

Abstract Submitted
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Differences Between Quasi-linear and Exact Ion Cyclotron Resonant Diffusion¹ R.W. HARVEY, Y.V. PETROV, CompX, E.F. JAEGER, XCEL Engineering, A. BADER, P.T. BONOLI, Mass. Institute of Technology — These studies investigate the validity of ICRF quasilinear(QL) diffusion theory by comparison of QL coefficients from the AORSA full-wave code [1] with “exact” Lorentz equation orbit-based coefficients calculated with the DC code using AORSA full-wave fields, for a C-Mod minority-H ICRF heating scenario. We also compare time-dependent distribution functions and power deposition obtained with the coupled CQL3D Fokker-Planck code [2], using the two RF diffusion sets. The resulting synthetic diagnostic NPA energy spectra are compared with experiment. Initial results indicate that “exact” RF coefficient-based NPA spectra give improved agreement with experiment [3]. This work investigates the dominant causes of the QL/“exact” RF diffusion discrepancy.

[1] E.F. Jaeger et al, Nucl. Fusion 46, (2006) S397-S408.

[2] R.W. Harvey and M.G. McCoy, <http://www.compxco.com/cql3d.html>.

[3] A. Bader et al, Proc. of 13th RF Power in Plasmas Conference, Newport, RI (2011).

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