

Abstract Submitted
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A Time-of-Flight Neutral Particle Detector for the Irvine FRC

W.S. HARRIS, E.P. GARATE, W.W. HEIDBRINK, E. TRASK, UC Irvine — A time-of-flight neutral particle detector¹ has been constructed to diagnose the ion contribution to the current in the Irvine FRC. Charge exchange neutrals are chopped by a slotted disk which then collide with a Channeltron electron multiplier. The 22cm diameter slotted disk has a rotation frequency of 30,000 RPM and a chopping frequency of 80kHz. This rotation frequency and a slot thickness of $152\mu\text{m}$ allow a snapshot of $0.8\mu\text{s}$ to be taken and spread out over a 1.5m streaming length. With these parameters, the time-dependent ion velocity distribution can be measured with $12.5\mu\text{s}$ time resolution.

¹D. E. Voss and S. A. Cohen, Rev. Sci. Instrum. 53, 1696 (1982).

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