

Abstract Submitted  
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**Automatic Detection of Shock Wave Features**<sup>1</sup> NICK PATTERSON,  
R.P. DRAKE, KATSUYO THORNTON, U of Michigan — An image analysis algorithm and procedure are developed to analyze the radiographs of shock waves to automatically detect features necessary to quantitatively characterize their dynamics. We examine a high-intensity laser-driven nearly planar shock wave to study the shock structure and radiation hydrodynamics. The experimental parameters are relevant to astrophysical systems with dynamics influenced by radiative effects. The image analysis program is also applicable to structures predicted by simulations. The three primary features detected are the wall boundaries, the position of the shock front, and the angle of the wall shock. The program requires very little human input and is a significant improvement over the manual method. Furthermore, the procedure allows consistent characterization of shock waves, both experimental and simulated, which is necessary for uncertainty quantification.

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