

Abstract Submitted
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Density Limit Disruption Studies in the Compact Toroidal Hybrid Experiment¹ JAMES KRING, Auburn University, XINGXING MA, Oak Ridge National lab, DAVID MAURER, GREGORY HARTWELL, DAVID ENNIS, Auburn University — The Compact Toroidal Hybrid (CTH) at Auburn University is being used to investigate the impact of vacuum transform (transform produced only by external coils) on density limit disruptions. While not fully understood, experimentally increasing the vacuum transform allows for plasma densities to surpass the empirical Greenwald Density Limit without using core fueling methods. Utilizing the available diagnostic suite including an interferometer, magnetic diagnostics, and SXR cameras, we present the phenomenology leading to a density limit disruption on CTH for shots taken from 2012 to 2016. Currently, an investigation is under way to study similarly disrupting shots with bolometer arrays. In conjunction with the bolometers, we present the development of a De-Convolutional Neural Network that was trained on synthetic data and used to reconstruct the bolometer emissivity from disruptions on CTH.

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