

Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

MAJORANA DEMONSTRATOR: Prototype Module Commissioning¹
CHRISTOPHER O'SHAUGHNESSY, Univ of NC - Chapel Hill, MAJORANA
COLLABORATION — The MAJORANA DEMONSTRATOR is designed to explore
the feasibility of operating a tonne-scale search for neutrinoless double beta decay
by utilizing germanium detectors enriched in the isotope ^{76}Ge as both a source and
detector. A key goal of the DEMONSTRATOR is to achieve a background of 3 counts
per tonne-year in the region of interest using a compact copper and lead shield.
Meeting such a stringent background limit necessitates the custom design of com-
ponents from materials known to be clean. Most notable are the inner shield, the
strings that hold the enriched detectors, and the module cryostats that contain the
strings. These are fabricated from ultra-high purity copper that has been electro-
formed underground. A prototype module with strings of natural Ge detectors has
been operated using a cryostat and components fabricated from commercial cop-
per. Here we will highlight the performance of the prototype module and its role in
assembly of the ultra-pure modules.

¹We acknowledge support from the Office of Nuclear Physics in the DOE Office
of Science, the Particle Astrophysics Program of the National Science Foundation,
the Russian Foundation for Basic Research, and the Sanford Underground Research
Laboratory.

Christopher O'Shaughnessy
Univ of NC - Chapel Hill

Date submitted: 01 Jul 2014

Electronic form version 1.4