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Overview of Recent Results from HSX and the Planned Experimental Program[1] D.T. ANDERSON, A.F. ALMAGRI, F.S.B. ANDERSON, A.R. BRIESEMEISTER, J.M. CANIK, C. CLARK, W. GUTTENFELDER, A. HERR, K.M. LIKIN, J. LORE, H. LU, S. OH, P.H. PROBERT, R. RADDER, J. SCHMITT, J.N. TALMADGE, K. ZHAI, HSX Plasma Laboratory; University of Wisconsin-Madison, D.L. BROWER, C. DENG, University of California-Los Angeles — HSX has previously demonstrated that the quasihelical symmetry (QHS) does indeed improve single-particle confinement and reduce parallel viscous damping over a non-optimized 3-D configuration. New neoclassical differences have been observed under the present operating conditions including reduced thermodiffusion and electron thermal conductivity in the QHS case as compared to the mirror case. Current measurements are consistent with bootstrap calculations and show the current flows in a direction opposite to the tokamak. MHD modes have been observed tied to the presence of energetic electrons in the QHS configuration. A new ECRH transmission line now permits operation at full tube power. Our goals are to increase the density, the magnetic field and heating power to accentuate neoclassical transport relative to anomalous. A CHERS system is being implemented to infer radial electric fields for transport analysis. Preparations are near complete for going to B=1.0T for O-mode heating.

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