Abstract Submitted
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Strong Zeeman effects in the Landau level spectrum of $(In_xBi_{1-x})_2Se_3$ DANIEL WALKUP, WENWEN ZHOU, ILIJA ZELJKOVIC, Boston College, YOSHINORI OKADA, Boston College and Tohoku University, ZHENSONG REN, Boston College, KANE SCIPIONI, Boston College and University of Illlinois at Urbana-Champaign, STEPHEN WILSON, Boston College and Univserity of California Santa Barbara, VIDYA MADHAVAN, Boston College and University of Illlinois at Urbana-Champaign — We investigate the surface states of $(In_xBi_{1-x})_2Se_3$ by scanning tunneling spectroscopy (STS) in the range $0 \leq x$ 3%. We carefully examine the low-lying Landau levels of the topological surface states in attempt to extract the parameters of the surface-state Hamiltonian as a function of doping. Close examination of the data oblige us to index the Landau levels in a manner different to precedent on pristine Bi_2Se_3, and fits to the Landau level spectra yield large g-factors on the order of 40, which decrease with increasing x. The Landau levels of pristine Bi_2Se_3 are also reexamined, yielding high g-factors roughly consistent with results obtained from magnetic oscillations, and suggesting a decrease in the surface-state Zeeman coupling with increasing In as the topological phase transition is approached.

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