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Band Bending Inversion in Bi2Se3 Nanostructures LOUIS VEYRAT, IFW-Dresden, Institute for Solid State Research, FABRICE IACOVELLA, Laboratoire National des Champs Magntiques Intenses (LNCMI-EMFL), JOSEPH DUFOULEUR, CHRISTIAN NOWKA, HANNES FUNKE, IFW-Dresden, Institute for Solid State Research, MING YANG, WALTER ESCOFFIER, MICHEL GOIRAN, Laboratoire National des Champs Magntiques Intenses (LNCMI-EMFL), BARBARA EICHLER, OLIVER G. SCHMIDT, BERND BCHNER, SILKE HAMPEL, ROMAIN GIRAUD, IFW-Dresden, Institute for Solid State Research — Shubnikov-de-Haas oscillations were studied under high magnetic field in Bi_2Se_3 nanostructures grown by Chemical Vapor Transport, for different bulk carrier densities ranging from $3 \times 10^{19} cm^{-3}$ to $6 \times 10^{17} cm^{-3}$. The contribution of topological surface states to electrical transport can be identified and separated from bulk carriers and massive two-dimensional electron gas. Band bending is investigated, and a crossover from upward to downward band bending is found at low bulk density, as a result of a competition between bulk and interface doping. These results highlight the need to control electrical doping both in the bulk and at interfaces in order to study only topological surface states[1]. [1] : Veyrat et al., Nano Lett., Article ASAP, DOI: 10.1021/acs.nanolett.5b03124

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