Abstract Submitted for the DPP05 Meeting of The American Physical Society

Electron Cyclotron Emission from Nonthermal Distributions R.W. HARVEY, A.P. SMIRNOV, N.M. ERSHOV, E. NELSON-MELBY, CompX, Del Mar, CA, S. CODA, CRPP-EPFL, Lausanne, CH, G. TAYLOR, PPPL, Princeton, NJ, M.E. AUSTIN, UT, Austin, TX, R. PRATER, GA, San Diego, CA The GENRAY ray tracing code incorporates a solution of the RF energy transport equation (emission and absorption along WKB rays) including the effects of nonthermal electron distribution functions. Distributions are from self-consistent RF solutions of the bounce-averaged Fokker-Planck equation using the CQL3D 2V-1R code. We present computed spectra for two experimental situations: (1) EBW emission from electron distributions in NSTX due to future EBWCD experiments. In this case, the calculated transport of the EBW emission from overdense (omega_pe > omega_ce) NSTX plasma to the plasma edge accounts for the effects of BXO mode conversion whereby EBW waves transform to X-mode, then O-mode near the omega_pe=1 surface; and (2) EC emission in present low density DIII-D ECH experiments. A 27 keV central ECE temperature is calculated, in close agreement with the experimental value, for a plasma with 6.5 keV Thomson scattering temperature. Acknowledgment: USDOE Grants DE-AC03-99ER54463 and DE-FG03-02ER54684, and CRPP-EPFL.

> R.W. Harvey CompX

Date submitted: 22 Jul 2005

Electronic form version 1.4