Abstract Submitted
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Overview of the Fusion Z-Pinch Experiment FuZE[1] T.R. WEBER, U. SHUMLAK, B.A. NELSON, R.P. GOLINGO, E.L. CLAVEAU, University of Washington, H.S. MCLEAN, K.K. TUMMEL, D.P. HIGGINSON, A.E. SCHMIDT, Lawrence Livermore National Laboratory, UW/LLNL TEAM — Previously, the ZaP device, at the University of Washington, demonstrated sheared flow stabilized (SFS) Z-pinch plasmas [1]. Instabilities that have historically plagued Z-pinch plasma confinement were mitigated using sheared flows generated from a coaxial plasma gun of the Marshall type. Based on these results, a new SFS Z-pinch experiment, the Fusion Z-pinch Experiment (FuZE), has been constructed. FuZE is designed to investigate the scaling of SFS Z-pinch plasmas towards fusion conditions. The experiment will be supported by high fidelity physics modeling using kinetic and fluid simulations. Initial plans are in place for a pulsed fusion reactor following the results of FuZE. Notably, the design relies on proven commercial technologies, including a modest discharge current (1.5 MA) and voltage (40 kV), and liquid metal electrodes. [1] U. Shumlak et al., Nucl. Fusion 49 (2009) 075039.

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Uri Shumlak
University of Washington

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