Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Compression of a fast MHD jet upon impact with a heavy gas cloud: an analog to liner compression[1] AMELIA GREIG[2], PAUL BELLAN, Caltech — The Caltech plasma jet experiment was previously configured to have a fast MHD-driven hydrogen plasma jet collide with a neutral argon cloud located in the path of the jet [1]. By changing to the jet frame, this compression of the light hydrogen jet by impact with the heavy cloud is seen to be equivalent to the Magnetized Inertial Fusion situation of a heavy liner compressing a low-density, magnetized plasma. In the previous experiments it was observed that the hydrogen jet quickly ionized the heavy argon cloud and, being relative low mass compared to the cloud, the hydrogen jet became scrunched up by the impact. Magnetic probe measurements indicated that this nearly tripled the jet magnetic field while Stark broadening showed a simultaneous substantial density increase. We will repeat these measurements for a greater range of parameters and with better diagnostics with the ultimate goal of determining an equation of state characterizing the actual observed behavior. Preliminary results will be presented.

[1] A. L. Moser and P. M. Bellan, Astrophysics and Space Science 337, 593 (2012)

[1]Supported by ARPA-E ALPHA program.
[2](as of approximately September 15)

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Date submitted: 22 Jul 2015 Electronic form version 1.4