

Abstract Submitted  
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**28 GHz Gyrotron ECRH Upgrade for LDX**<sup>1</sup> P.C. MICHAEL, P.P. WOSKOV, J.L. ELLSWORTH, J. KESNER, PSFC-MIT, D.T. GARNIER, Columbia University, M.E. MAUEL<sup>2</sup>, R.F. ELLIS, University of Maryland — A 10 kW, CW, 28 GHz gyrotron is being implemented on LDX to increase the plasma density and to more fully explore the potential of high beta plasma stability in a dipole magnetic configuration. Higher density increases the heating of ions by thermal equilibration and allows for improved wave propagation in planned ICRF experiments. This represents over a 50% increase in the 17 kW ECRH from sources at 2.45, 6.4, and 10.5 GHz. The higher frequency will also make possible access to plasma densities of up to  $10^{13}$  cm<sup>-3</sup>. The 1 Tesla resonances are located above and below the floating coil near the dipole axial region. The gyrotron beam will be transmitted in TE<sub>01</sub> mode in 32.5 mm diameter guide using one 90° bend and a short < 5 m straight waveguide run. A Vlasov launch antenna in LDX will direct the beam to the upper 1 Tesla resonance region. A layout of the planned system will be presented.

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