Topological Nonsymmorphic Crystalline Superconductors QING-
ZE WANG, CHAO-XING LIU, Pennsylvania State Univ — Topological supercon-
ductors possess a nodeless superconducting gap in the bulk and gapless zero energy
modes, known as "Majorana zero modes", at the boundary of a finite system. In this
work, we introduce a new class of topological superconductors, which are protected
by nonsymmorphic crystalline symmetry and thus dubbed "topological nonsymmor-
phic crystalline superconductors". We construct an explicit Bogoliubov-de Gennes
type of model for this superconducting phase in the D class and show how Majo-
rana zero modes in this model are protected by glide symmetry. Furthermore, we
generalize the classification of topological nonsymmorphic crystalline superconduc-
tors to the classes with time reversal symmetry, including the DIII and BDI classes,
in two dimensions. Our theory provides a guidance to search for new topological
superconducting materials with nonsymmorphic crystal structures.

Qingze Wang
Pennsylvania State Univ

Date submitted: 22 Sep 2015   Electronic form version 1.4