

Abstract Submitted
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Observations of the Sawtooth Instability in the Compact Toroidal Hybrid¹ J.L. HERFINDAL, D.A. MAURER, G.J. HARTWELL, D.A. ENNIS, S.F. KNOWLTON, M.C. ARCHMILLER, Auburn University — Sawtooth instabilities have been observed in the Compact Toroidal Hybrid (CTH), a current-carrying stellarator/tokamak hybrid device. The sawtooth instability is driven by ohmic heating of the core plasma until the safety factor drops below unity resulting in the growth of an $m = 1$ kink-tearing mode. Experiments varying the vacuum rotational transform are being conducted to study sawtooth property dependence on vacuum flux surface structure. CTH has an extensive collection of internal diagnostics capable of detecting the signatures of sawtooth instabilities: three two-color SXR cameras, a bolometer, and a three-channel 1 mm interferometer. The conditions for the onset of sawteeth, size of the inversion radius, and characteristics such as the rise and crash timescales are investigated as functions of the vacuum rotational transform, electron density and temperature.

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