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Negative Longitudinal Magnetoresistance of silver chalcogenides JINGSHI HU, T.F. ROSENBAUM, University of Chicago, J.B. BETTS, NHMFL, Los Alamos — The transverse, positive magnetoresistance of doped silver telluride and silver selenide changes linearly with field by thousands of percent, with no sign of saturation up to MegaGauss. The inhomogeneous distribution of 1 part in 10,000 of excess silver ions appears to be essential to this unusual response. We report here a systematic measurement of the longitudinal magnetoresistance up to 60T from sub-Kelvin to room temperatures. We find a non-saturating, but negative longitudinal magnetoresistance over a wide temperature range, becoming most negative and linear where the bands cross and the spatial fluctuations in the current paths reach their maximum. The dependence of the negative longitudinal magnetoresistance on sample thickness was also investigated to search for the length scale of distorted current paths.

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