

Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Methods for deploying ultra-clean detectors ALEXIS SCHUBERT,
Univeristy of Washington, MAJORANA COLLABORATION — Next-generation
underground experiments, such as searches for neutrinoless double-beta decay and
dark matter experiments, will perform high-sensitivity measurements that require
extremely low backgrounds. The MAJORANA Collaboration ¹ proposes such an
experiment to search for neutrinoless double-beta decay using an array of germanium
crystals enriched in ⁷⁶Ge. The design of the MAJORANA experiment must minimize
backgrounds while meeting criteria for electrical signal quality, structural integrity,
and thermal cooling characteristics. Recent work has addressed detector deployment
in ultra low-background environments. Advances have been made in fabrication of
radiologically pure copper parts. Prototype designs for detector support structures
reduce backgrounds by minimizing component mass and making use of ultra-pure
materials. This talk will describe the design and use of cryostat test-stands to
investigate the performance of prototype designs for detector strings. While MAJO-
RANA uses germanium detectors, the design considerations and progress made by
the collaboration are applicable to other detector technologies and fields of research.

¹F.T. Avignone III (2007) arXiv:0711.4808v1

Alexis Schubert
Univeristy of Washington

Date submitted: 10 Jan 2008

Electronic form version 1.4