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Observation of two-dimensional Fermi surface and Dirac dispersion in the new material $YbMnSb_2$[1] ROBERT KEALHOFER, SOOYOUNG JANG, SINEAD GRIFFIN, CAOLAN JOHN, SPENCER DOYLE, JEFFREY NEATON, JAMES G. ANALYTIS, Department of Physics, University of California, Berkeley, and Lawrence Berkeley National Laboratory, J. D. DENLINGER, Advanced Light Source, Lawrence Berkeley National Laboratory, KATHERINE BENAVIDES, JULIA CHAN, Department of Chemistry and Biochemistry, The University of Texas at Dallas — We present the synthesis, crystal structure, electronic structure, and transport properties of the new material $YbMnSb_2$. Our measurements reveal that this system is a low-carrier-density semimetal with a 2D Fermi surface arising from a 3D Dirac dispersion. This Fermi surface is consistent with the predictions of antiferromagnetic density functional theory calculations and the Fermi surface observed via angle-resolved photoemission spectroscopy. The quantitative agreement between these measurements and calculations indicates that $YbMnSb_2$ may be a new topological semimetal in the presence of magnetic order.

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Robert Kealhofer
Univ of California - Berkeley

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