

Abstract Submitted
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Observation of Dirac-Like Semi-Metallic Phase in NdSb.¹ KLAUSS DIMITRI², MADHAB NEUPANE³, M. MOFAZZEL HOSEN, Univ of Central Florida, ILYA BELOPOLSKI, Princeton University, NICHOLAS WAKEHAM, Los Alamos National Laboratory, NAGENDRA DHAKAL, Univ of Central Florida, JIAN-XIN ZHU, Los Alamos National Laboratory, M. ZAHID HASAN, Princeton University, ERIC D. BAUER, FILIP RONNING, Los Alamos National Laboratory — The search of new topological phases of matter is one of the new directions in condensed matter physics. Recent experimental realizations of Dirac semimetal phases pave the way to look for other exotic phases of matter in real materials. Here we use a systematic angle-resolved photoemission spectroscopy (ARPES) study of NdSb as well as first-principles calculations to study the electronic structure of NdSb. Our studies reveal two hole-like Fermi surface pockets present at the zone center (Γ) point as well as two elliptical electron-pockets present in the zone corner (X) point of the Brillouin zone (BZ). Interestingly, Dirac-like linearly dispersive states are observed about the zone corner (X) point in NdSb. Moreover, the Dirac-like state observed in NdSb may be a novel correlated state, not yet predicted in calculations. Our study opens a new direction to look for Dirac semi-metal states in other members of the rare earth monpnictide family.

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