Abstract Submitted
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Synchrotron emission in Alcator C-Mod: spectra at three magnetic fields, visible camera images, and polarization data[1] R ALEX TINGUELY, ROBERT GRANETZ, MIT Plasma Science and Fusion Center, MATHIAS HOPPE, OLA EMBRÉUS, ADAM STAHL, TÜNDE FÜLÖP, Chalmers University of Technology — Alcator C-Mod's high magnetic field allows runaway electron synchrotron emission to be observed in the visible wavelength range. Visible spectrometers were used to measure synchrotron spectra at three magnetic fields: 2.7, 5.4, and 7.8 T. Both a test-particle model [1] and kinetic solver CODE (COllisional Distribution of Electrons) [2,3] explore the energy evolution of the runaway population and the impact of magnetic-field-dependent synchrotron radiation as a power loss mechanism. Additionally, distortion-corrected visible camera images capture the spatial distribution and evolution of synchrotron emission in C-Mod. Initial results show good agreement between experiment and the new synthetic diagnostic SOFT (Synchrotron-detecting Orbit-Following Toolkit) [4]. Finally, a first look at synchrotron polarization data is presented.

[1] JR Martín-Solís, et al. PoP 5 (1998)
[2] M Landreman, et al. CPC 185 (2014)
[3] A Stahl, et al. NF 56 (2016)
[4] M Hoppe, et al. Synthetic synchrotron diagnostic for runaway electrons in tokamaks. In progress.

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