Abstract Submitted
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Anisotropic resistivity in single crystals of the helical magnet $EuCo_2P_2$[1] MAKARIY TANATAR, N. S. SANGEETHA, ABHISHEK PANDEY, S. L. BUD'KO, D. C. JOHNSTON, R. PROZOROV, Ames Laboratory USDOE and Iowa State University — The anisotropic resistivity is studied in single crystals of $EuCo_2P_2$, a model helical antiferromagnet with $T_N \approx 66$ K [1]. Alignment of Eu^{2+} magnetic moments ($S = 7/2$) parallel to the conducting planes leads to a monotonic decrease of the in-plane resistivity, $\rho_a(T)$, on cooling due to a decrease of the magnetic spin scattering. The inter-plane resistivity, $\rho_c(T)$, with current flowing along the helix axis (c-axis), reveals a resistivity increase starting above T_N, echoing the onset of the entropy release determined by heat capacity measurements [1]. An additional anomaly occurs in $\rho_c(T)$ at ~ 25 K, which may reflect an incommensurate-to-commensurate transition in the helix wave vector on cooling, since the wave vector is known to be somewhat temperature dependent [2].

[1] N. S. Sangeetha, E. Cuervo-Reyes, A. Pandey, and D. C. Johnston, Phys. Rev. B **94**, 014442 (2016).

[2] M. Reehuis, W. Jeitschko, M. H. Möller, and P. J. Brown, J. Phys. Chem. Solids **53**, 687 (1992).

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