Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

**Modifications to the ZaP Experiment: Quasi-Steady Accelerator and ZaP-HD Operation**[1] M.C. HUGHES, U. SHUMLAK, B.A. NELSON, R.P. GOLINGO, M.P. ROSS, K.K. LAMBERT, J.R. WEED, C.A. BOWERS, S.A. DOTY, E.G. FORBES, S. FUNKE, D. GOLDSTONE, B. KIM, S.M. SWOFFORD, Aerospace and Energetics Research Program, University of Washington — The ZaP Flow Z-Pinch Experiment studies the stabilization of an unstable plasma by utilizing flow shear. The most recent operations of the original ZaP machine investigated a mechanism to increase the gas supply to the plasma source to prevent depletion during pulses. As the power through the machine increased, the density from the accelerator would drop off, leading to a lack of flow into the pinch and a loss of stability. The alteration created a quasi-steady operational mode that persists for the duration of the current pulse to the machine. Results are presented on this mode. In order to investigate scaling the ZaP concept to HEDP conditions, the ZaP-HD machine has been constructed. The new design has the flexibility to power the plasma source and Z-pinch separately. The design also takes lessons learned from the quasi-steady operational configuration. Initial operations of the machine focus on creating similar conditions to the ZaP machine. Recent results from the new ZaP-HD machine are presented.

[1]This work is supported by grants from the U.S. Department of Energy and the U.S. National Nuclear Security Administration.

Michal Hughes
University of Washington

Date submitted: 11 Jul 2014 Electronic form version 1.4