

Abstract Submitted
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Neutron Activation Diagnostics for FRCHX at AFRL D.A. SUTHERLAND, Massachusetts Institute of Technology, G.A. WURDEN, T.P. INTRATOR, Los Alamos National Laboratory, KIRTLAND AIR FORCE RESEARCH LABORATORY COLLABORATION — Neutron diagnostics have been developed for MTF on the field reversed configuration heating experiment (FRCHX) to detect both DD and DT neutrons. We are working with time-integrated activation counting systems for absolute measurements of neutron yields, in the range of 10^6 - 10^{13} neutrons/shot. We are using multiple diagnostics due to different activation thresholds and need for diagnostic redundancy. The first system is indium-activation, with an Ortec germanium detector (GEM-10185) coupled to a multi-channel analyzer. Indium is sensitive to and provides a count of DD neutrons. The second diagnostic system is Arsenic-activation that will also detect DD neutrons. The third system is Copper-activation, using a sodium iodide (NaI) coincidence system. Only DT neutrons are detected by this system. A fourth system consists of BTI Bubble detectors that are sensitive to both DD and DT neutrons. Thus, four systems will provide an absolute count of DD or DT neutrons from the FRC plasma implosion in FRCHX at the AFRL in Albuquerque later this year.

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