

Abstract Submitted  
for the DPP16 Meeting of  
The American Physical Society

**Neutron Generation from Laser-Accelerated Ion Beams: Use of Alternative Deuteron-Rich Targets for Improved Neutron Yield and Control of Neutron Spectra**<sup>1</sup> B. J. ALBRIGHT, L. YIN, A. FAVALLI, Los Alamos National Laboratory — Laser-ion-beam generation in the break-out afterburner (BOA) acceleration regime has been modeled for several deuteron-rich solid-density targets using the VPIC particle-in-cell code [1]. Monte Carlo modeling of the transport of these beams in a beryllium converter in a pitcher-catcher neutron source configuration shows significant increases in neutron yields may be achievable through judicious choices of laser target material. Additionally, species-separation dynamics in some target materials during the BOA ion acceleration phase can be exploited to control the shapes of the neutron spectra. [1] K. J. Bowers et al., *Phys. Plasmas* **15**, 055703 (2008).

<sup>1</sup>Work performed under the auspices of the U.S. DOE by the LANS, LLC, Los Alamos National Laboratory under Contract No. DE-AC52-06NA25396. Funding provided by the Los Alamos National Laboratory Directed Research and Development Program.

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Date submitted: 13 Jul 2016

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