Abstract Submitted
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Speckle-adaptive VISAR fringe analysis technique[1] DAVID ERSKINE, Lawrence Livermore Natl Lab — A line-VISAR (velocity interferometer) is an important diagnostic in shock physics, simultaneously measuring many fringe histories of adjacent portions of a target splayed along a line on a target, with fringes recorded vs time and space by a streak camera. Due to laser illumination speckle (spatial intensity variation), target surface unevenness, or rapid spatial variation of target physics, conventional fringe analysis algorithms which do not properly model these variations can suffer from inferred velocity (fringe phase) errors. A speckle-adaptive algorithm has been developed which senses the interferometer and illumination parameters for each individual row (spatial position Y) of the 2d interferogram, so that the interferogram can be compensated for Y-dependent non-fringing intensity, fringe visibility, and nonlinear phase distribution. In numerical simulations and on actual data we have found this individual row-by-row modeling improves the accuracy of the result, compared to a conventional column-by-column analysis approach.

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