

A NOVEL METHOD FOR UNFOLDING LASER BLAST WAVE VISAR DATA

M. Hess¹, K. Peterson¹, A. Harvey-Thompson¹
¹Sandia National Laboratories, Albuquerque, NM, USA
mhess@sandia.gov

In order to assess the Z-Beamlet [1] laser preheat component of the MagLIF [2] fusion concept, a set of experiments were performed to measure the properties of the laser blast wave within the fuel. These experiments fielded a VISAR diagnostic on the outer metal cylindrical liner surface, which contains the preheated fuel. By unfolding the measured VISAR velocities on the surface of the metal liner, one can infer the fuel pressure as a function of time on the inner liner surface. Our novel VISAR unfold technique combines analytical methods, such as appropriate liner pressure and density boundary conditions, numerical methods, and well-known EOS tabular data to provide a fast and accurate unfold of the fuel pressure. In addition to describing our new unfold methodology, we discuss the effectiveness of fuel preheating in these experiments as found from our pressure unfolds.

[1] P. Rambo et al, *Appl. Opt.* 44, 2421 (2005).

[2] S. A. Slutz et al, *Phys. Plasmas* 17, 056303 (2010).

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