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Diagnosing the high density FRX-L Field Reversed Configuration plasma[1] G.A. WURDEN, T.P. INTRATOR, R.M. RENNEKE, L.A. DORF, M.W. FARRELL, T.K. GRAY, S.C. HSU, Los Alamos National Laboratory, A.G. LYNN, U of New Mexico, E.L. RUDEN, Air Force Research Laboratory — The FRX-L plasma is a high pressure, high density, field reversed configuration (FRC), at n $\sim$1x10^{16}-1x10^{17} cm^{-3}, and hundreds of eV electron temperature. In order to study formation, equilibrium, transport, flow, and confinement issues, we have a suite of diagnostics. Standard plasma diagnostics include B-dot probes, magnetic flux loops, single and multi-channel visible spectroscopy, optical light tomography arrays, up to 8 filtered visible fibers (546 nm or 486 nm) and an 8-chord side-on HeNe interferometer. Recent diagnostic additions include AXUV bolometers, VUV spectroscopy using a methly salicylate fluorescer converter and optical multichannel analyzer (OMA), eight simultaneous axial views of visible spectra with a 0.3 meter spectrometer and Princeton Instruments PI-Max camera, two-foil end-on surface barrier diode soft x-ray measurements, a hard x-ray/neutron plastic scintillator/ PMT, and indium activation foils to detect time-integrated absolute DD neutron emission. We also discuss plans for a soft x-ray framing camera, using end-on optical access and consisting of a pinhole/fluorescer geometry coupled to a high resolution DiCam camera.

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