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Neutron Energy Spectra for Deuteron Beams Incident on Thin **Targets**<sup>1</sup> JESSAMYN ALLEN, University of California, Berkeley, PEGGY MCMAHAN, LAWRENCE HEILBRONN, JOE CERNY, DARREN BLEUEL, Lawrence Berkelev National Laboratory, BRAD BARQUEST, CYBELE JEWETT, University of California, Berkeley, IAN THOMPSON, LARRY AHLE, Lawrence Livermore National Laboratory — Neutron energy spectra and cross-section data have been measured for deuteron breakup on thin targets using the 88-Inch Cyclotron at Lawrence Berkeley National Laboratory. Data was collected for tantalum and titanium targets at deuteron energies 20, 29, 35 and 38 MeV. Using a NE213 liquid-scintillation counter with neutron/gamma pulse shape discrimination, energy spectra were determined at zero degrees by measuring the time-of-flight relative to the cyclotron R.F. Additional data was collected at larger angles for deuteron energy of 20 MeV. The data collected tests the predictions of current breakup models, aiding in further development of the codes providing a better understanding of the competition between Coulombic and nuclear breakup. Breakup systematics will be useful in exploiting deuteron breakup as a mechanism for fast neutron production for a variety of applications.

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