

Abstract Submitted
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Effect of Wall Reflections on Hot Electron Temperature from ECE Diagnostics in LDX¹ D.J. CHARLES, University of South Florida, P.P. WOSKOV, J. KESNER, PSFC MIT, D.T. GARNIER, M.E. MAUEL, Columbia University — The Levitated Dipole Experiment (LDX) uses a floating donut-shaped superconducting magnet to study magnetic dipole plasma confinement. Plasma is generated and sustained by microwave electron cyclotron resonance heating. Two radiometers at 110 and 137 GHz are used to diagnose harmonic electron cyclotron emission (ECE). The ratio of these two signals is primarily a function of hot electron temperature. Previous analysis to interpret this ratio in terms of hot electron temperature assumed a direct view of the plasma with no reflection from the chamber walls, effectively neglecting emission from the inside of the ring. In this analysis we integrated local emission over all angles to model a reflection signal component, examining cases of complete reflection, zero reflection, and combinations of the two extremes. As reflection is added, the calculated temperature for a given ratio decreases, suggesting that previous models ignoring reflections may overestimate hot electron temperature.

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