Abstract Submitted
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Nonthermal ECE as a diagnostic of LH driven fast electrons on Alcator C-Mod[1] S.G. BAEK, R.R. PARKER, A. HUBBARD, MIT, Plasma Science and Fusion Center, Cambridge, MA, USA, R.W. HARVEY, CompX, Del Mar, CA, USA — Downshifted 2^{nd} harmonic ECE from the outboard horizontal midplane has been measured during Lower Hybrid Current Drive (LHCD) on C-Mod and is a direct indication of the generation of nonthermal electrons. However optical depth and radial magnetic field variation make quantitative analysis difficult. Potential single and multi chord vertical high harmonic ECE measurement systems are investigated with a view to obtaining quantitative information about nonthermal electrons in momentum or physical space. A simple distribution function model is tested to evaluate dependence of emissivity on parallel and perpendicular Maxwellian temperature. A more detailed simulation is done with GENRAY-CQL3D, using its synthetic diagnostic code for nonthermal ECE. Initial results indicate radial emissivity profile and perpendicular temperature can be inferred, but experimental issues originating from optically thin higher harmonic radiation may hinder the realization of vertical ECE diagnostics for Alcator C-Mod.

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