

Abstract Submitted  
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**STM Spectroscopic Mapping of  $\text{Cd}_3\text{As}_2$**  ANDRAS GYENIS, SANGJUN JEON, BRIAN ZHOU, BENJAMIN FELDMAN, QUINN GIBSON, ROBERT CAVA, ALI YAZDANI, Princeton University — Recently, theoretical studies and experimental findings suggest that the well-known semiconductor, cadmium arsenide ( $\text{Cd}_3\text{As}_2$ ) is one of the realizations of the three-dimensional Dirac semimetal state of matter. This new topological phase has various exotic physical properties originating from the existence of the single pair of bulk Dirac points and the unusual Fermi arcs of the surface states. To investigate the unique electronic structure of  $\text{Cd}_3\text{As}_2$ , we perform scanning tunneling spectroscopy measurements on samples with different doping levels. Similar to STM experiments on other materials, spectroscopic mapping with the STM can be used to understand the role of the impurities on the surface and to examine scattering transitions, which helps to establish topological properties of the 3D Dirac state. Work supported by ARO-MURI

Andras Gyenis  
Princeton University

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