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Anomalous electronic states in $Pb_{1-x}Sn_xTe$ induced by hydrostatic pressure[1] TIAN LIANG, SATYA KUSHWAHA, QUINN GIBSON, R. J. CAVA, N. P. ONG, Princeton University — Dirac/Weyl semimetals have attracted strong interest. In Dirac semimetals Cd_3As_2, Na_3Bi, the Dirac nodes split into Weyl states in a magnetic field, which leads to novel phenomena, such as ultrahigh mobility (10^7 cm^2 V^{-1} s^{-1}) in Cd_3As_2 [1], and the chiral anomaly in Na_3Bi [2]. The chiral anomaly appears as a negative longitudinal magnetoresistance. A new path to realize Weyl states is via the closing of the bulk gap in a system with broken inversion symmetry. As the gap is tuned, a Weyl semimetalic state is predicted to appear between two insulating phases [3]. We performed the hydrostatic pressure measurement for $Pb_{1-x}Sn_xTe$ and observed that the gap of the system closes under pressure and the system shows insulator to metal phase transition. Interestingly, in the metalic phase, we observed giant negative magnetoresistance as well as anomalous hall effect which onsets only in the quantum limit. We discuss the implication of these phenomena and their relation with the Berry curvature. [1] Liang, T. et al., Nature Materials, **14**, 280 (2015). [2] Xiong, J. et al., Science, **350**, 413 (2015). [3] Murakami, S et al., Phys. Rev. B **78**, 165313 (2008); New J. Phys. **9**, 356 (2007).

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