

Abstract Submitted  
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**Analysis of Runaway Electron Synchrotron Radiation in Alcator C-Mod**<sup>1</sup> R.A. TINGUELY, R.S. GRANETZ, MIT Plasma Science and Fusion Center — In Alcator C-Mod, runaway electron (RE) beams can reach energies of  $\sim 30$  MeV or higher, emitting synchrotron radiation in the visible wavelength range. Two spectrometers, with spectral ranges of 350-1020 nm and resolutions of  $\sim 4$  nm, have been installed and absolutely calibrated on C-Mod to observe this emission. Recent theoretical work [1,2] predicts that the RE distribution tends toward a mono-energetic bump as the synchrotron radiation and collisional friction balance the electric force. Our analysis of RE synchrotron spectra shows that it is possible to distinguish the emission of a mono-energetic and mono-pitch beam from that of a distribution of energies and pitch angles (as calculated in [3]). Preliminary results indicate that the mono-energetic bump is formed as predicted, instead of a broader distribution.

[1] A. Stahl, et al. Phys. Rev. Lett. 114, 115002 (2015).

[2] P. Aleynikov, et al. Phys. Rev. Lett. 114, 155001 (2015).

[3] A. Stahl, et al. Phys. Plasmas 20, 093302 (2013).

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