DNP17-2017-000154

Abstract for an Invited Paper
for the DNP17 Meeting of
the American Physical Society

**Exotic nuclei studied via the (d,$^3$He) reaction with fast and not-so-fast beams**[1]

ALAN WUOSMAA, Univ of Connecticut - Storrs

Proton-removal reactions open a window to the properties of exotic neutron-rich nuclei that is complementary to neutron-adding reactions that have been the focus of considerable recent study. Nucleon removal probes not only the states populated in the final nucleus, but also the ground-state wave function of target, and can reveal connections between the initial and final states as well as providing detailed information about the filling of nuclear shells. For exotic nuclei, reactions typically must be performed in inverse kinematics with weak secondary beams. While the reduced beam intensities introduce technical challenges, the inverse-kinematic regime gives access to additional experimental observables that can provide clean signatures for weak transitions that might otherwise not be visible. I will describe two examples of neutron-rich nuclei studied with the proton-removing (d,$^3$He) reaction studied with different approaches: possible proton-intruder configurations in neutron-rich boron isotopes $^{13,14}$B produced from $^{14,15}$C beams near the Coulomb barrier, and a new determination of the properties of the super-heavy isotope of hydrogen $^5$H from fast $^6$He beams.

[1]Work supported by the U.S. Department of Energy, under Grants DE-FG02-04ER41320, DE-SC0014552, DE-AC02-06CH11357, and DE-FG02-87ER40316, and the U.S. National Science Foundation under Grant Nos. PHY-1068217, PHY-1068192 and PHY-1102511.