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Transport properties and ARPES measurements of the Dirac line-node semimetals CaTX[1] EVE EMMANOUILIDOU, BING SHEN, AOSHUANG SHI, NI NI, Department of Physics and Astronomy and California NanoSystems Institute, University of California, Los Angeles, CA 90095, USA, CHANG LIU, Department of Physics, South University of Science and Technology of China, Shenzhen, Guangdong 518055, China, XIAOYU DENG, GABRIEL KOTLIAR, Department of Physics and Astronomy, Rutgers University, Piscataway, NJ 08854, USA, SUYANG XU, Department of Physics, MIT, Cambridge, MA, 02139, USA — Recently noncentrosymmetric CaAgAs crystallizing in the P-6 2m space group has been proposed to be a topological line-node semimetal with only nontrivial bands near the Fermi level. In this talk we present magneto-transport properties, ARPES measurements and DFT calculations of single crystalline CaAgAs and its sister compound CaCdGe. At 2K and 9 T, linear transverse magnetoresistance (MR) up to 18% is observed in CaAgAs while extremely large non-saturating quadratic MR up to 2500% shows up in CaCdGe, attributing to the electron-hole compensation revealed by Hall measurements. This is consistent with the DFT calculation which reveals two hole and one electron Fermi pockets in CaCdGe. Angle-dependent Shubnikov-de Haas oscillations in CaCdGe resolve one of the hole Fermi pockets revealed by DFT. ARPES measurements on both compounds will be discussed too.

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