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Overview and Recent Results from the ZaP Flow Z-Pinch U. SHUMLAK, B.A. NESLON, C.S. ADAMS, D.J. DEN HARTOG, R.P. GOLINGO, S.D. KNECHT, K.A. MUNSON, J. NEWMAN, J. PASKO, D. SCHMULAND, M. SYBOUTS, G. VOGMAN, Aerospace and Energetics Research Program, University of Washington — The ZaP Flow Z-Pinch Experiment at the University of Washington investigates a magnetic confinement configuration that relies on sheared flow for stability in an otherwise unstable configuration. An axially flowing Z-pinch is generated with a coaxial accelerator coupled to a pinch assembly chamber. Magnetic probes measure fluctuation levels. The plasma is magnetically confined for an extended quiescent period where the mode activity is reduced. Multichord Doppler shift measurements of impurity lines show a sub-Alfvenic, sheared flow during the quiescent period and low shear profiles during periods of high mode activity. The plasma has a sheared axial flow that exceeds the theoretical threshold for stability during the quiescent period and is lower than the threshold during periods of high mode activity. A holographic interferometer measures a radially peaked density profile during the quiescent period. Density profiles are analyzed to determine magnetic field and temperature profiles. Internal magnetic fields have been recently determined by measuring the Zeeman splitting of impurity carbon emission. The measurements are consistent with a magnetically confined pinch plasma. Recent experimental measurements will be presented. This work is supported by a grant from DOE.

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