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**Characterization of neutron yield and x-ray spectra of a High Flux Neutron Generator (HFNG)** NNAEMEKA NNAMANI, University of California, Berkeley, CA 94720, USA, HFNG COLLABORATION — The High Flux Neutron Generator (HFNG) is a DD plasma-based source, with a self-loading target intended for fundamental science and engineering applications, including $^{40}Ar/^{39}Ar$ geochronology, neutron cross section measurements, and radiation hardness testing of electronics. Our first estimate of the neutron yield, based on the population of the 4.486 hour $^{115}In$ isomer gave a neutron yield of the order $10^8$ n/sec; optimization is ongoing to achieve the design target of $10^{11}$ n/sec. Preliminary x-ray spectra showed prominent energy peaks which are likely due to atomic line-emission from back-streaming electrons accelerated up to 100 keV impinging on various components of the HFNG chamber. Our x-ray and neutron diagnostics will aid us as we continue to evolve the design to suppress back-streaming electrons, necessary to achieve higher plasma beam currents, and thus higher neutron flux. This talk will focus on the characterization of the neutron yield and x-ray spectra during our tests. A collimation system is being installed near one of the chamber ports for improved observation of the x-ray spectra. This work is supported by NSF Grant No. EAR-0960138, U.S. DOE LBNL Contract No. DE-AC02-05CH11231, U.S. DOE LLNL Contract No. DE-AC52-07NA27344, and the UC Office of the President Award 12-LR-238745.

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