

Abstract Submitted
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Ion Energy Distribution Functions in the Irvine FRC W.S. HARRIS, E.P. GARATE, W.W. HEIDBRINK, R. MCWILLIAMS, T. ROCHE, E. TRASK, University of California, Irvine — Charge-exchange neutral particle energy distribution function measurements have been made over the 20-500 eV energy range in the Irvine Field Reversed Configuration (IFRC) using a time-of-flight charge exchange analyzer. Neutral flux measurements imply that ion acceleration has been observed as a consequence of the applied toroidal electric field, giving average energies around 65 eV. Radially scanning through different chords results in an increased neutral flux as the chord's minimum radius approaches the null circle. The initial magnetic field has been varied in order to compare ion acceleration in the following cases. In one case, the ion gyroradius is 20 cm, approximately equal to the null circle radius, 25 cm, and the resulting reversed field has a magnitude of 100 Gauss and a lifetime of 20 μ s. In the other case, the ion gyroradius during FRC formation is 4.5 cm and the resulting reversed field has a magnitude of 200 Gauss and lifetime of 80 μ s. Visible emission spectroscopy has also been performed on the H_α line resulting in Doppler broadening in the range of 5-10eV.

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