

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Majorana Fermions in a Spin Ladder System WADE DEGOTTARDI, SMITHA VISHVESHWARA, University of Illinois at Urbana-Champaign, DITPIMAN SEN, Centre for High Energy Physics, Indian Institute of Science, KITAEV LADDER COLLABORATION — We consider a two-legged spin chain version of Kitaev's honeycomb model. Like its parent, this model supports Z_2 vortices at every plaquette. The topological phase of the system is sensitive to, *inter alia*, the spatial pattern of these vortices. The topological phases are gapped in the bulk but possess isolated zero energy Majorana modes at each end. The existence of such Majorana modes can be inferred from a new topological invariant. We show that there is an intimate relation between the existence of Majorana modes and the spontaneous breaking of the global Z_2 symmetry.

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Date submitted: 04 Mar 2011

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