

Abstract Submitted  
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**Observation of superconductivity induced by a point contact on 3D Dirac semimetal Cd<sub>3</sub>As<sub>2</sub> crystals.**<sup>1</sup> HE WANG, HUICHAO WANG, HAIWEN LIU, HONG LU, WUHAO YANG, SHUANG JIA, XIONGJUN LIU, XINCHENG XIE, JIAN WEI, JIAN WANG, Peking Univ — The 3D Dirac semimetal state is located at the topological phase boundary and can potentially be driven into other topological phases including topological insulator, topological metal and the long-pursuit topological superconductor states. Crystalline Cd<sub>3</sub>As<sub>2</sub> has been proposed and proved to be one of 3D Dirac semimetals which can survive in atmosphere. By precisely controlled point contact (PC) measurements, we observe the exotic superconductivity in the vicinity of the point contact region on the surface of Cd<sub>3</sub>As<sub>2</sub> crystal, which might be induced by the local pressure in the out-of-plane direction from the metallic tip for PC. The observation of zero bias conductance peak (ZBCP) and double conductance peaks (DCPs) symmetric to zero bias further reveals p-wave like unconventional superconductivity in Cd<sub>3</sub>As<sub>2</sub>. Considering the special topological property of the 3D Dirac semimetal, our findings may indicate that the Cd<sub>3</sub>As<sub>2</sub> crystal under certain conditions is a candidate of topological superconductor, which is predicted to support Majorana zero modes or gapless Majorana edge/surface modes on the boundary depending on the dimensionality of the material.

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