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Shubnikov-de Haas Oscillations from topological surface states of metallic $Bi_2Se_{2.1}Te_{0.9}$[1] KESHAV SHRESTHA, TcSUH and Department of Physics, University of Houston, 3201 Cullen Blvd., Houston, Texas 77204, USA, VERA MARINOVA, Institute of Optical Materials and Technology, Bulgarian Academy of Sciences, Acad. G. Bontchev Str. 109, So?a 1113, Bulgaria, BERND LORENZ, PAUL C.W. CHU[2], TcSUH and Department of Physics, University of Houston, 3201 Cullen Blvd., Houston, Texas 77204, USA — We have studied the quantum oscillations in the conductivity of metallic, p-type $Bi_2Se_{2.1}Te_{0.9}$. The dependence of the oscillations on the angle of the magnetic field with the surface as well as the Berry phase determined from the Landau level fan plot indicate that the observed oscillations arise from surface carriers with the characteristic Dirac dispersion. Several quantities characterizing the surface conduction are calculated employing on the Lifshitz-Kosevich theory. The low value of the Fermi energy with respect to the Dirac point is consistent with the metallic character of the bulk hole carriers. We conclude that, due to the peculiar shape of the valence band, the Shubnikov-de Haas oscillations of the bulk carriers are shifted to higher magnetic fields which allows for the detection of the quantum oscillations from the topological surface states at lower field.

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