Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Recent EBW Emission Results and Plans for a 350 kW, 28 GHz EC/EBW Heating System on NSTX[1] G. TAYLOR, S.J. DIEM, R.A. ELLIS, E. FREDD, N. GREENOUGH, J.C. HOSEA, Princeton U., T.S. BIGELOW, J.B. CAUGHMAN, D.A. RASMUSSEN, P.M. RYAN, J.B. WILGEN, ORNL, R.W. HARVEY, A.P. SMIRNOV, N.M. ERSHOV, CompX, J. PREINHAELTER, J. URBAN, Czech Inst. of Plasma Phys., A.K. RAM, MIT — Electron cyclotron heating (ECH) and electron Bernstein wave EBW heating (EBWH) can assist plasma startup on the low aspect ratio NSTX device and provide sufficient electron heating to allow effective high harmonic fast wave (HHFW) coupling during current ramp up. EBW current drive (EBWCD) can also provide off-axis current to stabilize solenoid-free NSTX plasmas at β >20%. Efficient coupling of externally launched electromagnetic waves to EBWs is required for EBWH and EBWCD. The prospect for EBWH and EBWCD is supported by EBW emission studies on NSTX that show efficient EBW coupling for some edge conditions. A 350 kW 28 GHz ECH/EBWH system is being installed on NSTX to support solenoid-free startup, HHFW current ramp up and initial EBW coupling and heating studies. This system will provide on-axis second harmonic ECH/EBWH in NSTX. Fundamental on-axis heating may also be possible by operating the gyrotron at 15.3 GHz.

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

Gary Taylor
Princeton University

Date submitted: 16 Jul 2007 Electronic form version 1.4