of MgAgAs-type confirmed using X-ray diffraction. Magnetization, magnetic susceptibility, electrical resistance and heat capacity measurements revealed an antiferromagnetic phase transition at $T_N = 1.2$ K. At high temperatures, the electrical resistivity has semiconducting-like character ($dR/dT < 0$). The resistance starts decreasing with decreasing T below 15 K and shows a sharp drop below T_N but remains finite down to 0.4 K. Hence, no obvious, clear-cut evidence of superconductivity was found in $R(T)$ data. On the other hand, the real part of the ac magnetic susceptibility is negative below $T_C = 1.6$ K, and its imaginary component has a clear maximum at this temperature that might be associated with the onset of superconducting state. The electrical resistance revealed Shubnikov - de Haas oscillations in magnetic fields 8-33 T. The SdH amplitude decreases with increasing T and disappears above 10 K.

References: [1] Y. Pan, A. M. Nikitin, T.V. Bay *et al.* Eur. Phys. Lett. **104**, 27001 (2013)