Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Temporal Dynamics of NSTX NBI+HHFW Discharges using CQL3D-Hybrid-FOW[1] R.W. (BOB) HARVEY, YU. V. PETROV, CompX, D. LIU, W.W. HEIDBRINK, Univ. of California, Irvine, G. TAYLOR, Princton Pl. Phys. Lab., P.T. BONOLI, Mass. Inst. of Technology — The Fast Ion Diagnostic FIDA [1] signal resulting from neutral beam injection (NBI) and high harmonic fast wave (HHFW) RF power injected into the NSTX spherical tokamak has been simulated with the CQL3D Fokker-Planck code [2,3,4]. Motivated by a radial inward shift of the FIDA signal simulated with zero-orbit-width (ZOW) CQL3D compared to the large finite-orbit-width (FOW) NSTX experimental results [5], a 1st order correction was added which gave too large an outward shift [3]. More recent CQL3D FOW simulations based on guiding center orbits (plus gyro-width for losses) [4] produces quite accurate comparison with experiment. The modulated NBI and time-dependent background plasma variations are accounted for, also giving temporal neutron variation in rough agreement with NSTX observations.

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[5] M. Choi, et al., Phys. of Plasmas 17, 056102 (2010).

[1]Supported by USDOE grants SC0006614, ER54744, and ER44649

R.W. (Bob) Harvey
CompX

Date submitted: 18 Jul 2012 Electronic form version 1.4