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Non-saturating Magnetoresistance of Inhomogeneous Conductors JINGSHI HU, University of Chicago, T. F. ROSENBAUM, University of Chicago, MEERA M. PARISH, Cavendish Laboratory, Cambridge, UK, J. B. BETTS, NHMFL Los Alamos — The inhomogeneous distribution of excess/deficient silver atoms, introducing spatial conductivity fluctuations with length scales independent of the cyclotron radius, lies behind the large, positive and linear transverse magnetoresistance displayed by $Ag_{2\pm\delta}Se$ and $Ag_{2\pm\delta}Te$. We report here a systematic measurement of the $\rho_{xx}(H)$, $\rho_{xy}(H)$ and $\rho_{xz}(H)$ components of the resistivity tensor with various sample geometries, showing clear evidence of distorted current paths as seen in theoretical simulations. Comparison of the (positive) transverse and (negative) longitudinal magnetoresistance for different sample thicknesses and electrical contact separations points to a characteristic length scale set by the spatial inhomogeneity that is as large as ten microns.

Jingshi Hu
University of Chicago

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