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Fokker-Planck Modeling of X-ray Emission Due to Electron Bernstein Wave Heating in MST W.A. COX, J.K. ANDERSON, C.B. FOREST, R. O'CONNELL, University of Wisconsin - Madison, MADISON SYMMETRIC TORUS TEAM — Experiments on MST are underway to test the viability of using electron Bernstein waves (EBW) to heat and drive current in the reversed field pinch. This proof-of-principle experiment uses 250 kW of rf power at 3.6 GHz, a power level that is typically much lower than the Ohmic input power in MST. Power coupling experiments show that power launched into the plasma chamber exceeds 120 kW; the response of various diagnostics to this EBW power is modeled for comparison with experiment using GENRAY ray-tracing and CQL3D Fokker-Planck codes. This procedure inhibits variation of the current profile from equilibrium and allows the inductive electric field to respond on short time scales to maintain a constant current density. CQL3D then predicts the x-ray fluxes and Thomson scattering signals corresponding to the modified electron distribution, which are compared to experimental data. Initial modeling results indicate that the main response can be interpreted as electron heating and that non-thermal features in the distribution function are difficult to detect using x-ray diagnostics. This work is supported by the United States Department of Energy.

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