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Recent EBW Emission Results on NSTX[1] S.J. DIEM, G. TAYLOR, P.C. EFTHIMION, B.P. LEBLANC, Princeton U., J.B. CAUGHMAN, T.S. BIGELOW, J.B. WILGEN, ORNL, R.W. HARVEY, CompX, J. PREINHAELTER, J. URBAN, Czech Inst. of Plasma Phys., S.A. SABBAGH, Columbia U. — NSTX high beta plasmas operate in the overdense regime, allowing the electrostatic electron Bernstein wave (EBW) to propagate and be strongly absorbed and emitted at the electron cyclotron resonances. As such, EBWs may enable local electron temperature measurements and provide local electron heating and current drive. For these applications, efficient coupling between EBWs and electromagnetic waves outside the plasma is needed. Thermal EBW emission, measured on NSTX with two remotely steered, quad-ridged antennas, has been used to determine the EBW transmission efficiency for a wide range of plasma conditions. The antennas collect fundamental (8-18GHz), second and third (18-40 GHz) EBW emission via the oblique B-X-O mode conversion process. Recent H-mode results show that fundamental and second harmonic EBW transmission efficiencies >30% are observed for certain edge conditions. Experimental results from this diagnostic and comparisons to modeling will be presented.

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S.J. Diem
Princeton University

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