

Abstract Submitted
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Bursts in Electron Cyclotron Emission During ELMs and EHOs in Tokamaks¹ E. LI, M.E. AUSTIN, University of Texas-Austin — Electron cyclotron emission (ECE) bursts during edge localized modes (ELMs) have been observed and reported in several tokamaks. A number of possible explanations have been suggested, but none describe completely the observed ECE bursts. A key to understanding these bursts is that they always occur during edge MHD activity such as ELMs or EHOs in QH-mode plasmas. Other observed properties are that the ECE bursts appear on the low-field-side with an intensity of several tens or hundreds times the thermal emission level, and with a bandwidth as narrow as the instrumental filter spacing of 400 MHz or narrower. A model based on the basic emission and absorption relationship of ECE in plasma is put forth. We calculate the radiation temperature for different electron velocity distribution functions, but with a small variable resonance frequency within the instrumental bandwidth. The resulting radiation temperature and its spectral width agree well with experimental observations both in non-Maxwellian and Maxwellian distribution, but the radiation temperature in non-Maxwellian case is much higher.

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