

Abstract Submitted
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Simulation of ECE frequency spectra for NSTX and comparison with new radiometer results¹ JAKUB URBAN, JOSEF PREINHAELTER, IPP, Czech Academy, GARY TAYLOR, STEFFI DIEM, PPPL, Princeton University, LINDA VAHALA, Old Dominion University, GEORGE VAHALA, William & Mary — Time evolution of ECE spectra in the 20-40GHz range is simulated for NSTX plasmas. The code is based on the full wave solution of the cold plasma wave propagation used for the determination of EBW-X-O and EBW-X mode conversion efficiencies using adaptive finite elements and on the determination of the effective radiation temperature from simultaneous solution of EBW ray evolution coupled to the integration of the radiative transfer equation. This method has been successfully used to determine the central temperature in NSTX from the detected EBW signal at 16.5GHz [1]. We obtained detailed information on how the ECE intensity is connected to the plasma parameters. Hence these simulations can test the applicability of using EBW for plasma diagnostics and for the determination of parameters useful for ECCD.

[1] J. Preinhaelter et al, 16th Topical Conf. on RF Power in Plasmas, Park City, Utah, B-05, in print.

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