

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Current-phase relation for Josephson effect through helical metal ERHAI ZHAO, George Mason University, CHRIS OLUND, University of Virginia — We compute the current-phase relation of Josephson junctions fabricated on the surface of three-dimensional topological insulators. The Josephson coupling between two superconductors is mediated by the two-dimensional helical metal. It gives rise to the so-called fractional Josephson effect. A short junction is previously known to be a quantum wire of Majorana fermions. We discuss the dependence of the current-phase relation on the length of the junction, the chemical potential of the helical metal, and temperature.

Erhai Zhao
George Mason University

Date submitted: 11 Nov 2011

Electronic form version 1.4