Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

HHFW Heating Properties for H-mode Plasmas in NSTX J. HOSEA, R.E. BELL, E. FREDRICKSON, B.P. LEBLANC, C.K. PHILLIPS, L. ROQUEMORE, G. TAYLOR, J.R. WILSON, S. ZWEBEN, PPPL, J.-W. AHN, T. GRAY, A. MCLEAN, R. MAINGI, P.M. RYAN, J. WILGEN, ORNL, K. TRITZ, JHU, AND THE NSTX TEAM — High harmonic fast wave (HHFW) heating properties for ELM-free and ELMy H-mode plasmas are being compared to investigate the effects of ELMs on HHFW heating efficiency and edge HHFW power losses. In general, core heating is reduced and edge heating is increased in the NB and HHFW driven ELMy H-mode regimes. The goal is to determine to what extent the reduction of core heating with ELMs is due to an increase in electron stored energy loss versus a relative increase in the edge HHFW power that is deposited in the edge/divertor region. Measurements of core heating effects (Thomson scattering, magnetics - EFIT, etc.) and of the divertor RF heating/interactions (IR cameras, RF probes, Langmuir probes, etc.) will be presented for a number of cases to elucidate these RF power loss effects. Fast IR data indicate that the bulk of the ELM ejected energy from the core plasma is deposited in the vicinity of the outer strike radius, falling off rapidly toward the radial zone of the edge RF power deposition in the divertor. Direct observation of the divertor edge RF deposition zone with the fast IR camera is planned to quantify the effect of the ELMs there. Work supported by USDOE Contract No. DE-AC02-09CH11466.

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Date submitted: 24 Aug 2010 Electronic form version 1.4