Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Transport properties of crystalline topological insulator $Pb_{1-x}Sn_xSe$[1] TIAN LIANG, Dept. Phys. Princeton University, New Jersey 08544, QUINN GIBSON, Dept. Chem. Princeton University, New Jersey 08544, JUN XIONG, M.A. HIRSCHBERGER, Dept. Phys. Princeton University, New Jersey 08544, R.J. CAVA, Dept. Chem. Princeton University, New Jersey 08544, N.P. ONG, Dept. Phys. Princeton University, New Jersey 08544 — The narrow-band gap semiconductors $Pb_{1-x}Sn_xSe$ and $Pb_{1-x}Sn_xTe$ have received considerable attention recently following the prediction [1] that they are examples of a topological crystalline insulator with surface states characterized by a mirror Chern number. Several ARPES groups have reported evidence for the topological surface states [2,3]. We have investigated the transport properties of crystals of $Pb_{1-x}Sn_xSe$. For Sn content x bracketing 0.23, we observe strong quantum oscillations from bulk carriers (either n or p type) with concentrations near 2×10^{18} cm^{-3} and mobilities $\sim$ 3,000 cm^2/Vs. The results of experiments to tune the chemical potential into the gap using chemical doping and liquid gating will be reported. References: [1] T. H. Hsieh et al., Nature Commun. **3**, 982 (2012). [2] P. Dziawa et al., Nature Materials (2012) doi:10.1038/nmat3449 [3] Su-Yang Xu et al., arXiv:1206.2088

[1]Supported by Army Research Office (ARO W911NF-11- 1-0379) and NSF-MRSEC Grant DMR 0819860.

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Date submitted: 28 Dec 2012 Electronic form version 1.4