Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Overview of Caltech Spheromak/Astrophysical Jet/Solar Simulation Experiments[1] PAUL BELLAN, SETTHIVOINE YOU, GUNSU YUN, SHREEKRISHNA TRIPATHI, DEEPAK KUMAR, Caltech — Experiments underway at Caltech address several issues common to spheromaks, solar coronal loops, and astrophysical jets. These experiments use magnetized plasma guns and allow the plasma morphology to self-organize rather be imposed by either external coils or the shape of a surrounding vacuum chamber. The evolution of the plasma morphology/topology is tracked using high speed cameras. A good understanding of the evolutionary sequence has been obtained as well as insights into how this sequence depends on the interactions between MHD forces, convection of magnetic flux frozen into flowing plasma, and collimation resulting from the pile-up of flowing plasma and its embedded flux. These interactions are fundamental to the development of equilibria since flow, mass ingestion, and flux build-up are the means by which equilibrium hydrodynamic pressure and magnetic field are established.

[1]supported by USDOE and NSF

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Date submitted: 20 Jul 2005 Electronic form version 1.4