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**Lower Hybrid Antenna Coupling on MST**[1] M.C. KAUFMAN, D.R. BURKE, J.A. GOETZ, C.B. FOREST, University of Wisconsin-Madison — The particular constraints of MST lead to the use of a novel interdigital-line structure rather than the traditional waveguide grill antenna for launching lower hybrid waves. The antenna has been designed to launch the slow wave at 800 MHz and an $n_{||}$ of 7.5 with maximum absorption at r/a $\sim$ 0.8 for current drive scenarios. While there are several drawbacks to this type of antenna including the lack of fine phasing control, the launched spectrum displays fairly good directivity. Loading studies indicate that the antenna operates well in a variety of plasma conditions, and agrees well with theory. With LH wave injection, toroidally localized hard x-rays in standard plasmas with energies up to 50 keV have been observed. Additional x-ray measurements at the antenna indicate that the progenitor fast electrons are lost more quickly than the ohmic field can accelerate them to the inferred velocities. Monte Carlo modeling shows that the emission is likely the result of edge interaction of electron gyro-orbits with gradients in the antenna near field.

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