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X-ray diagnosis of Lower Hybrid experiments on the MST[1] D.R. BURKE, UW - Madison, A.F. ALMAGRI, UW- Madison, D.J. CLAYTON, UW - Madison, C.B. FOREST, J.A. GOETZ, M.C. KAUFMAN, K. MAKWANA, R. O'CONNELL, S.C. PRAGER, UW - Madison — Inductive auxiliary current drive has been shown to transiently reduce tearing fluctuations and improve confinement in the Reversed Field Pinch (RFP). Lower hybrid waves are predicted to be capable of supplying steady state stabilizing current on MST. The RFP offers a unique set of challenges for lower hybrid wave injection from both a diagnostic and a modeling perspective. Toroidal loop voltage cannot be used as an diagnostic, since driven current is expected to be mostly poloidal. Thus, the main diagnostic of the effects of lower hybrid waves on the plasma is measurement of the x-ray spectrum. MST plasmas are diagnosed by CdZnTe detectors for x-rays above 10 keV. Silicon photodiodes are being employed to add spectral discrimination from 2 to 10 keV. Ray tracing with the GENRAY code and Fokker-Planck modeling with the CQL3D code are used to predict flux. Hard x-rays with energies up to 60 keV have been measured and are toroidally localized to within 60° of the antenna. The unique challenges presented by this explored and modeling results are compared with experiment. Direct current measurements using a Rogowski coil are being attempted.

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