

Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Magnetically Insulated Electron Flow in the 2.5-MeV URSA Minor LTD JOSHUA LECKBEE, TIMOTHY POINTON, BRYAN OLIVER, Sandia National Laboratories — The Linear Transformer Driver (LTD) is a compact type of inductive voltage adder (IVA) with the primary energy storage inside the IVA cells. The 2.5-MV URSA Minor LTD is designed to drive a magnetically insulated transmission line (MITL) and electron beam diode load. Because of its compact architecture, control of the electron power flow in the MITL (e.g. early time loss currents) is paramount to efficient operation. Results from experimental testing and 2-D particle-in-cell (PIC) simulations of magnetic insulation and electron loss in the MITL will be presented. The simulations compute the local energy deposition of electrons hitting the anode structures, including the dielectric insulator for each cavity. On URSA Minor, currents are measured in the cathode and anode conductors at four axial locations along the MITL. Measured currents and inferred voltages will be compared to the simulations.

Timothy Pointon
Sandia National Laboratories

Date submitted: 15 Jul 2011

Electronic form version 1.4