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High-Flux Neutron Generator Facility for Geochronology and Nuclear Physics Research CORY WALTZ, University of California, Berkeley, CA 94720, USA, HFNG COLLABORATION — A facility based on a next-generation, high-flux D-D neutron generator (HFNG) is being commissioned at UC Berkeley. The generator is designed to produce monoenergetic 2.45 MeV neutrons at outputs exceeding 10^{11} n/s. The HFNG is designed around two RF-driven multi-cusp ion sources that straddle a titanium-coated copper target. D+ ions, accelerated up to 150 keV from the ion sources, self-load the target and drive neutron generation through the d(d,n)^{3}He fusion reaction. A well-integrated cooling system is capable of handling beam power reaching 120 kW impinging on the target. The unique design of the HFNG target permits experimental samples to be placed inside the target volume, allowing the samples to receive the highest neutron flux (10^{11} cm^{-2}s^{-1}) possible from the generator. In addition, external beams of neutrons will be available simultaneously, ranging from thermal to 2.45 MeV. Achieving the highest neutron yields required carefully designed schemes to mitigate back-streaming of high energy electrons liberated from the cathode target by deuteron bombardment. The proposed science program is focused on pioneering advances in the ^{40}Ar/^{39}Ar dating technique for geochronology, new nuclear data measurements, basic nuclear science, and education. An end goal is to become a user facility for researchers. 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 UC Office of the President Award 12-LR-238745.

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