Transport on the Surface of Weak Topological Insulators

Roger S. Mong*

Physics, Mathematics and Astronomy, California Institute of Technology, USA

***Email of Presenting Author: roger@caltech.edu**

Abstract

Weak topological insulators have an even number of Dirac cones in their surface spectrum and are thought to be unstable to disorder, which leads to an insulating surface. Here we argue that the presence of disorder alone will not localize the surface states, rather, the presence of a time-reversal symmetric mass term is required for localization. Through numerical simulations, we show that in the absence of the mass term the surface always flow to a stable metallic phase and the conductivity obeys a one-parameter scaling relation, just as in the case of a strong topological insulator surface. With the inclusion of the mass, the transport properties of the surface of a weak topological insulator follow a two-parameter scaling form.

About the speaker

Roger Mong was born in Hong Kong, and raised in Toronto, Canada. He received an undergraduate degree in engineering from the University of Toronto, and a Ph.D. in Physics at the University of California, Berkeley.

He was supervised by Prof. Joel E. Moore, where his works focused on the classification and characterization of topological insulators.