

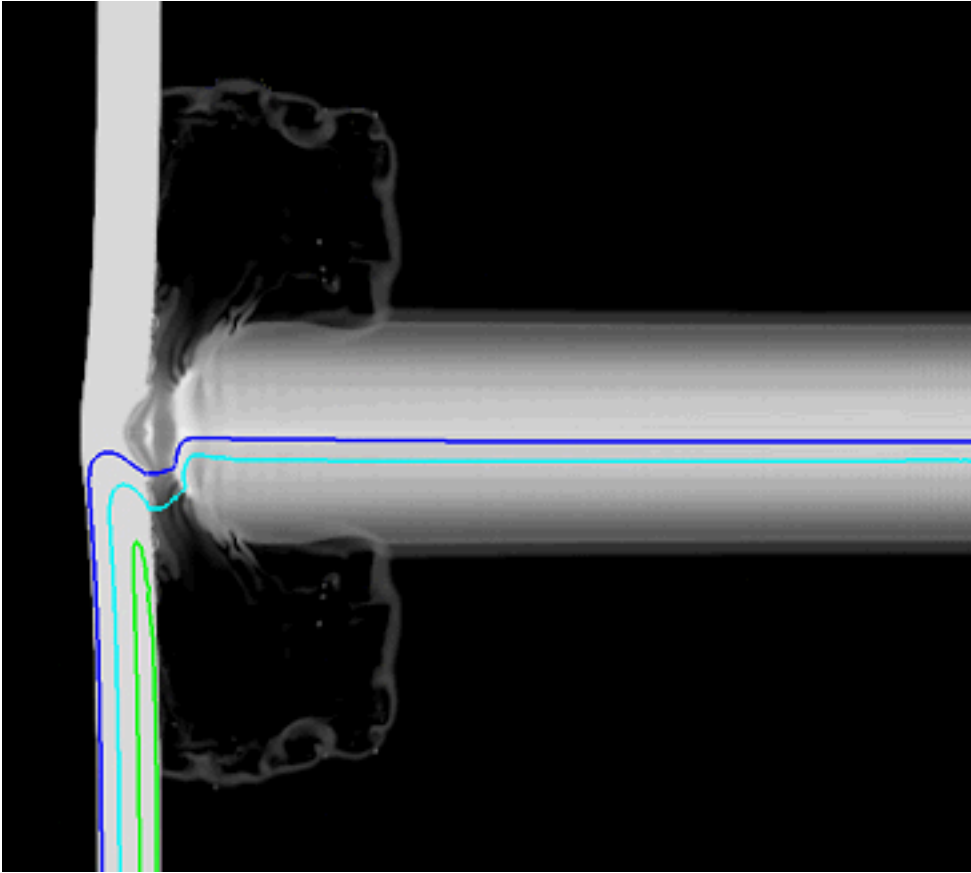
Impact of ALEGRA on Army Research Laboratory Experimental Program

**Erik Strack
Computational Shock & Multiphysics
Sandia National Laboratories
Albuquerque, NM 87185-1431**

The ALEGRA shock physics code is currently being used regularly by the Army Research Laboratory (ARL) to simulate experiments for fundamental research and is helping guide their experimental program. Recently, ARL experimentalists were preparing to publish some new results on exploding wires when they asked ARL analysts to perform some simulations of the work using ALEGRA (see Figure 1). The simulated results were different enough that a detailed investigation was warranted. Additional ALEGRA simulations and experiments helped identify that the presumed experimental impedance mismatch between the oscilloscope and the feed was off by a factor of two. This discrepancy would probably not have been found without the help of the simulations. After the correction, the experiment showed improved consistency with the simulations (see Figure 2), which then allowed ARL to use the simulation results to start understanding the fundamental dynamics of the experiment. Remaining inconsistencies between experiment and simulation for these types of problems (see Figure 2) will be addressed in a four year program led by ARL that is focused on verification and validation. The goal of the program is to assess and improve the predictiveness of modeling and simulation tools used in ARL's research. The images are courtesy of Dr. B. Doney, ARL.

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND -2005-6648P





r

