Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Pulsed Flow Pinch CHARLES HARTMAN, DAVID REISMAN, Lawrence Livermore National Lab — Formation of a Pulsed Flow Pinch is discussed, based on 2-D, MHD numerical calculations. The PFP utilizes the observed stable, Btheta magnetic "bubble" which propagates from breach to muzzle during the run-down phase of the coaxial Marshall gun. We consider two ways of launching a PFP onto a fiber or cylindrical gas cloud: 1) by propagating the bubble to small radius along an exponentially-decreasing-radius center conductor and, 2) by a radial launch to form reflex PFP's propagating in opposite directions along a fiber. We show that the bubble velocity increases to high values as the radius is decreased making the rise time of Btheta at an axial point very short. A bubble, launched into uniform gas is found to undergo unstable pinching of the front. Results will be presented of calculations of a PFP driven, neutron-producing, snow-plow pinch. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

Charles Hartman
Lawrence Livermore National Lab

Date submitted: 30 Aug 2005 Electronic form version 1.4