Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Effects of a GPI deuterium gas puff on the edge plasma in NSTX S.J. ZWEBEN, R.E. BELL, W.M. DAVIS, S.M. SAYE, PPPL, S. KUBOTA, UCLA, R. MAINGI, PPPL, T. MUNSAT, Colorado, B.P. LEBLANC, PPPL, R.J. MAQUEDA, X Science LLC, Y. SECHREST, Colorado, D.R. SMITH, Wisconsin, D.P. STOTLER, PPPL, V.A. SOUKHANOVSKII, LLNL — Deuterium neutral gas puffs near the outer midplane of NSTX have been routinely used for the gas puff imaging (GPI) diagnostic to measure edge turbulence. These puffs can inject up to 3.5×10^{20} D atoms over 100 msec from a manifold at the outer wall, with a maximum influx of 10^{22} atoms/sec after 20 msec. The 3D shape and absolute brightness of the D-alpha emission cloud from this puff have previously been modeled using DEGAS 2 [1]. The effects of the GPI puff on the edge plasma are now evaluated using Thomson scattering and other edge diagnostics of NSTX. The time evolution of the radial profile of D-alpha emission from the GPI cloud itself can be used to infer local changes in density and/or temperature. These results will be compared with models for the expected density and temperature perturbations, including parallel and perpendicular transport, drifts, rotation, and energy loss from radiation and charge exchange. The edge turbulence seen by GPI does not change significantly vs. time during the GPI puff, and other measurements of edge turbulence will be evaluated across the time of this puff.

[1] B. Cao, D. Stotler et al, Fusion Sci. Tech. **64**, 29 (2013)

S.J. Zweben
PPPL

Date submitted: 11 Jul 2013 Electronic form version 1.4