

Abstract Submitted
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High Harmonic Fast Wave Propagation and Heating on NSTX¹

J.B. PARKER, Cornell University, C.K. PHILLIPS, J.C. HOSEA, E.J. VALEO, J.R. WILSON, NSTX Team, Princeton Plasma Physics Laboratory, R.W. HARVEY, CompX — Recent experiments on the National Spherical Torus Experiment (NSTX) show that the high harmonic fast wave (HHFW) core heating efficiency depends on the antenna phasing and plasma conditions. [1]. Power losses in the edge due to rf sheath formation or other parasitic absorption processes could occur if the waves propagate nearly parallel to the wall in the edge regions and intersect nearby vessel structures. To investigate this possibility, the 3D HHFW propagation in NSTX has been studied both analytically and numerically with the ray tracing code GENRAY. Initial calculations show that for certain values of the launched parallel wave number and magnetic field, the waves in NSTX are launched at a shallow angle to the vessel wall. In contrast, for ICRF heating in C-Mod or ITER, the initial ray trajectories tend to be more radially oriented. Comparisons of the GENRAY results with 2D TORIC full wave simulations for the power deposition will also be discussed.

[1] See invited talk by J. C. Hosea this meeting.

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