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HSX Program Overview and Research Directions SIMON ANDERSON, Univ of Wisconsin, Madison, HSX GROUP TEAM — HSX is a neoclassical-transport optimized stellarator. Research has concentrated on neoclassical transport, turbulent transport and concept optimization, and the plasma edge. For neoclassical transport, an optimized diagnostic has improved equilibrium reconstruction. Counter-streaming Pfirsch-Schluter flow measurements have been made to examine the core electron-root $\mathbf{E_r}$. Turbulent transport studies have included heat transport stiffness and direct comparisons with non-linear GENE calculations. Optimization of the HSX magnetic configuration to turbulent transport has been initiated. Edge studies have concentrated on measurements of 2D edge profiles and comparison to EMC3-EIRENE. The HSX program will continue in these main areas, with extension into energetic ion confinement with DNB injection. Diagnostic upgrades will permit direct $\mathbf{E_r}$ measurements through MSE, and improvements in density and temperature fluctuation measurements will improve understanding of turbulent transport and facilitate continued GENE modeling. Edge studies will be extended to measure neutral fueling and recycling, which will permit use of a single reservoir particle balance model to provide a complete particle inventory. * This work supported by US DOE Grant DE-FG02-93ER54222

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