

Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

Neutron excitation of lead and copper in search for specific excited state decays¹ DONG-MING MEI, Los Alamos National Laboratory/University of South Dakota, STEVE ELLIOTT, ANDREW HIME, Los Alamos National Laboratory, ANTON TONCHEV, WERNER TORNOW, MICHAEL ANTONACCI, ANDRII CHYZH, JAMES ESTERLINE, BRENT FALLIN, CALVIN HOWELL, ANTHONY HUTCHESON, HUGON KARWOWSKI, JOHN KELLEY, MARY KIDD, BEN SPAUN, Triangle Universities Nuclear Laboratory, MAJORANA COLLABORATION — Monoenergetic neutron beams of 8 and 12 MeV were produced at the TUNL Shielded Neutron Source. The beam-on data obtained with three CLOVER detectors were used to measure the excitation function in lead and copper for some specific excited state decays. These decays are an important background for the next generation of double-beta decay experiments which are designed to reach the sensitivity set by the atmospheric neutrino mass scale. Measuring and understanding high energy neutron excitation of the shielding and detector materials for neutrinoless double beta decay experiments are crucial for interpreting the result and establishing the shielding requirements. Moreover, locating some specific excited state transitions, such as the $5/2^+$ to $5/2^-$ decay in ^{207}Pb , the 1^- to 1^+ decay in ^{206}Pb etc., will make important contributions to nuclear structure.

¹U.S. Department of Energy and Los Alamos Directed Research and Development Program, DE-FG02-97ER41033, DE-FG02-97ER41042, DE-FG02-97ER41041, NSF-PHY-05-52723.

Dong-Ming Mei
Los Alamos National Laboratory/University of South Dakota

Date submitted: 30 Jun 2006

Electronic form version 1.4