Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Modeling superconductor-semiconductor heterostructures in the presence of gate-induced electric fields ANDREY E. ANTIPOV, Microsoft Station Q, ENRICO ROSSI, Microsoft Station Q; Department of Physics, William and Mary, BELA BAUER, ROMAN M. LUTCHYN, Microsoft Station Q — We study the effect of gate-induced electric fields on the properties of semiconductor-superconductor heterostructures. Using a model that describes the semiconductor and the superconductor on the same footing we are able to describe the changes of the heterostrtuctures' states induced by external electric fields and quantify the effect that these changes have on the effective parameters of the heterostructures. The effective g-factor of the heterostructure is a key parameter for the realization and observation of Majorana modes in these systems. We show that the changes of the heterostructure's wawefunctions induced by external electric fields can significantly modify the effective g-factor of superconductor-semiconductor heterostructures.

Andrey E. Antipov
Microsoft Station Q

Date submitted: 11 Nov 2016 Electronic form version 1.4