

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Universal transport signatures of Majorana fermions in superconductor-Luttinger liquid junctions** JASON ALICEA, California Institute of Technology, LUKASZ FIDKOWSKI, UC Berkeley, NETANEL LINDNER, California Institute of Technology, ROMAN LUTCHYN, Station Q, MATTHEW FISHER, UC Santa Barbara — One of the most promising proposals for engineering Majorana fermions employs a spin-orbit-coupled nanowire proximate to an s-wave superconductor. When only part of the wire's length contacts to the superconductor, the remaining conducting portion serves as a natural lead that can be used to probe these Majorana modes via tunneling. The enhanced role of interactions in 1D dictates that this configuration should be viewed as a superconductor-Luttinger liquid junction. We demonstrate that low-energy transport in such junctions is *universal*, and governed by fixed points describing either perfect normal reflection or perfect Andreev reflection. In addition to capturing (in some instances) the familiar Majorana-mediated zero-bias anomaly in a new framework, we show that interactions yield dramatic consequences in certain regimes. Implications for conductance and local density of states measurements will be discussed.

Jason Alicea  
California Institute of Technology

Date submitted: 07 Nov 2012

Electronic form version 1.4