

Abstract Submitted
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Calibrating Radiographic Images from Omega Experiments T.L.

DONAJKOWSKI, C.C. KURANZ, R.P. DRAKE, University of Michigan — Astrophysical phenomena can be studied by creating well-scaled experiments simulating Rayleigh-Taylor instabilities using the Omega Laser. X-ray radiography is used to obtain images of the shock and interface that can be calibrated and analyzed. Targets include a gold grid with fiducial cutouts for spatial and magnification calibration. Prior to the experiment the grid location is measured, which allows absolute calibration of radiographic images. Then using a reference point, e.g. a grid corner or fiducial, the image is rotated and a coordinate system is added. Measurements are taken of the interface position, and shock thickness and position, from which speeds and growth rates are calculated. Calibration can be made more accurate by adding multiple reference point inputs and measurement scale alteration. The accuracy of data analysis depends highly on the reliability of calibration of the x-ray radiograph. Results of these improvements will be shown. This research was sponsored by the National Nuclear Security Administration under the Stewardship Science Academic Alliances program through DOE Research Grants DE-FG52-03NA00064, DE-FG53-2005-NA26014, and other grants and contracts.

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