Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Insulator Modifications to Extend Plasma Lifetime on the ZaP Flow Z-Pinch M.C. HUGHES, U. SHUMLAK, B.A. NELSON, R.P. GOLINGO, S.D. KNECHT, M.P. ROSS, University of Washington — The ZaP Flow Z-Pinch at the University of Washington is a basic plasma physics experiment that utilizes sheared axial flows to maintain gross plasma stability. The experiment uses an annular acceleration region followed by a cylindrical assembly region in which the plasma column is formed and maintained. Upon Z-pinch formation, flowing plasma from the accelerator maintains the plasma supply in the Z-pinch in a quasi-steady state fashion. Past run campaigns have used changes in the injector parameters or to the annular area to alter the characteristics of the bulk plasma. Previous results show that the lifetime of the plasma is limited by the current from the power supply and by the plasma source from the accelerator. The supplied power has previously been increased to extend the current waveform. The insulated volume will be increased by 300% to extend the plasma supply from the accelerator, the stability period of the Z-pinch, and thus the plasma lifetime. Preliminary results will be discussed relating velocity shear measurements and interferometric accelerator densities. The increased source duration will be compared with the quasi-steady state duration of the pinch to show an increased control of the plasma lifetime through prolonged flow shear.

B.A. Nelson
University of Washington

Date submitted: 16 Jul 2012 Electronic form version 1.4