Abstract Submitted
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EBW Injection Experiment in the MST JAY K. ANDERSON, WILLIAM COX, CARY FOREST, University of Wisconsin-Madison — A 0.25 MW system designed to heat electrons and drive current via the electron Bernstein wave is in its early stages of operation on the MST reversed field pinch. The antenna is a grill of four half-height S-band waveguides with each arm powered by a separate, phase controlled traveling wave tube amplifier. Coupling to the plasma (as measured by ratio of reflected power) is very dependent on the relative phasing between adjacent waveguides. The total reflected power can be maintained at or below 25%, similar to that measured for a two-waveguide full height grill [1]. The antenna face is outfitted with a pair of triple Langmuir probes to measure local electron density; the density gradient at the upper hybrid resonance (typically within 1-2 cm of the antenna) is expected to strongly influence coupling efficiency. Conditioning of the antenna is currently underway (near the 0.2MW level) and total system power is expected to reach 0.25MW, or roughly a fourth of the Ohmic input power in target plasmas. The x-ray spectrum (5-200 keV) is monitored as a way to detect modification to the electron distribution as full transmitter power is approached. This work is supported by USDOE.

[1] M. Cengher, J. K. Anderson, C. B. Forest, V. Svidzinski, *Nuc Fusion* **40**, 521 (2006).

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