

Abstract Submitted  
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**Principles for laser-launched flyer plates by confined plasma ablation, and related diagnostics** DENNIS PAISLEY, Los Alamos National Laboratory — For over a decade, laser confined-ablation plasmas have been used to accelerate 1-D flyer plates for shock physics experiments and initiation of energetic materials. We have conducted experiments with flyer plate thicknesses from 2  $\mu\text{m}$  to 2 mm, 0.4 – 8 mm diameter using 3 ns – 2- $\mu\text{s}$  pulses and 10 mJ to 400 Joules. Traditional metals (Al, Cu, Au, Ta, SS, multi-layers) have been accelerated to a wide range of velocities, 0.1 –  $\geq 5$  km/s (not all plate sizes to all velocities). From these experiments, several general experimental trends have been observed and confirmed by models. The laser spatial and temporal profiles optimized to flyer plate parameters to properly launch 1-D plates at known conditions, and obtain the desired experimental results. These experimental methods and the diagnostics to confirm the desired results will be discussed, including the optical diagnostics and models.  
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