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Testing and Evaluation of High Voltage Diode Stacks for multi-pulse Linear Induction Accelerators

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The Department of Energy has tasked a few of the national laboratories to design and develop a new linear induction accelerator (LIA) capable of multi-pulse operation. This LIA would be different from the DARHT Axis II design in that, instead of multiple pulses being 'kicked'out of a single long pulse, the multiple pulses will be delivered independent of each other by the pulsed power system. In order to successfully do so, the pulsed power systems need to be isolated from each by inserting high voltage diode stacks in the pulsed power paths.
Los Alamos National Laboratory is currently testing and evaluating a few different designs of such diodes stacks capable of withstanding voltages of ˜300 kilovolts. Preliminary test results of high voltage pulses from Blumleins - capable of 300 kV pulses - fired into dummy (resistive) loads will be presented in this talk.
Comparison of these data with SPICE simulations of the circuit models, as well as, preliminary testing of dual pulsing results will be presented in companion papers.

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