

Abstract Submitted  
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**Anomalous Aharonov-Bohm Conductance Oscillations from Topological Insulator Surface States**<sup>1</sup> YI ZHANG, ASHVIN VISHWANATH, University of California, Berkeley — We study Aharonov-Bohm (AB) conductance oscillations arising from the surface states of a topological insulator nanowire, when a magnetic field is applied along its length. With strong surface disorder, these oscillations are predicted to have a component with anomalous period  $\Phi_0 = hc/e$ , twice the conventional period. The conductance maxima are achieved at odd multiples of  $\Phi_0/2$ , implying that a  $\pi$  AB phase for electrons strengthens the metallic nature of surface states. This effect is special to topological insulators, and serves as a defining transport property. A key ingredient, the surface curvature induced Berry phase, is emphasized here. We discuss similarities and differences from recent experiments on  $Bi_2Se_3$  nanoribbons, and optimal conditions for observing this effect.

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