

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Density Profile Measurements in LDX using Microwave Reflectometry ROBERT WILLS, University of California, Berkeley, MATT DAVIS, Columbia University, PAUL WOSKOV, Massachusetts Institute of Technology, DARREN GARNIER, Columbia University, JAY KESNER, Massachusetts Institute of Technology, MIKE MAUEL, Columbia University — The levitated dipole experiment (LDX) has a sharply peaked, stationary plasma density profile as shown recently by measurements with a four-channel microwave interferometer. More precision in profile measurement is needed to fully explore the stability of high beta LDX plasmas. A 4-8 GHz O-mode scanning reflectometer is being implemented that will probe the entire LDX density profile (the density in LDX varies in the range of $2-8 \times 10^{17} \text{ m}^{-3}$). This will add to information obtained from the four channels of the interferometer array and will be the first time a continuous density profile measurement is achieved in a levitating dipole plasma. This is important because it is needed to confirm predictions of a $1/r^4$ density profile obtained by Abel inversion of the interferometer data and to obtain the exact location of the peak density in LDX for the first time.

Paul Woskov
Massachusetts Institute of Technology

Date submitted: 16 Jul 2010

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