

Abstract Submitted  
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**VISAR** **Un-**  
**fold Analysis of MagLIF Laser Blast Wave Experiments**<sup>1</sup> MARK HESS,  
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ries — MagLIF (Magnetized Liner Inertial Fusion) [1] is a fusion energy scheme,  
which utilizes a short laser pulse to preheat a fuel, and a magnetically driven cylin-  
drical liner to compress the fuel to high energy density plasma conditions. Recently,  
a set of successful experiments have been performed to evaluate the effectiveness of  
our preheat process in MagLIF using the Z-Beamlet [2] laser at Sandia. The fuel  
is preheated in the liner, with no compression from the Z-machine, and a VISAR  
diagnostic was fielded on the outer surface of the liner to measure velocity of the  
liner due to the pressure of the laser blast wave on the inner surface of the liner. In  
support of this program, we developed a fast unfold method of the VISAR data using  
semi-analytical techniques/numerical methods. The method incorporates appropri-  
ate boundary conditions at both edges of the VISAR foil, realistic EOS tables, and  
an additional pressure pulse time-delay feature for accurately unfolding the time-  
dependent pressure from the VISAR data. Our fully automated method can produce  
high-quality unfolds of the laser blast wave in under a minute. [1] S.A. Slutz et al,  
Phys. Plasmas 17, 056303 (2010). [2] P. Rambo et al, Appl. Opt. 44, 2421 (2005).

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