Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Warm population measurements on the Levitated Dipole Experiment (LDX)[1] M. S. DAVIS, D.T. GARNIER, M.E. MAUEL, Columbia University, J.L. ELLSWORTH, J. KESNER, P.C. MICHAEL, P. WOSKOV, MIT Plasma Science and Fusion Center — Magnetic flux measurements of the diamagnetic current in LDX indicate that a significant portion of the ECRH power absorbed by the plasma creates a warm population in addition to energetic hot electrons. We present measurements to characterize this population using a silicon drift detector (SDD) and several cadmium-zinc-telluride detectors (CZTs). The SDD measures the soft X-ray spectrum from 1-20 keV and can pivot to view different tangency radii within the plasma. The three CZT detectors measure the higher energy X-ray spectrum from 10-670 keV and view three different fixed tangency radii. Results show the presence of high-Z impurities as well as the expected non-Maxwellian distribution of ECRH heated electrons. We are also installing a time-of-flight diagnostic that will exploit charge exchange to measure the energy of the ion population. This diagnostic will be of particular interest in future experiments as we begin to heat the ions with a 1 MW HF Band (4 - 26 MHz) transmitter.

[1]Supported by US DOE Grants: DE-FG02-98ER54458/9.

M. S. Davis
Columbia University

Date submitted: 15 Jul 2010 Electronic form version 1.4