Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

The HSX Experimental Program[1] F.S.B. ANDERSON[2], HSX Plasma Laboratory, UW-Madison — HSX has demonstrated reductions in neoclassical particle, heat, and momentum diffusivity through quasisymmetry. The Pfirsch- Schluter and bootstrap currents have been measured with pickup coils and analyzed with the V3FIT code. Their structure is consistent with the quasihelical structure; the time evolution of the bootstrap current is being modeled. The radial electric field plays a central role in neoclassical transport, and through ExB shear, in anomalous transport. Use of the 2D Wieland transport model for TEM/ITG turbulence predicts well the electron temperature profile outside r/a 0.3, and inside if turbulence suppression by ExB shearing is included. The peaked electron temperature (2.5 keV with 100 kW injected power) is indicative of an internal transport barrier. Our program is focusing on modeling and measurement of the electric fields through use of the PENTA code and a CHERS diagnostic. GNET is being used to look at ECRH/ICRF driven fluxes. The focus is now shifting toward anomalous transport and enhanced confinement regimes through increased turbulence measurements and variation of the electric field through attainment of the ion root.

[1]Supported under DoE Grant DE-FG02-93ER54222.
[2]for the HSX Team

David Anderson
UW-Madison

Date submitted: 21 Jul 2008 Electronic form version 1.4