

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Wireless Majorana Fermions: From Magnetic Tunability to Braiding¹ GEOFFREY FATIN, ALEX MATOS-ABIAGUE, BENEDIKT SCHARF, IGOR ZUTIC, University at Buffalo - SUNY — We propose a versatile platform to investigate the existence of zero-energy Majorana fermions (MFs) and their non-Abelian statistics through braiding [1]. This implementation combines a two-dimensional electron gas formed in a semiconductor quantum well grown on the surface of an *s*-wave superconductor, with a nearby array of magnetic tunnel junctions (MTJs). The underlying magnetic textures produced by MTJs provide highly-controllable topological phase transitions to confine and transport MFs in two dimensions, overcoming the requirement for a network of wires.

[1] G. Fatin, A. Matos-Abiague, B. Scharf, and I. Žutić, arXiv e-prints (2015), arXiv:1510.08182v1.

¹This work has been supported by ONR Grant N000141310754 and U.S. DOE BES Award DE-SC0004890.

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Date submitted: 04 Nov 2015

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