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Electronic Indication of Three-Dimensional Dirac Cone in Cd3As2 from Angle-Resolved Photoemission H.M. YI, C.Y. CHEN, Y.G. SHI, Z.J. WANG, Z.J. XIE, Y. FENG, A.J. LIANG, S.L. HE, J.F. HE, Y.Y. PENG, X. LIU, Y. LIU, L. ZHAO, G.D. LIU, X.L. DONG, J. ZHANG, Beijing National Laboratory for Condensed Matter Physics, IOP, CAS, Beijing 100190, China, ARITA M, SHIMADA K, NAMATAME H, TANIGUCHI M, HiSor, Hiroshima University, Hiroshima 739-8526, Japan, Z.Y XU, C.T. CHEN, IPC, CAS, Beijing 100190, China, X. DAI, Z. FANG, X.J. ZHOU, Beijing National Laboratory for Condensed Matter Physics, IOP, CAS, Beijing 100190, China, IOP.CAS COLLABORATION, HISOR.HIROSHIMA UNIVERSITY.JP COLLABORATION, IPC.CAS COLLABORATION — The narrow gap semiconductor, Cd3As2 is well known to have inverted band structure. It draws much attention recently because of its none-trivial properties which is predicted to be a three-dimensional Dirac semi-metal. Analogous to two-dimensional layered material graphene, Cd3As2 can be viewed as a 3D version of Dirac Fermion material whose bulk conduction and valence band contact only at discrete (Dirac) points in the Brillouin zone and disperse linearly in all directions around these critical points. Here we report direct observation of three-dimensional Dirac cones in Cd3As2 by using high resolution angle resolved photoemission spectroscopy(ARPES). Our ARPES results reveal the unique band structures for this topological 3D Dirac material that will provide key information in understanding and exploring exotic phenomenon in Cd3As2.

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