

Abstract Submitted  
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**Pure electron plasmas confined in a stellarator without internal objects**<sup>1</sup> THOMAS SUNN PEDERSEN, XABIER SARASOLA, ERIC WINKLER, Max-Planck Institute for Plasma Physics, Greifswald, PAUL W. BRENNER, Columbia University — The Columbia Non-neutral Torus (CNT) is a simple stellarator built to investigate confinement and dynamics of non-neutral plasmas. One major goal of the experiment is to provide the necessary scientific basis for an electron-positron plasma experiment. Since such a plasma must be devoid of internal material objects (in order to avoid rapid positron annihilation on these objects), it has been a goal of CNT to create pure electron plasmas without internal objects, so that these could serve as a target for positron injection. After several years of development, plasmas surviving for more than 50 msec after removal of all internal objects have now been successfully created and measured. The confinement time is in this case very sensitively dependent on the neutral pressure, and is significantly shorter than for plasmas with internal objects, contrary to initial expectations. An ionization avalanche of the background neutrals may be responsible for the observed behavior. Plans for the positron-electron torus (PET) project are now under development and will be discussed.

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