

Abstract Submitted
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A Study of Magnetoresistance of $\text{Yb}_{14-x}\text{La}_x\text{MnSb}_{11}$: an Ordered Dilute Magnetic Semiconductor¹ DAVID MANDRUS, RONGYING JIN, ZHIXIAN ZHOU, BRIAN SALES, Oak Ridge National Laboratory, LUIS BALICAS COLLABORATION² — $\text{Yb}_{14-x}\text{La}_x\text{MnSb}_{11}$ is an ordered dilute magnetic semiconductor, showing evidence for partial screening of the Mn magnetic moments and mass renormalization from $2 m_e$ near room temperature to $20 m_e$ at 5 K. We have measured both the transverse ($I \perp H$) and longitudinal ($I // H$) magnetoresistance (MR) of $\text{Yb}_{14-x}\text{La}_x\text{MnSb}_{11}$ ($x=0, 0.7$) single crystals above and below the ferromagnetic (FM) transition temperature $T_c = 53$ K ($x=0$) and 39 K ($x=0.7$). While it is negative in a wide temperature range, the MR becomes positive below $T_c/2$ and increases with decreasing temperature. Strikingly, the positive MR increases linearly with applied field, showing no sign of saturation up to 32 tesla. Quantitative analysis and implications of the data will be reported.

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