Abstract Submitted
for the APR05 Meeting of
The American Physical Society

Laboratory simulation of magnetized astrophysical jets R. PRESURA, L.F. WANEX, V.I. SOTNIKOV, A. ESAULOV, University of Nevada, Reno — Open questions regarding astrophysical jets nclude the mechanisms responsible for their collimation during propagation over distances at least 10 times larger than their diameter. Several laboratory experiments designed to address the role of stability and radiative cooling upon the collimation of magnetized jets will be presented. They are based on scaling and realistic facilities. Scaling issues will be presented. The plasma jets will be created by laser ablation ($I \leq$1PW/cm^2), and fields ($\boldsymbol{B}\leq$0.5MG, $\boldsymbol{E}\leq$200kV/cm) will be produced independently by a fast pulsed power generator. This combination allows for the generation of magnetized jets and, in particular, current carrying jets. Depending on the elemental composition, the jets can be made radiative or not. An addition external magnetic field can be used to produce jet rotation. Experimental results will be used to verify predictions of linear MHD theory and MHD modeling. In particular, the effects of sheared axial flow, sheared azimuthal flow, and axial magnetic field upon the MHD stability of current carrying jets will be investigated. Work supported by DOE/NNSA under UNR grant DE-FC52-01NV14050.

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Date submitted: 13 Jan 2005 Electronic form version 1.4