

Abstract Submitted  
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**Comparison of a New Self-Adjoint Calculation of NSTX High Harmonic Current Drive with CQL3D**<sup>1</sup> R.W. HARVEY, A.P. SMIRNOV, CompX, C.K. PHILLIPS, G. TAYLOR, J.C. HOSEA, D. MCCUNE, B. LEBLANC, PPPL — A new general linear calculation of RF current drive has been implemented in the GENRAY all-frequencies RF ray tracing code, based on the Karney *et al.* [AIP Conf. Proc. 190 (1989)] relativistic Green function calculator, ADJ, using the self-adjoint collision operator property, generalized to non- circular plasmas in toroidal geometry, and coupled with full, bounce-averaged momentum-space RF quasilinear fluxes [T. Stix, *Waves in Plasmas*(1992)]. This calculation includes effects of momentum conservation, polarization and trapped electrons, and is directly comparable to the CQL3D Fokker-Plank code when collisional effects exceed QL diffusion. Under these conditions, the model will be accurate for low-collisionality, low-phase velocity CD, e.g., HHFW. We show good comparisons between linear damping and current drive calculations in GENRAY and CQL3D for a range of NSTX plasma conditions. We also show circumstances where agreement between the described ADJ-QL calculation differs by up to a factor of 2 from previous Ehst-Karney parameterized results.

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