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The MIT HEDP Accelerator Facility for Diagnostic Development for OMEGA, Z, and the NIF F.H. SEGUIN, M. GATU JOHNSON, P. ADRIAN, A. BIRKEL, T.M. JOHNSON, N.V. KABADI, B. LAHMANN, C.E. PARKER, J.A. PEARCY, R. PRZYBOCKI, R.A. SIMPSON, H. SIO, G.D. SUTCLIFFE, A. BOSE, E. DOEG, R. FRANKEL, J.A. FRENJE, C.K. LI, R.D. PETRASSO, MIT, R. LEEPER, LANL, C.L. RUIZ, SNL, T.C. STANGSTER, LLE — The MIT HEDP Accelerator Facility utilizes a 135-keV, linear electrostatic ion accelerator; DT and DD neutron sources; and two x-ray sources for development and characterization of nuclear diagnostics for OMEGA, Z, and the NIF. The accelerator generates DD and D^3He fusion products through the acceleration of D^+ ions onto a ^{3}He-doped Erbium-Deuteride target. Accurately characterized fusion product rates up to 10^6 s^{-1} are routinely achieved. The DT and DD neutron sources generate up to 610^8 and 110^7 neutrons/s, respectively. One x-ray generator is a thick-target W source with a peak energy of 225 keV; the other uses Cu, Mo, or Ti elemental tubes to generate x-rays with a maximum energy of 40 keV. Diagnostics developed and calibrated at this facility include CR-39-based mono-energetic particle radiography, charged-particle spectrometers, neutron detectors, and the particle Time-Of-Flight (pTOF) CVD-diamond-based bang time detector. The accelerator is also a valuable hands-on tool for student education at MIT. This work was supported in part by the U.S. DoE, SNL, LLE and LLNL.

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