

Abstract Submitted
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Explosive plasma expansion in strong magnetic field¹ R. PRESURA, A. ESAULOV, V.V. IVANOV, Y. SENTOKU, V.I. SOTNIKOV, L.F. WANEX, T.E. COWAN, Nevada Terawatt Facility, University of Nevada, Reno — Experiments to investigate the interaction of a laser-produced-plasma with a strong magnetic field showed the formation of a dynamic boundary layer with high density gradient at the plasma-field interface.[1,2] The shape of the expansion is explained by 3D-ideal-MHD modeling, but kinetic effects are found to be important in understanding the shock penetration in the strong field region. Follow-up experiments using a higher intensity laser and stronger magnetic field will allow control of the plasma collisionality and magnetization in the plasma-field interaction region. These laboratory experiments will achieve conditions relevant to plasma astrophysics interactions. Experimental results and several new experimental concepts will be presented.

[1] R. Presura et al., ApSS 299, 299-303 (2005)

[2] W. Horton et al., Advances in Space Research, In Press, 2005

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R. Presura
University of Nevada, Reno

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