First results from the Lawrence Non-neutral Torus II: a toroidal electron plasma device\textsuperscript{1} J.P. MARLER, J.O. HECTOR, S.K. CURRY, BAO HA, M.R. STONEKING, Lawrence University — Progress towards studying the dynamics of long-lived (∼1 s) non-neutral plasmas in toroidal geometry will be presented. Achieving trapping times on the order of 1 second will permit study of higher order mode dynamics and inherently toroidal transport physics \cite{1}. This poster presents the first results from the newly constructed Lawrence Non-Neutral Torus (LNT) II apparatus. The LNT II features an improved toroidal magnetic field magnitude (∼0.5 kG) and base vacuum pressure (<10\textsuperscript{−9} Torr). A segmented Au-plated Al electrode shell contributes to the reduction in field asymmetries and enables enhanced diagnostics. Additionally, the electron source is located on a retractable bellows for study of confinement dynamics in a complete torus. Confinement times on the order of 1 second would represent more than an order of magnitude improvement over measurements made with the previous apparatus \cite{2}.


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