

Abstract Submitted
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Ion energy distribution function measurements in the Irvine Field Reversed Configuration THOMAS ROCHE, EUSEBIO GARATE, WAYNE HARRIS, WILLIAM HEIDBRINK, ROGER MCWILLIAMS, ERIK TRASK, UCI — A gridded ion energy analyzer has been constructed to measure the ion energy distribution function in the Irvine Field Reversed Configuration (IFRC). Three grids provide Debye shielding, electron rejection and ion energy selection, respectively. It has an acceptance angle of ~ 20 degrees. Due to a large, negative, floating potential a fast (17 MHz bandwidth) optocoupler is used to decouple the signal from earth ground. A dummy collector is also used to subtract background noise pickup. Ion current flows in the negative theta direction in the IFRC. Measurements have been taken both parallel and anti-parallel to the current near the magnetic null. These measurements have shown that a shifted Maxwellian, with peak energy of ~ 18 eV, can be fit to the ion energy distribution function. This number agrees with the upper limit of 20 eV previously placed on the peak by a time of flight diagnostic¹. Coupling of the distribution function measurements with magnetic field measurements will determine the distribution of orbit types in the IFRC, specifically the ratio of betatron to drift type particle orbits.

¹W. S. Harris et al., Rev. Sci. Instrum. **79**, 10F313 (2008)

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