Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Thermal Electron Bernstein Wave Emission Measurements on NSTX[1] S.J. DIEM, G. TAYLOR, P. EFTHIMION, B.P. LEBLANC, C.K. PHILLIPS, Princeton Plasma Physics Laboratory, J. CAUGHMAN, J. WILGEN, Oak Ridge National Laboratory, R.W. HARVEY, CompX, J. PREINHAELTER, J. URBAN, Czech Institute of Plasma Physics — NSTX high beta plasmas operate in the overdense regime, allowing the electrostatic electron Bernstein wave (EBW) to propagate and to be strongly absorbed and emitted at the electron cyclotron resonances. As such, EBWs offer the potential for local electron temperature measurements and local electron heating and current drive. A critical challenge for these applications is to establish efficient coupling between the EBWs and electromagnetic waves outside the plasma. Recently, two remotely steered, quad-ridged antennas, measuring EBW emission via the oblique B-X-O mode conversion process have been installed on NSTX. These antennas are connected to absolutely calibrated dual-channel radiometers, measuring fundamental (8-18 GHz), second and third harmonic (18-40 GHz) EBW emission, respectively. This diagnostic has been successfully used to map the EBW mode conversion efficiency as a function of poloidal and toroidal angles for L- and H-mode plasmas. Experimental results from this new diagnostic and comparisons to modeling will be presented.

[1]This work is supported by United States Department of Energy contract DE-AC02-76CH03073 and a grant to encourage innovations in fusion diagnostic systems.

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Date submitted: 20 Jul 2006 Electronic form version 1.4