

Abstract Submitted
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B=1.0T Operation of HSX¹ F. SIMON B. ANDERSON, A.F. ALMAGRI, D.T. ANDERSON, A.R. BRIESEMEISTER, J. CANIK, C. DENG, UCLA, W.A. GUTTENFELDER, C. LECHTE, K.M. LIKIN, J. LORE, H. LU, S. OH, J. RADDER, J. SCHMITT, J.N. TALMADGE, K. ZHAI, HSX Plasma Laboratory, Univ. of Wisconsin-Madison — Operation of the HSX device at 1 Tesla is planned for late 2005 with fundamental O-mode ECH at 28 GHz. Many of the current diagnostics carry over from the present B=0.5 T operation, but some modifications to plasma diagnostics need to be addressed. More refined models of the device and ANSYS[®] analysis of 1 T coil forces and stresses are underway and are compared to coil motions observed with a set of motion sensors. We are investigating a new mode of HSX operation that allows the effective ripple to be modified over a large range without large changes to the macroscopic magnetic parameters. Coil forces and stresses are significantly increased for this mode of operation (which reduces coil currents in one coil per half-field-period), and ANSYS is being used to carefully examine loads and forces to ensure safe machine operation. New or improved plasma diagnostics for 1 T operation, which include CHERS, ECE, microwave reflectometry, soft X-ray tomography, and Z-eff radial profiles, and the planned upgraded ECH heating/waveguide system, will be presented.

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David Anderson

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