

Abstract Submitted
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Modeling of Nonthermal Electron Cyclotron Emission due to Lower Hybrid Current Drive on Alcator C-Mod¹ A.E. SCHMIDT, P.T. BONOLI, A.E. HUBBARD, Plasma Science and Fusion Center, MIT, R.W. HARVEY, A.P. SMIRNOV, CompX — Lower Hybrid Current Drive (LHCD) has been installed on Alcator C-Mod and will soon be increased in power for current profile control. The lower hybrid waves will generate non-thermal electrons, which will affect the electron cyclotron emission (ECE) spectrum. C-Mod has several out-board midplane ECE diagnostics, normally used to measure electron temperature in Maxwellian plasmas. CQL3D/GENRAY [1] is a modeling package that employs a 3-D Fokker-Planck solver and performs a self-consistent nonthermal ECE calculation. It receives an input of thermal temperature and density profiles as well as injected LH $N_{||}$ spectrum, and returns perturbed distribution functions and the ECE spectra associated with these distributions. GENRAY's output of ECE spectra with varied LH powers and plasma parameters can be compared to thermal spectra. These will be used to determine the conditions under which the ECE temperature measurements are reliable. Simulations also provide information about how the ECE spectra can be used to determine properties of the nonthermals, including spatial and energetic distribution. [1] R. W. Harvey and M. G. McCoy, General Atomics Report GA-A20978 (1992).

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Andrea Schmidt

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