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Experimental study of explosively-driven shock wave propagation in scaled two-dimensional geometries SARA DIGREGORIO, CARL LUCERO, JAMES ANDERSON, MICHAEL HARGATHER, New Mexico Tech — An experimental fixture was developed to study explosively-driven shock wave propagation in two-dimensional geometries. Shock waves are produced using an electric spark gap on a detonator header which is driven by a FS-17 fire set. The spark produces a shock wave, which propagates through the fixture. The fixture itself is made from laser-cut acrylic sheets which are cut to represent varied geometries for shock reflection, diffraction, and complex interactions. This fixture is placed within a schlieren imaging system and high-speed images of explosive events are recorded at various frame rates. The shock wave propagation is quantified in terms of shock speed throughout the models. Piezoelectric pressure gages are used to measure static and reflected pressures at various locations in the geometries to supplement shock wave measurements. Additional measurements of product gas motion and turbulent mixing are presented.

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