

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Measurement of Pfirsch-Schluter flows and radial electric field in the HSX Stellarator¹ S.T.A. KUMAR, F.S.B. ANDERSON, D.T. ANDERSON, J.N. TALMADGE, HSX Plasma Laboratory, UW-Madison — Inboard-outboard asymmetry in the toroidal C+6 ion flow has been measured using the Charge Exchange Recombination Spectroscopy in the HSX stellarator. Measurements indicate the presence of counter-streaming Pfirsch-Schluter (PS) ion flows. Experiments are done in 100 kW ECRH heated methane plasmas of line averaged density $\sim 4 \times 10^{18}/\text{m}^3$ and central electron temperature ~ 2 keV. Measurements are made for both the quasi-helically symmetric configuration and for the configuration where the symmetry is deliberately broken using auxiliary coils. It has been observed that the flows, both mean and the PS flows, are larger for the broken symmetry configuration compared to the helically symmetric configuration. The radial electric field, which is proportional to the magnitude of the PS flow, is larger than the previous measurements but still significantly less than the neoclassically calculated value.

¹This work is supported by the US DOE.

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Date submitted: 10 Jul 2014

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