

Abstract Submitted
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Development of modular scalable pulsed power systems for high power magnetized plasma experiments¹ I.A. BEAN, Virginia Tech, T.E. WEBER, Los Alamos National Laboratory, C.S. ADAMS, B.R. HENDERSON, Virginia Tech, A.J. KLIM, The Ohio State University — New pulsed power switches and trigger drivers are being developed in order to explore higher energy regimes in the Magnetic Shock Experiment (MSX) at Los Alamos National Laboratory. To achieve the required plasma velocities, high-power (approx. 100 kV, 100s of kA), high charge transfer (approx. 1 C), low-jitter (few ns) gas switches are needed. A study has been conducted on the effects of various electrode geometries and materials, dielectric media, and triggering strategies; resulting in the design of a low-inductance annular field-distortion switch, optimized for use with dry air at 90 psig, and triggered by a low-jitter, rapid rise-time solid-state Linear Transformer Driver. The switch geometry and electrical characteristics are designed to be compatible with Syllac style capacitors, and are intended to be deployed in modular configurations. The scalable nature of this approach will enable the rapid design and implementation of a wide variety of high-power magnetized plasma experiments.

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