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5-D Kinetic Modeling of ECRH Plasmas in the HSX Stellarator¹ J.W. RADDER, HSX Plasma Laboratory, University of Wisconsin-Madison, J.N. TALMADGE, K.M. LIKIN, D.T. ANDERSON, S. MURAKAMI, Department of Nuclear Engineering, Kyoto University, Kyoto, Japan, HSX PLASMA LABORA-TORY, UNIVERSITY OF WISCONSIN-MADISON TEAM — The global transport code GNET is used to model the evolution of the perturbed electron distribution function and radial electron transport due to electron cyclotron heating (ECRH) in the HSX stellarator. GNET solves a linearized drift kinetic equation in 5-D phase space, allowing simulation of 3-D HSX magnetic configurations. ECRH is modeled in GNET via a quasi-linear source term calculated with a separate 3-D ray tracing routine for 2nd-harmonic X-mode at 0.5 Tesla operations and 1st-harmonic O-mode at 1.0 Tesla operations. First low input power simulations (< 50kW) show a slight difference between radial transport in quasihelically symmetric and mirror magnetic configurations. GNET predictions of ECRH driven flux, power deposition profiles, and implications for ECE and X-ray diagnostics will be presented.

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