

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Microwave Interferometer for the Levitated Dipole Experiment¹

A.C. BOXER, J. KESNER, MIT PSFC, D.T. GARNIER, M.E. MAUEL, Columbia University — Measuring and understanding the evolution of the plasma density is an important goal for the Levitated Dipole Experiment (LDX). Theoretical considerations suggest that the density profile may naturally evolve to a highly peaked profile with $\delta(nV) \sim 0$, or $n \sim 1/r^4$. Knowledge of the density profile is also necessary for the reconstruction of the overall equilibrium parameters of the confined plasma. In LDX we have built and tested a 4-cord interferometer diagnostic using heterodyne receivers at 60 GHz. Using the multi-cord interferometer, we have measured the radial density profile and its evolution over time in a plasma confined by a supported dipole field. Initial measurements show a range of profiles—from peaked to flat—have been created in the supported-mode of LDX and that the maximum density is usually around $4 \times 10^{10} \text{ cm}^{-3}$.

¹Work supported by USDOE

Alexander Boxer
MIT PSFC

Date submitted: 21 Jul 2006

Electronic form version 1.4