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**Computational studies of laser-driven flyer impact experiments to probe properties of inert and energetic materials** SVJETLANA STEKOVIC, University of Illinois at Urbana-Champaign, H KEO SPRINGER, Lawrence Livermore National Laboratory, MITHUN BHOWMICK, DANA D DLOTT, University of Illinois at Urbana-Champaign — We present computational studies of laser-driven flyer impact experiments using a multi-material, arbitrary Lagrangian-Eulerian code, ALE3D. The Dlott research group has designed a tabletop apparatus in which a flyer plate is driven by a short-pulse laser to speeds of 1-5 km/s and impacts a multi-material medium. The multi-material medium consists of a transparent window and either an inert or nitromethane. These experiments provide high-resolution information on the dynamic material response and reactivity through the transparent window. Numerical results demonstrate agreement with experimental data for the laser launch of the aluminum flyer and the flyer impact response of window. These efforts have been used to improve the experimental design and provide further knowledge into the non-planar effects during the dynamic material response of inert materials. We also expand our computational approach to simulate a multi-material medium and observe the dynamic response of nitromethane.

Svjetlana Stekovic
University of Illinois at Urbana-Champaign

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