

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Magneto-Optical Signature of Massless Kane Electrons in Cd₃As₂¹ MILAN ORLITA, MICHAEL HAKL, BENJAMIN A. PIOT, CLEMENT FAUGERAS, GERARD MARTINEZ, MAREK POTEMSKI, LNCMI-CNRS, Grenoble, France, ANA AKRAP, IRIS CRASSEE, DIRK VAN DER MAREL, University of Geneva, Switzerland, SERGUEI TCHOUMAKOV, MARK O. GORBIG, LPS-CNRS, Orsay, France, JAKUB KUBA, ONDREJ CAHA, JIRI NOVAK, CEITEC, Brno, Czech Republic, FREDERIC TEPPE, WILFRIED DESRAT, L2C-CNRS, Montpellier, France, SEYED KOOHPAYEH, LIANG WU, N. PETER ARMITAGE, The Johns Hopkins University, USA, ALEXANDR NATEPROV, ERNEST ARUSHANOV, Academy of Sciences of Moldova, QUINN D. GIBSON, ROBERT J. CAVA, Princeton University, USA, CHRISTOPHER C. HOMES, Brookhaven National Laboratory, USA — We report on infrared magneto-spectroscopy of Cd₃As₂. The observed response clearly indicates the presence of 3D massless charge carriers. The specific cyclotron resonance absorption in the quantum limit implies that we are probing massless Kane electrons rather than symmetry-protected 3D Dirac particles [1]. The latter may appear at a smaller energy scale and are not directly observed in our infrared experiments. This our conclusion is fully consistent with the simple Bodnar model developed in the past to describe the Cd₃As₂ band structure [2]. References: [1] A. Akrap et al., Phys. Rev. Lett. 117, 136401 (2016) [2] J. Bodnar et al., Proc. of Narrow Gap Semicond. Conf., Warsaw, 1977, p. 311.

¹ERC MOMB (320590), TWINFUSYON (692034), Lia TeraMIR, DE-SC0012704, DE-FG02-08ER46544, W911NF-12-0461, Swiss NSF

Milan Orlita
LNCMI-CNRS, Grenoble, France

Date submitted: 11 Nov 2016

Electronic form version 1.4