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**Coupling to Electron Bernstein Waves with a Phased Twin  
Waveguide Antenna in the MST Reversed Field Pinch** MIRELA

CENGER, JAY ANDERSON, VLADIMIR SVIDZINSKI, CARY FOREST, Department of Physics, University of Wisconsin-Madison, MST TEAM — Coupling to the electron Bernstein wave (EBW) via a phased array of waveguides is experimentally investigated in the MST reversed field pinch (RFP). EBWs may provide localized heating and current drive in overdense plasmas such as those in the RFP. Choice of antenna structure and launched wave polarization are important factors in optimizing coupling to EBW. The theory predicts the coupling efficiency will vary with launch angle and to depend sensitively upon the edge density profile. Amplitudes and phases of reflected power in each of the waveguides are measured experimentally, and compared to predictions. Reflection and phase were measured for different polarizations, launch angles and time varying density profiles. An asymmetry in reflection predicted by theory was found experimentally for X-mode with best reflection below 15%. The dependence on density scale length predicted by theory was confirmed in the experiment. The phase of the reflected signal is shown to contain reflectometry-based information about the edge density profile. Work supported by USDOE.

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