

Abstract Submitted
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Linear magnetoresistance caused by mobility fluctuations in a bulk three-dimensional Dirac semi-metal, Cd_3As_2 ¹ ARJUN NARAYANAN, MATTHEW WATSON, SAMUEL BLAKE, YULIN CHEN, DHARMALINGAM PRABHAKARAN, Oxford University, BINGHAI YAN, Max-Planck-Institut für Chemische Physik, NICOLAS BRUYANT, Laboratoire National des Champs Magnétiques Intenses, LOIS DRIGO, Laboratoire National des Champs Magnétiques Intenses, IGOR MAZIN, Naval Research Laboratory, CLAUDIA FELSER, Max-Planck-Institut für Chemische Physik, TAI KONG, PAUL CANFIELD, Ames Laboratory, Iowa State University, AMALIA COLDEA, Oxford University — Cd_3As_2 is a three-dimensional Dirac semi-metal with a variety of exciting transport properties such as exceedingly high mobility and an unusual non-saturating linear magnetoresistance. Given the fundamental interest in bulk band structure and potential for applications based on transport properties, understanding the transport properties is crucial. We report magnetotransport and tunnel diode oscillation measurements on Cd_3As_2 , in pulsed magnetic fields up to 65 T and temperatures between 1.5 K and 300 K. We study the unconventional non-saturating linear magnetoresistance up to 65 T and conclude that it is linked to disorder effects. Analysis of quantum oscillations in the magnetoresistance data allow us to further characterize the electronic state and discuss the bulk Fermi surface of Cd_3As_2 .

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