Effect of disordered geometry on transport properties of three dimensional topological insulator nanowires EMMANOUIL XYPAKIS, JUN WON RHIM, Max Planck Institute for the Physics of Complex Systems, Dresden 01187, Germany, RONI ILAN, Department of Physics, University of California, Berkeley, California 94720, USA, JENS H. BARDARSON, Max Planck Institute for the Physics of Complex Systems, Dresden 01187, Germany — Three dimensional topological insulator nanowires are materials which, while insulating in the bulk, have a metallic boundary described by a two dimensional Dirac Hamiltonian with antiperiodic boundary conditions. Transport properties of this system have been extensively studied in the limit where the surface manifold is conformally flat (e.g., a cylinder) in the presence of a random disordered scalar potential. In this talk I will discuss how this picture is altered when a more realistic surface manifold is chosen, such as a cylinder with a randomly fluctuating radius.

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