

Abstract Submitted
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Probing Topological Superconductors DAVID SCHMELTZER,
C.C.N.Y. — The presence of attractive interaction on the surface of a 3D topological insulator which is characterized by spinors carrying a Berry phase of π gives rise to superconductivity that support space time half vortices (Majorana zero modes). We construct the effective dual action for the superconductor with the vortices, and show that the $2n$ Majorana fermions are localized and can be replaced with n spinless fermions. The effect of the Majorana zero modes can be observed through the Andreev cross reflection when metallic leads are attached to the superconductor. The presence of the Majorana fermions can be detected with transverse sound waves. We have computed the effect of elastic strain fields and obtain an anomalous response indicating the presence of the Majorana fermions.

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