

Abstract Submitted
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Dynamics of the Onset of Damage in Metals under Shock Loading¹ AARON KOSKELO, SCOTT GREENFIELD, KENNETH MCCLELLAN, DARRIN BYLER, ROBERT DICKERSON, DENNIS PAISLEY, SHENGNIAN LUO, DAMIAN SWIFT, DAVIS TONKS, Los Alamos National Laboratory, PEDRO PERALTA, Arizona State University — We seek to understand the development of damage in polycrystalline materials under shock loading. Our current focus is on the role material microstructure plays in spall formation. Our approach is to use sensitive dynamic interferometry methods (see Greenfield's and Paisley's presentations at this meeting) to probe surface displacement and velocity dynamics of copper during shock loading using laser-launched flyers. Specimens have either columnar grains or have no more than one or two grain-boundaries between the spall layer and the surface that is monitored. In this way, we expect to unravel the complex surface dynamics observed in terms of loci for damage within the material. The dynamic measurements are to be correlated with pre- and post- shot materials characterization and damage assessment. Variables such as triple points, intergranular orientation mismatches, engineered inclusions and voids, and dynamic development of connections between voids are all part of our current work. This presentation will detail the results to date.

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