

Abstract Submitted
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Gated Terahertz Magneto-optical Measurements of 3D Dirac Semimetals¹ DON C. SCHMADEL, GREGORY S. JENKINS, ANDREI B. SUSHKOV, REMINGTON L. CAREY, H. DENNIS DREW, Dept of Physics & CNAM, Univ of Maryland-College Park, JASON W. KRIZAN, SATYA KUSHWAHA, QUINN GIBSON, ROBERT J. CAVA, Dept of Chemistry, Princeton Univ — We report gated terahertz magneto-optical measurements of the bulk and surface states of Na₃Bi and Cd₃As₂. The onset of interband transitions within the bulk 3D Dirac cone is observed. A gate is used to modulate surface carriers and bulk carriers near the surface resulting in differential optical signals. Gate-modulated cyclotron resonance and Fourier transform infrared spectroscopy characterize the bulk Dirac carriers along all three crystal axes as well as the Fermi-arc carriers with Fermi Energy. The transport scattering and Fermi velocity anisotropy as well as potential fluctuations characterized near the Dirac point will be discussed.

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Don C. Schmadel
Dept of Physics & CNAM, Univ of Maryland-College Park

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