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Theory  Experiment

**DC Studies of Coaxial Vacuum Gap Breakdown for Pulsed Power Liners,\*** C.M. Meisenhelder, *Williams College*; S.C. Bott-Suzuki, *UCSD*; D.M. Haas, *General Atomics* – Previously, pulsed power loads for inertial fusion have been envisioned as cylindrical wire arrays, which could easily be constrained to be in contact with both electrodes for a good electrical connection. Recently, solid liners have become the load of choice for Magnetized Liner Inertial Fusion (MagLIF) experiments which are currently being conducted on the Z-Machine at Sandia National Laboratory. These liners cannot easily be constrained as previous wire loads were, particularly for a repetitive system. The result is a vacuum gap between the driver electrodes and load, which may have unknown effects on the stability and development of the plasma system. DC voltages up to 30 kV will be applied to coaxial electrodes in vacuum to simulate a variety of possible gap parameters for pulsed power liners. This work investigates the breakdown-timing, azimuthal symmetry and coupling of the driver energy to the load as a function of gap parameters to better understand the subsequent behavior of a liner load.

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