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Characterization of short-pulse laser driven neutron source KATERINA FALK, Los Alamos National Laboratory, DANIEL JUNG, Queens University of Belfast, NEVZAT GULER, Jefferson Lab, OLIVER DEPPERT, Technische Universitat Darmstadt, MATTHEW DEVLIN, J.C. FERNANDEZ, D.C. GAUTIER, Los Alamos National Laboratory, M. GEISSEL, Sandia National Laboratories, R.C. HAIGHT, Los Alamos National Laboratory, B.M. HEGELICH, University of Texas at Austin, DANIELA HENZLOVA, K.D. IANAKIEV, METODI ILIEV, R.P. JOHNSON, F.E. MERRILL, Los Alamos National Laboratory, G. SCHAUMANN, Technische Universitat Darmstadt, K. SCHOENBERG, T. SHIMADA, T.N. TADDEUCCI, J.L. TYBO, Los Alamos National Laboratory, F. WAGNER, Technische Universitat Darmstadt, S.A. WENDER, G.A. WURDEN, ANDREA FAVALLI, Los Alamos National Laboratory, MARKUS ROTH, Technische Universitat Darmstadt — We present a full spectral characterization of a novel laser driven neutron source, which employed the Break Out Afterburner ion acceleration mechanism. Neutrons were produced by nuclear reactions of the ions deposited on Be or Cu converters. We observed neutrons at energies up to 150 MeV. The neutron spectra were measured by five neutron time-of-flight detectors at various positions and distances from the source. The nTOF detectors observed that emission of neutrons is a superposition of an isotropic component peaking at 3.5-5 MeV resulting from nuclear reactions in the converter and a directional component at 25-70 MeV, which was a product of break-up reaction of the forward moving deuterons. Energy shifts due to geometrical effects in BOA were also observed.

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