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Dirac fermions, Fermi surface and magnetotransport in bulk crystals of layered SrZnSb2 KEFENG WANG, LIMIN WANG, Brookhaven National Laboratory, DAVID GRAF, National High Magnetic Field Laboratory, Florida State University, CEDOMIR PETROVIC, Brookhaven National Laboratory — We report evidence for anisotropic Dirac-like pockets and the large magnetoresistance in the quasi-two-dimensional Sb rectangular layers of bulk SrZnSb2 crystals. Due to the two-fold symmetry of the Sb layers, there are three different Dirac-like pockets as revealed by the calculated Fermi surface. Angular dependent in-plane magnetoresistance and oscillation frequencies indicate the quasi-two-dimensional character of the pockets. This is different from the identical Dirac-cone-like points in the Bi square net of SrMnBi2. The large linear magnetoresistance and magnetothermopower were observed in crystals. The magnetoresistance behavior can be described very well by combining the semiclassical cyclotron contribution and the quantum limit magnetoresistance. Magnetic field also enhances the thermopower. Our results can be well understood by the magnetotransport of Dirac states in the bulk band structure. Work at BNL supported by Office of Basic Energy Sciences, US DOE, under contract No. DE-AC02-98C (K. W, L. W and C. P.). Work at the National High Magnetic Field Laboratory is supported by the DOE NNSA DE-FG52-10NA29659, by the NSF Cooperative Agreement No.DMR-0654118, and by the state of Florida (D. G.)

Kefeng Wang
Brookhaven National Laboratory

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