Abstract Submitted
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Angular Magnetoresistance and Hall Measurements in New Dirac Material, ZrSiS MAZHAR ALI, IBM-Almaden, MPI-Microstructure Physics, LESLIE SCHOOP, BETTINA LOTSCH, MPI-Solid State Research, STUART PARKIN, IBM-Almaden, MPI-Microstructure Physics — Dirac and Weyl materials have shot to the forefront of condensed matter research in the last few years. Recently, the square-net material, ZrSiS, was theorized and experimentally shown (via ARPES) to host several highly dispersive Dirac cones, including the first Dirac cone demanded by non-symmorphic symmetry in a Si square net. Here we report the magnetoresistance and Hall Effect measurements in this compound. ZrSiS samples with RRR = 40 were found to have MR values up to 6000% at 2 K, be predominantly p-type with a carrier concentration of ˜8 x 10^{19} cm^{-3} and mobility ˜8500 cm^2/Vs. Angular magnetoresistance measurements reveal a peculiar behavior with multiple local maxima, depending on field strength, indicating of a sensitive and sensitive Fermi surface. SdH oscillations analysis confirms Hall and angular magnetoresistance measurements. These results, in the context of the theoretical and ARPES results, will be discussed.

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