Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Dynamics of Magnetized Plasma Jets and Bubbles Launched into a Background Magnetized Plasma[1] B. WALLACE, Y. ZHANG, D.M. FISHER, M. GILMORE, University of New Mexico — The propagation of dense magnetized plasma, either collimated with mainly azimuthal B-field (jet) or toroidal with closed B-field (bubble), in a background plasma occurs in a number of solar and astrophysical cases. Such cases include coronal mass ejections moving in the background solar wind and extragalactic radio lobes expanding into the extragalactic medium. Understanding the detailed MHD behavior is crucial for correctly modeling these events. In order to further the understanding of such systems, we are investigating the injection of dense magnetized jets and bubbles into a lower density background magnetized plasma using a coaxial plasma gun and a background helicon or cathode plasma. In both jet and bubble cases, the MHD dynamics are found to be very different when launched into background plasma or magnetic field, as compared to vacuum. In the jet case, it is found that the inherent kink instability is stabilized by velocity shear developed due to added magnetic tension from the background field. In the bubble case, rather than directly relaxing to a minimum energy Taylor state (spheromak) as in vacuum, there is an expansion asymmetry and the bubble becomes Rayleigh-Taylor unstable on one side. Recent results will be presented.

[1]Work supported by the Army Research Office award no. W911NF1510480

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Date submitted: 15 Jul 2016 Electronic form version 1.4