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**Insulating behavior in ultra-low carrier density Bismuth Selenide single crystals** PAUL SYERS, JOHNPIERRE PAGLIONE, University of Maryland — The topological insulator material $Bi_2Se_3$ is well known to suffer from a non-insulating bulk due to doping caused by selenium vacancies. We present results on the synthesis and characterization of pure undoped $Bi_2Se_3$ crystals that exhibit nonmetallic transport behavior over the entire measured temperature range, from room temperature down to at least 2 K. Measurements of longitudinal transport and Hall effect are used to characterize the transport temperature and magnetic field dependences, carrier sign and density, and sensitivity to air exposure.

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