

Abstract Submitted  
for the DPP10 Meeting of  
The American Physical Society

**Characterization of Effect of LLD on Edge Plasma Parameters using High-Density Langmuir Probe Array**<sup>1</sup> J. KALLMAN, M.A. JAWORSKI, T. ABRAMS, R. KAITA, H. KUGEL, PPPL, T.K. GRAY, ORNL, F. SCOTTI, PPPL, V. SOUKHANOVSKII, LLNL — The NSTX Liquid Lithium Divertor (LLD) is designed to alter the edge plasma by providing a persistent particle sink with greater affinity than lithiated graphite surfaces for deuterium ions reaching the divertor target, thus lowering edge density while increasing edge temperature. In order to measure this effect, a 99-channel Langmuir probe array was designed and installed in an NSTX carbon divertor tile situated in the gap between two LLD plates. The Langmuir probes have the capability to measure the target electron temperature and density in either swept single-probe or continuous triple-probe mode. The probe array can also directly measure the incident ion flux from the plasma, which can be used to track the strike point location for applications in control system optimization and verification in conjunction with magnetic,  $D_\alpha$ , and IR camera data. In addition, offline and in-vessel RGA measurements of reactive lithium surfaces are analyzed using mass de-convolution to relate gaseous partial pressures to lithium activity, which is then correlated with  $n_e$  and  $T_e$  measurements from the probe array.

<sup>1</sup>Supported by US DOE contracts DE-AC02-09CH11466, DE-AC05-00OR22725, and DE-AC52-07NA27344.

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Date submitted: 26 Jul 2010

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