Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Electron Bernstein Wave Experiments in the Madison Symmetric Torus WILLIAM COX, Madison Symmetric Torus, University of Wisconsin-Madison, JAY ANDERSON, MIRELA CENGHER, CARY FOREST, SHANE MCMAHON, JEFF WAKSMAN — Electron Bernstein waves (EBW) are a possible method of non-inductively modifying the current profile to enhance confinement in the reversed field pinch. Efficient mode conversion to EBW for current drive first requires a suitable antenna and optimization of plasma and magnetic field conditions near the antenna. A system capable of transmitting a 10 ms, 275 kW pulse of 3.6 GHz RF power is installed and operational in the Madison Symmetric Torus (MST). Replacing a two-waveguide antenna limited by its maximum transmittable power, the new antenna is a four-waveguide half-width S-band phased array designed to improve coupling and power handling. A triple Langmuir probe is integrated into the antenna to measure local electron temperature and density for use in coupling predictions. Perturbations in the magnetic field due to the port in the conducting shell of MST are examined to accurately determine the position of resonance locations. Investigation of expected soft x-ray fluxes resulting from EBW heating is underway. Details and results of simulation and experiments on MST will be presented and discussed. This work is supported by the United States Department of Energy.

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Date submitted: 19 Jul 2006 Electronic form version 1.4