Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Self-consistent Study of Majorana Fermions on a Topological Insulator Surface π Junction MAHMOUD LABABIDI, ERHAI ZHAO, George Mason University — It has been proposed that a Josephson π junction that resides on the 2D surface of a 3D topological insulator (TI) is host to the Majorana fermion. We present a microscopic study of the π junction TI surface through self-consistent calculations with the Bogoliubov-de Gennes equation. We calculate the order parameter, the singlet correlation function along with the energy spectrum, local density of states, and the spectral function. We also show the evolution of the energy dispersion of Majorana fermion as a function of the TI chemical potential.

Mahmoud Lababidi
George Mason University

Date submitted: 11 Nov 2011 Electronic form version 1.4