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Spectroscopic Diagnostics of the Irvine FRC J.M. LITTLE, E.P. GARATE, W.S. HARRIS, W.W. HEIDBRINK, R. MCWILLIAMS, T. ROCHE, E. TRASK, University of California, Irvine — A spectroscopic system is developed to resolve the Hydrogen-alpha spectral line of the Balmer series in order to estimate neutral hydrogen temperatures and rotational velocities in the Irvine Field Reversed Configuration (IFRC). Light from the chamber is collected with a system of lenses and relayed via 1mm diameter fiber optic cable to a one-meter Jarrell Ash Czerny-Turner monochromator. An image intensifier is placed in series with a CCD camera at the exit slit of the monochomator to capture the image of the spectral line. The image is focused on the CCD camera with approximately 150 pixels per nanometer of wavelength, which allows a wavelength range of around 4 nm per image. The estimated resolution of the system is presently on the order of 5Å FWHM. The spectral line profile is obtained by deconvolving the measured profile with the instrument profile in IDL.

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