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Exploring consequences of Dirac nodal lines in ternary semimetal ZrSiS by angle-dependent magneto electrical transport measurements YIXUAN CHEN, JUSTIN RODRIGUEZ, BRIAN ZAKRZEWSKI, Pennsylvania State Univ, ZHIJIE TANG, JIN HU, ZHIQIANG MAO, Tulane University, YING LIU, Pennsylvania State Univ and Shanghai Jiao Tong University — ARPES, de Haas-van Alphen and Shubnikov de Haas quantum oscillation studies of ZrSiS have revealed that this ternary semimetal hosts Dirac nodal line fermions through the determination of a non-trivial Berry phase. Interesting behavior was observed in the magnetoresistance measurements including a butterfly-shaped angle dependence as the magnetic field is tilted away from the c axis. We studied the consequences of Dirac line nodes in the electrical transport properties of this material by carrying out systematic angle-dependent magnetoresistance and Hall coefficient measurements. The effects of the existence of the zeroth Landau level when the field is aligned in the Dirac nodal line plane will be discussed.

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