

Abstract Submitted  
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**Evidence of a 100 cm Plasma in the ZaP Flow Z-Pinch**<sup>1</sup> U. SHUMLAK, J.M. CHADNEY, R.P. GOLINGO, M.C. HUGHES, S.D. KNECHT, B.A. NELSON, R.J. OBERTO, J.L. ROHRBACH, G. SHAH, G.V. VOGMAN, Aerospace and Energetics Research Program, University of Washington — The ZaP Flow Z-pinch experiment at the University of Washington investigates the effect of sheared flows on MHD stability. Evidence will be presented showing that an axially flowing Z-pinch plasma is produced that is 100 cm long with a 1 cm radius. The plasma remains quiescent for many Alfvén and flow time scales. The quiescent periods are characterized by low magnetic mode activity measured at several locations along the plasma column and by stationary visible plasma emission. Profiles of the plasma's axial flow are measured with a multi-chord ion Doppler spectrometer. A sheared flow profile is observed to be coincident with the quiescent period. The flow profile is well-understood and consistent with classical plasma viscosity. Plasma lifetime appears to only be limited by plasma supply and current waveform. Equilibrium is determined by the following diagnostic measurements: interferometry for density; spectroscopy for ion temperature, plasma flow, and density; Thomson scattering for electron temperature; Zeeman splitting for internal magnetic field measurements; and fast framing photography for global structure.

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