

Abstract Submitted
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The Development of ChERS and Passive Spectroscopy for Measuring Ion temperatures, Densities, and Flows in HSX A. BRIESEMEISTER, D.T. ANDERSON, K. ZHAI, F.S.B. ANDERSON, J. LORE, J. TALMADGE, HSX Plasma Laboratory, University of Wisconsin - Madison — A charge-exchange recombination spectroscopy system (ChERS) is being implemented on HSX to measure ion flow speed and temperature. These flow measurements can be used to verify the value of the radial electric field, which has been predicted to be large in the core region of the plasma. Flow measurements will also be used to observe changes in viscous damping caused by breaking the symmetry of HSX's quasi-helical magnetic field structure. Careful analysis of the ChERS system is presented including effects from beam width and the different energy components of the beam. The radial distribution of ion species is predicted using coronal equilibrium as well as impurity diffusion to facilitate the use of spectroscopic measurements to estimate the effective ion charge at different radial locations within HSX plasmas using both ChERS and passive spectroscopy. This work is supported by DOE Grant DE-FG02-93ER54222.

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