

**Supplementary Information for “Independence of surface state and bulk conductance
in three-dimensional topological insulators”**

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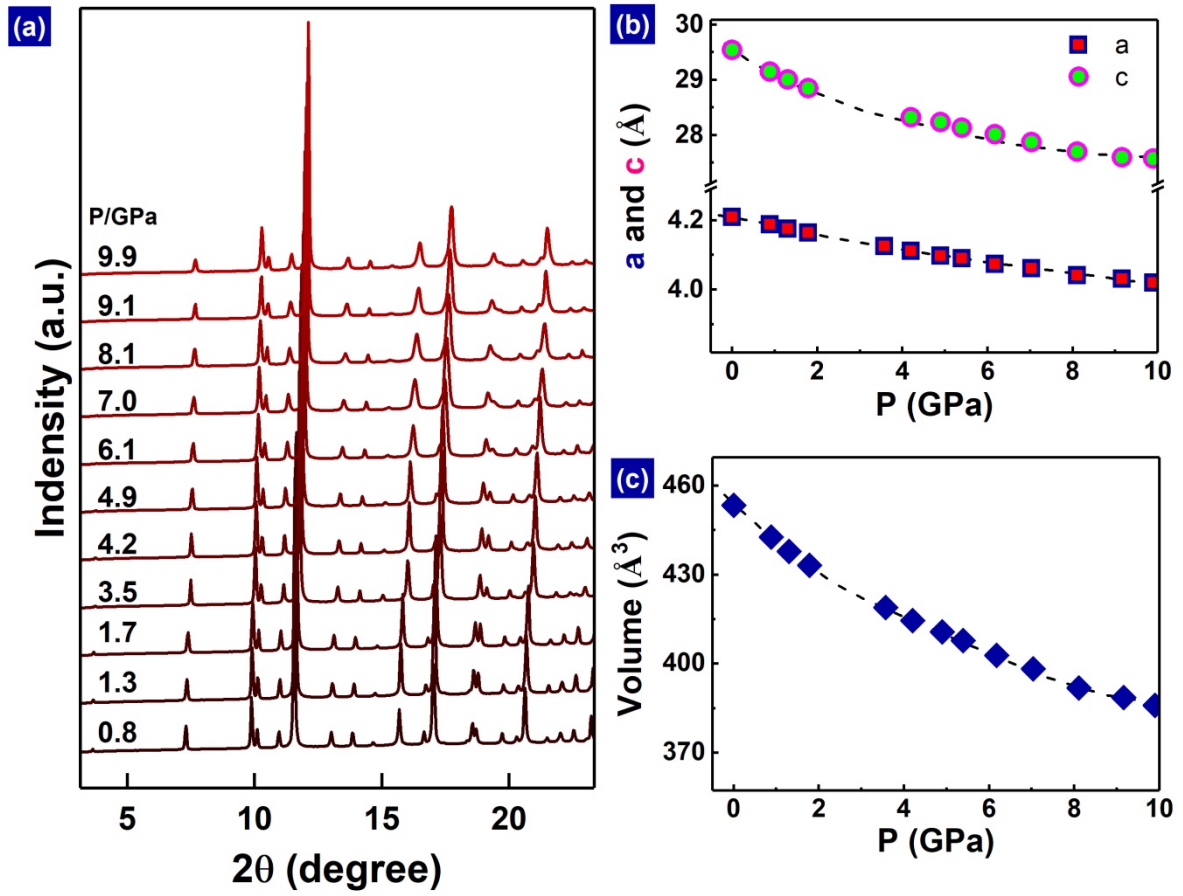


Figure S1 High pressure X-ray diffraction study of BSTS, showing that it undergoes no structural phase transitions in the pressure range of these experiments. (a) Synchrotron powder X-ray diffraction patterns of BSTS at different pressures between 0.8 and 9.9 GPa, showing the maintenance of the tetradymite-type diffraction pattern. (b) and (c) The pressure dependence of the lattice parameters and volume for BSTS.

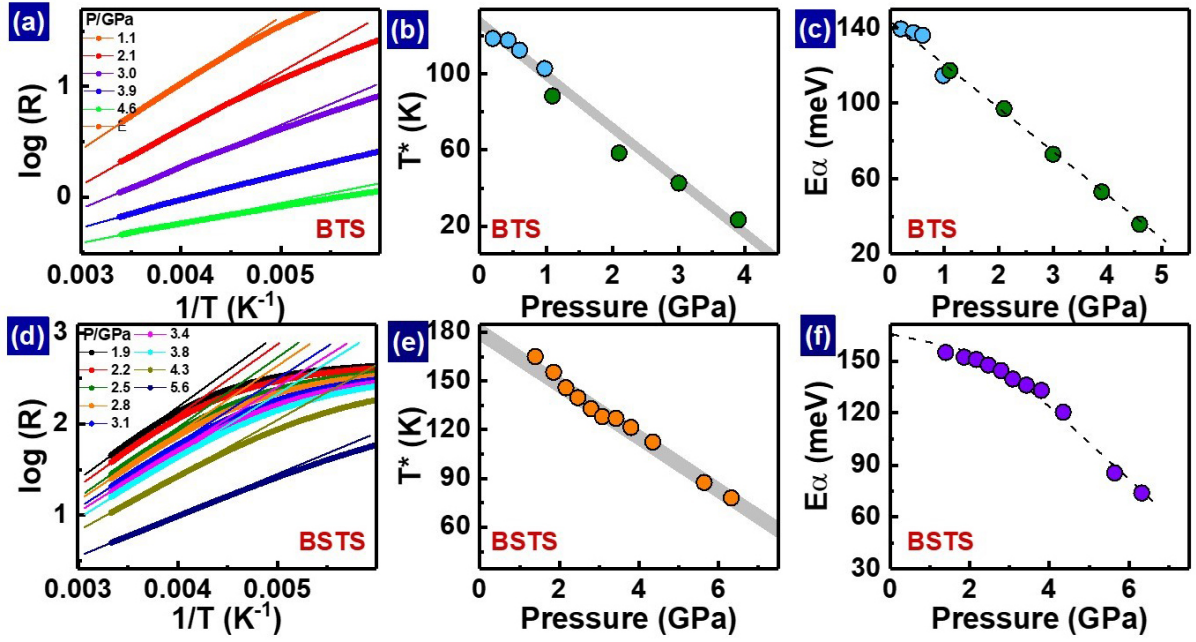


Figure S2 The temperature-dependent resistances for crystals of the optimally doped topological insulators BTS and BSTS as a function of pressure. (a) and (d) Arrhenius plots of the temperature dependence of the resistance at different pressures for the two materials. (b) and (e) Pressure dependence of the crossover temperatures T^* . (c) and (f) Pressure dependence of the resistance activation energies E_α .

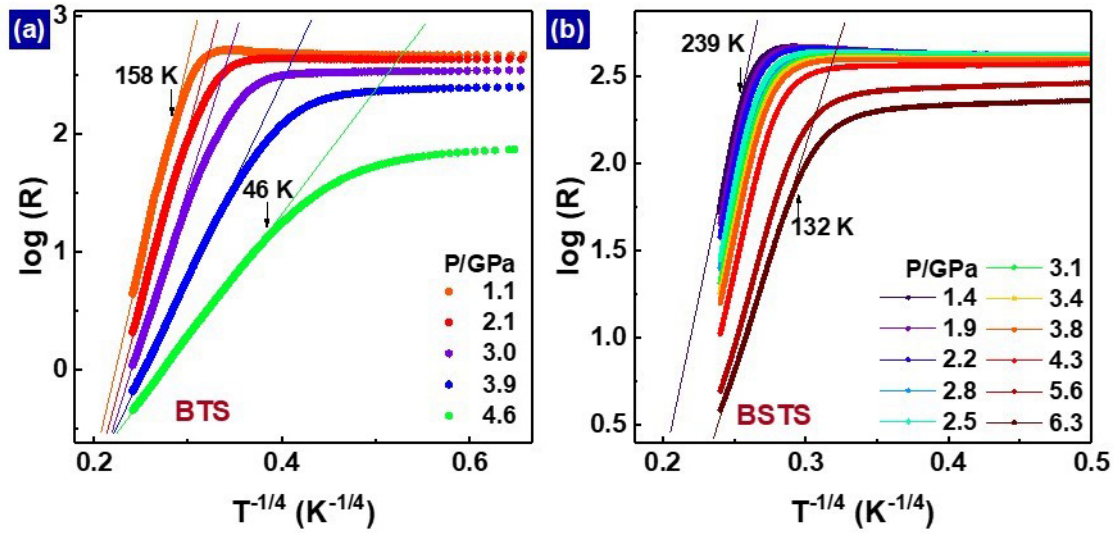


Figure S3 Variable-Range-Hopping (VRH) plots of the temperature versus resistance at different pressures for the two materials. The solids are experimental data and the lines are the linear fit to the data measured at high temperatures. It shows that the VRH fits can describe our experimental data well.

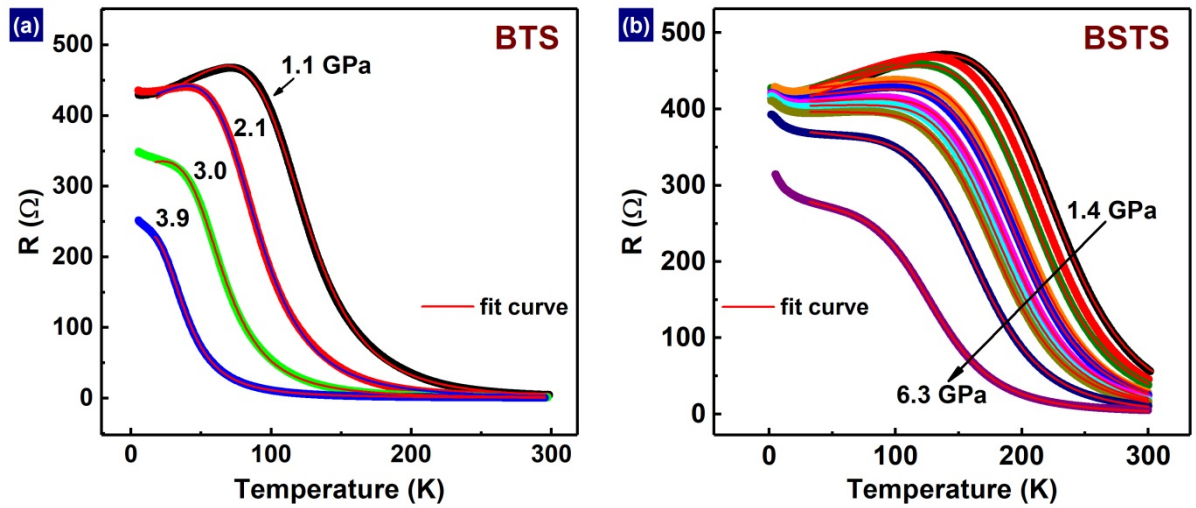


Figure S4 Resistance as a function of temperature obtained at different pressures for BTS and BSTS samples. The solids are experimental data and the red lines are the fit to the data with the two channel model.

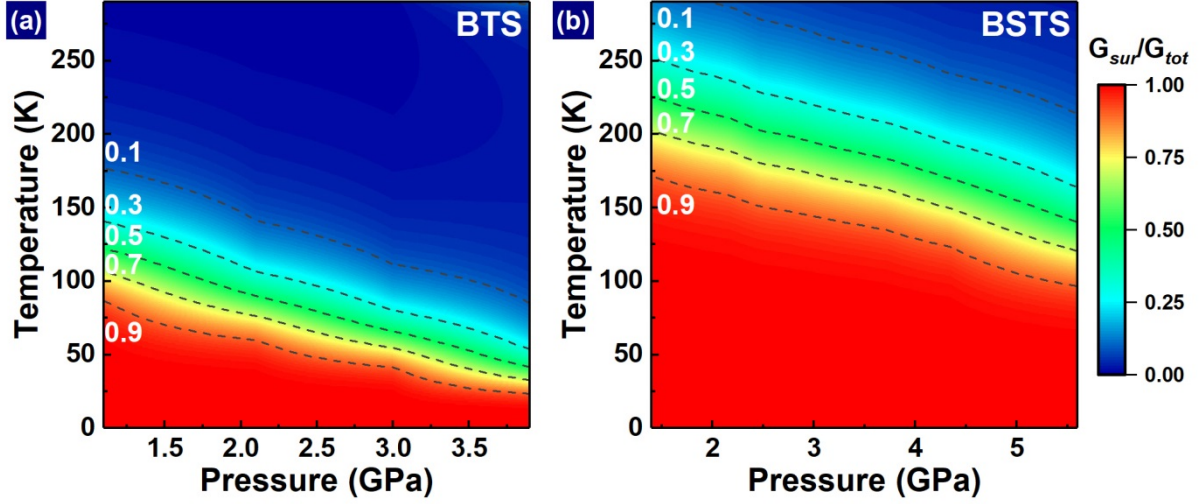


Figure S5 Pressure dependence of the ratio of G_{sur}/G_{tot} (shown on a color scale) for BTS and BSTS. G_{sur} and G_{tot} are obtained from the bulk and surface conductances averaged from measurements for different runs, displaying that the pressure-induced decrease in the bulk activation energy influences the temperature of dominance of the TSS for both TIs. If we define the values of G_{sur}/G_{tot} above 0.9 (red area) and below 0.1 (blue area) as the regimes where the metallic surface states and the insulating bulk states dominate respectively, then the similarities and differences between BTS and BSTS are straightforwardly seen through the color coding. Conservatively speaking, below 10 K at ambient pressures the surface states are sufficiently dominant in both materials to allow for study of their properties.

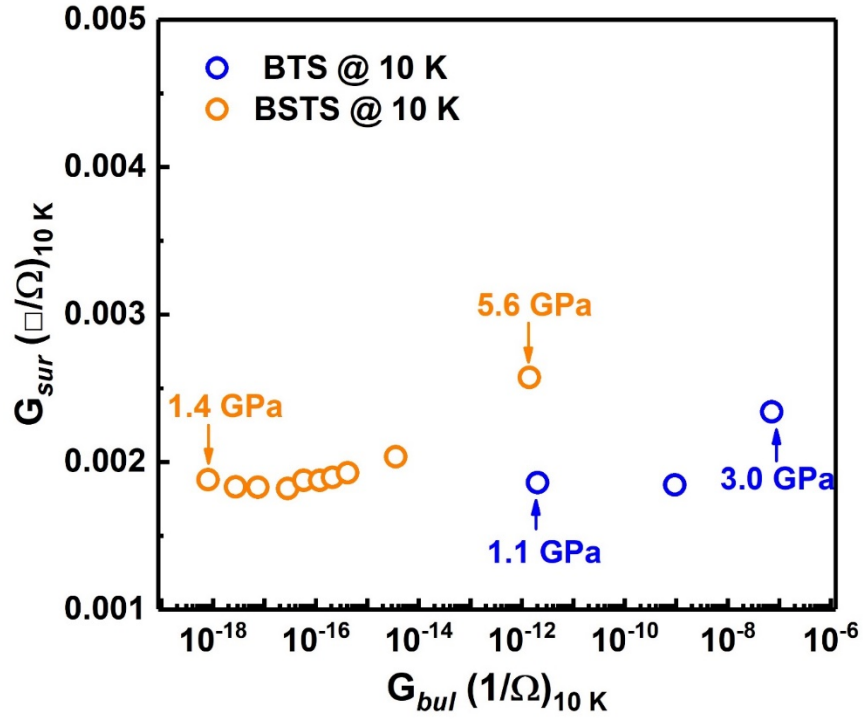


Figure S6 Conductance of surface states as a function of the conductance of the bulk states extrapolated down to 10 K from the conductance starting at 270 K. The orange circles represent the data obtained from the BSTS sample, while the blue circles stand for the data obtained from the BTS sample.