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Observation of Electron Bernstein Wave Heating in the MST Reversed Field Pinch ANDREW SELTZMAN, JAY ANDERSON, AMI DUBOIS, ABDULGADER ALMAGRI, PAUL NONN, KARSTEN MCCOLLAM, BRETT CHAPMAN, JOHN GOETZ, CARY FOREST, University of Wisconsin — We report the first observation of electron Bernstein wave heating in the MST RFP. Similar to a high density stellarator, the RFP is inaccessible to electromagnetic ECRH. The plasma current and |B|operating range of MST allows a 5.5 GHz RF source (100kW, 4ms pulse) to heat on the fundamental and up to 4th harmonic EC resonances. With an x-ray diagnostic most sensitive to edge electrons located +12 degrees toroidally from the antenna, the measured emission is a strong function of predicted heating inside versus outside the Bt=0 reversal layer of the RFP. Measured during a scan of plasma current, distinct edges in a plot of emissivity versus predicted deposition layer align with the deposition layers crossing of this reversal layer and confirm EBW heating on the fundamental through 4th EC harmonic. Additional confirmation of the absorption location has been demonstrated by using auxiliary poloidal current drive to reduce electron diffusion rates and sweep the location of the Bt=0 surface across a static RF absorption location in RFP discharges. In these discharges EBW enhancement of the 15-40keV x-ray energies has been observed. Work supported by USDOE.

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