

Abstract Submitted
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A toroidal CHERS diagnostic for MST¹ R.M. MAGEE, D.J. DEN HARTOG, G. FIKSEL, University of Wisconsin - Madison and CMSO, D. CRAIG, Wheaton College and CMSO, D.A. ENNIS, University of Washington, S. GANGADHARA — Charge exchange recombination spectroscopy (CHERS) has been used on MST for several years to make localized measurements of the poloidal component of the impurity ion temperature and flow. These data have been used to constrain theoretical models of the RFP anomalous ion heating problem and measure the MHD dynamo in the core. The complementary toroidal measurements will allow reconstruction of the parallel and perpendicular temperature profiles and measurements of additional MHD dynamo components. This poster will describe the design of the diagnostic in light of two principal difficulties. The low signal-to-background ratio has been addressed by upgrading the 49 keV H⁰ neutral beam to increase the charge exchange signal. The requirements of high temporal and spatial resolution have driven the optical design; the assembly maximally fills a high throughput spectrometer optimized for fast measurements (100 kHz) while maintaining a spatial resolution of 2-3 cm. Initial results will be presented.

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