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Lower hybrid wave absorption on the MST[1] D.R. BURKE, A.F. ALMAGRI, D.J. CLAYTON, C.B. FOREST, J.A. GOETZ, M.C. KAUFMAN, UW Madison — Rf waves near the lower hybrid frequency have long been used to accelerate electrons in tokamaks. Lower hybrid wave injection experiments are underway on the MST RFP targeting electrons at r/a ~ 0.8 (where $\nabla J_{||}$ is steep) with the goal of stabilizing tearing fluctuations. Fast electrons are observed through bremsstrahlung emission using an Amptek Si-PIN photodiode to measure x rays from 3-10 keV. Increased x ray flux is observed during rf experiments, toroidally localized near the antenna. This is believed to be caused by the high field winding ($q \simeq 0$) and the high radial diffusion in the RFP edge. Bremsstrahlung emission is enhanced by inserting a probe with a molybdenum tip into the edge, which provides a higher Z target than the plasma, making edge emission more prominent relative to core emission. This probe has been refined, providing a plasma-free line of sight, and an interchangeable target. These probe studies reveal more about the local electron distribution function. Computational studies of wave propagation and absorption have also been undertaken for various plasma conditions, using a Grad-Shafranov fitter coupled with GENRAY (a ray-tracing code) and CQL3D, a Fokker-Planck equation solver. Results from target and computational studies are presented.

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