Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Numerical Modeling of HHFW Heating and Current Drive on NSTX[1] C.K. PHILLIPS, R.E. BELL, J.C. HOSEA, B.P. LEBLANC, G. TAYLOR, E.J. VALEO, J.R. WILSON, Princeton Plasma Physics Laboratory, L.A. BERRY, E.F. JAEGER, P.M. RYAN, J.B. WILGEN, Oak Ridge National Laboratory, P.T. BONOLI, J.C. WRIGHT, PSFC-MIT, R.W. HARVEY, CompX, H.Y. YUH, Nova Photonics, THE NSTX TEAM — High harmonic fast wave (HHFW) heating and current drive, at frequencies up to 15 times the fundamental deuterium cyclotron frequency, are being studied on NSTX. Recent experiments indicate that the core heating efficiency depends strongly on the antenna phasing and plasma conditions [1], and improves significantly at higher toroidal magnetic fields. Wave propagation, absorption and current drive characteristics for L-mode and H-mode NSTX discharges have been analyzed using both ray tracing and full wave models. Simulations obtained with the AORSA and TORIC full codes agree reasonably well with Motional Stark Effect measurements of the driven current, and indicate the importance of trapping effects on the driven current profile. Collisional damping effects on the wave absorption, particularly in edge regions, will be considered. [1] J. C. Hosea, *et al*, Phys. Plasmas **15**, 056104 (2008).

[1]Work supported by USDOE DE-AC02-76CH03073.

Cynthia K. Phillips
Princeton Plasma Physics Laboratory

Date submitted: 14 Jul 2008 Electronic form version 1.4