

Abstract Submitted  
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**Characterization of Quasi-monoenergetic Neutron Beams from Deuteron Breakup at the 88-Inch Cyclotron**<sup>1</sup> DARREN BLEUEL, MARGARET MCMAHAN, Lawrence Berkeley National Laboratory, LARRY AHLE, LEE BERNSTEIN, Lawrence Livermore National Laboratory, LAWRENCE HEILBRONN, Lawrence Berkeley National Laboratory — A neutron irradiation facility is being developed at Lawrence Berkeley National Laboratory's (LBNL's) 88-inch cyclotron to measure neutron cross sections on radioactive targets important to nuclear astrophysics and stockpile stewardship. Quasi-monoenergetic neutron beams are produced in the 10-32 MeV range using the deuteron breakup reaction on various thin targets. Accurate characterization of these beams is needed before cross section measurements may be performed. To determine the neutron spectra produced by the breakup reaction on thin targets, three methods have been used, including activation foil measurements, direct neutron measurement using the time-of-flight technique with a Stilbene detector, and complimentary measurements of the associated protons using STARS, a silicon telescope array. Preliminary results indicate a good outlook for producing quasi-monoenergetic neutron beams with fluxes in the  $10^{6-8}$  n/cm<sup>2</sup>/s range.

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