

Abstract Submitted
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The first experimental results from the Columbia Non-neutral Torus JASON KREMER, THOMAS PEDERSEN, REMI LEFRANCOIS, QUINN MARKSTEINER, Columbia University, XABIER SARASOLA, CIEMAT — CNT is a new, simple stellarator designed to study non-neutral plasmas on magnetic surfaces. A detailed field line mapping effort was conducted and confirmed the existence of magnetic surfaces, an aspect ratio of 1.9 and good agreement with numerical predictions. The method and results of this field line mapping effort will be presented. The first electron plasma experiments have been conducted in CNT. Electron plasmas are made by thermionic emission from a negatively biased, heated tungsten filament inserted directly into the magnetic surfaces. The total number of electrons confined is estimated to be 10^{11} . Confinement time has been estimated to be 20 ms and preliminary measurements indicate that this may be limited by the presence of the emitter and diagnostic arrays. Current-voltage characteristics of emitting and non-emitting floating probes have been measured and have been used to estimate a temperature of 5 - 15 eV. Through these measurements, it is believed that the plasma criterion has been met. The details of these measurements and the progress on refining them will be presented.

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