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Equilibrium and Stability Properties for Long Stability Period and High-Field Regimes in the ZaP Flow Z-Pinch S.D. KNECHT, U. SHUMLAK, R.P. GOLINGO, B.A. NELSON, University of Washington — The ZaP Flow Z-Pinch experiment investigates the effect of sheared axial flows on the gross stability of a Z-pinch. The cathode is replaced with a larger version to increase heating through increased adiabatic compression and to increase flexibility of gas injection through a greater number of gas valves. Two operational regimes are identified with the electrode configuration: long stability period; high peak magnetic field. The long stability regime results in a well-centered pinch with little magnetic mode activity for an extended period of time which appears to be limited by the current pulse. The high-field regime results in a ramp-up of magnetic field by a factor of two. Loss of stability is typically correlated with the magnetic field peak. Radial density profile is calculated using a four-chord HeNe interferometer, magnetic field and mode activity are measured with an azimuthal array of probes and total temperature is estimated from these values. Equilibrium and stability properties are calculated and reported.

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