Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Intrinsic Flow Behavior During Improved Confinement in MST Reversed-field Pinch[1] E. TAN, D. CRAIG, B. SCHOTT, Wheaton College, J. BOGUSKI, Z.A. XING, M.D. NORNBERG, J.K. ANDERSON, University of Wisconsin-Madison — We used active charge exchange recombination spectroscopy to measure impurity ion flow velocity in high-current plasmas during periods of improved confinement. Velocity measurements througout the core reveal that ion flow parallel to the magnetic field is dominant compared to the perpendicular flow. The poloidal flow profile reverses at r/a = 0.6, and the flow near the core is larger on outboard positions compared to the inboard positions. A strong shear in the toroidal flow develops near the axis as PPCD proceeds. In the past, the mode velocity has been used to infer the toroidal flow based on the 'no-slip' assumption that the mode and local plasma co-rotate. We tested this assumption with direct measurements near the m = 1, n = 6 resonant surface. Inboard flow measurements are consistent with the no-slip condition and exhibit a time dependence where the flow decreases together with the n = 6 mode velocity. The outboard flow is consistent in magnitude with the no-slip condition but the variations in time and across shots do not correlate well with the n = 6 mode velocity. Possible reasons why the inboard and outboard flow exhibit different behavior are discussed.

[1]This work has been supported by the US DOE and the Wheaton College summer research program.

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Date submitted: 14 Jul 2017 Electronic form version 1.4