

Abstract Submitted  
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**Second ECRH system and upgraded ECE on HSX**<sup>1</sup> G.M. WEIR, K.M. LIKIN, F.S.B. ANDERSON, D.T. ANDERSON, J.W. RADDER, HSX Plasma Lab, Univ. of Wisconsin, Madison, WI, USA — A second 200 kW/ 28 GHz ECRH system has been installed on the HSX stellarator. The Varian gyrotron VGA-8050M has a multimode output. The TE<sub>02</sub> waveguide mode is dominant (about 90% of total power) in the power spectrum. To maximize the RF power that can be delivered to the torus over a pure wave guide transmission line, a hybrid transmission line has been implemented to deliver power to the plasma with correct polarization (O1/X2) and as a well-focused beam. The line consists of a Vlasov mode converter with a set of focusing mirrors, a polarizer, 4" and 2.5" dual-mode waveguides, and a launcher. The antenna is a steerable focusing mirror within the HSX vessel that allows power deposition studies, specifically the effect of power deposition on ITB formation in the stellarator. The power from the second gyrotron can be modulated to facilitate local thermal diffusivity measurements using the ECE diagnostic. Upgrades to the 16-channel ECE radiometer will also be discussed.

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