Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Results of the ZaP Flow Z-Pinch Inner Electrode Upgrade SEAN KNECHT, URI SHUMLAK, RAYMOND GOLINGO, BRIAN NELSON, University of Washington, ZAP TEAM — The ZaP Flow Z-Pinch is a plasma physics experiment that investigates the stabilization of a plasma column using sheared flows. The experiment consists of a coaxial plasma accelerator coupled to a pinch assembly region. Recently, the 10 cm diameter inner electrode (cathode) of the experiment was replaced by a 15 cm diameter inner electrode with the goal of increasing the temperature of the pinch through adiabatic compression while also increasing the quiescent (stable) period of the plasma through increased control of neutral-gas injection. This increased control is a product of the larger number of neutral-gas puff valves located inside the inner electrode (eight in the present configuration, compared to one in the previous). Results obtained after this inner electrode upgrade will be presented. Special attention will be paid to the temperature, density, characteristic radius of the pinch and the length of the quiescent period. Comparisons will be drawn between the properties of the plasma when using the 10 cm inner electrode and the 15 cm inner electrode. Theoretical calculations have shown an increase in the temperature by a factor of two, a slight increase in number density and a decrease in the characteristic radius of the pinch. Plans for future efforts will also be reported.

Sean Knecht
University of Washington

Date submitted: 23 Jul 2007 Electronic form version 1.4