Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Initial predictive studies of HHFW heating in the NSTX-U device[1] C.K. PHILLIPS, N. BERTELLI, R.V. BUDNY, S. GERHARDT, J.C. HOSEA, B.P. LEBLANC, J.E. MENARD, G. TAYLOR, E.J. VALEO, J.R. WILSON, PPPL, E.F. JAEGER, XCEL Engineering, P.T. BONOLI, J.C. WRIGHT, PSFC-MIT, R.W. HARVEY, CompX, L.A. BERRY, D.L. GREEN, ORNL, AND THE NSTX-U TEAM, AND THE RF SCIDAC TEAM — Plasma heating and non-inductive current drive via applied fast waves at high harmonics of the ion cyclotron frequency have been used successfully on NSTX, though rf power losses outside of the last closed flux surface and interactions of the HHFWs with co-injected NBI, which are relevant in ITER and other devices, are not fully understood. NSTX-U will operate with toroidal magnetic fields up to 1 T, nearly twice the value used in the experiments on NSTX. While the dominant rf heating mechanisms in NSTX were found to be TTMP damping on electrons and fast ion damping at high cyclotron harmonics, at the mid-harmonic range expected on NSTX-U the power partitioning may change. Initial simulations with the AORSA, TORIC, METS and GENRAY codes indicate that significantly more thermal D damping may occur in NSTX-U. Detailed predictions of the fields and power deposition obtained from these codes will be discussed.

[1]Work supported by U.S.D.O.E Contract No. DE-AC0209CH11466.

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Date submitted: 18 Jul 2012 Electronic form version 1.4