

Abstract Submitted
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Benchmark of ICRF codes in mid and high harmonic regimes in view of NSTX-U operation¹ NICOLA BERTELLI, C.K. PHILLIPS, E.J. VALEO, PPPL, R. BILATO, M. BRAMBILLA, IPP-Garching, E.F. JAEGER, XCEL Engineering, P.T. BONOLI, PSFC-MIT — NSTX-Upgrade (NSTX-U) is presently scheduled to operate at the beginning of 2015 with toroidal magnetic fields (B_T) up to 1 T, nearly twice the value used in the experiments on NSTX, and with NBI power up to 10 MW. The doubling of B_T while retaining the 30 MHz rf source frequency moves the heating regime from the high harmonic fast wave (HHFW) regime (up to 10th harmonic) used in NSTX to the mid harmonic fast wave (MHFW) regime (up to 5th harmonic). Both the MHFW regime and the doubling of the NBI power can strongly affect the power absorption partitioning. In fact, the thermal and fast ions absorption can significantly increase [Bertelli et al AIP Conf. Proc. **1580**, (2014) 310]. Thus, it is crucial to have an accurate evaluation of the power absorbed by fast and thermal ions for experimental analysis. Detailed benchmarking comparisons between the full wave codes TORIC v.5 [Brambilla, PPCF **44**, (2002) 2423], TORIC v.6 [Bilato et al, NF **51**, (2011) 103034], AORSA [Jaeger et al, PoP **8**, 1573 (2001)], and the ray tracing code GENRAY [Smirnov et al, Bull. Am. Phys. Soc. **39**, 1626 (1994)] have been performed. Finally, numerical predictions on NSTX-U are discussed for different scenarios.

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