

Abstract Submitted  
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**Development of a High- Brightness, Quasi- Monoenergetic Neutron Source at LLNL for Nuclear Physics Applications**<sup>1</sup> M.S. JOHNSON, S.G. ANDERSON, D. BLEUEL, P.J. FITSOS, D. GIBSON, J.M. HALL, R. MARSH, B. RUSNAK, LLNL — Lawrence Livermore National Laboratory is developing a high-brightness, quasi-monoenergetic neutron source. The intensity of the neutron source is expected to be  $10^{11}$  n/s/sr with energies between 7 MeV and 10 MeV at 5% bandwidth at 0-degrees. This energy region is important for the study of neutron-induced reactions, nuclear astrophysics, and nuclear structure. For example, for neutrons between 1 and 10 MeV, the capturing states are below the GDR in many nuclei and the dominant reactions are compound and direct capture. The intensity and energy selection of the source makes it appealing for measurements of sparse targets at specific energies. We will present an array of nuclear physics measurements that will benefit from this source. The source is also of interest to generating activated targets for decay-out studies or for target production for other reaction-based measurements, e.g. fusion-evaporation reactions. Other usage examples include practical applications for imaging of very dense objects such as machine parts. For this presentation, we will discuss our method to use (d,n) production reaction on deuterium in a windowless gas target system. This approach is required because of the large power of the 7 MeV,  $300\mu\text{A}$  deuteron beams. We will discuss our facility and its capabilities.

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