

Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

Transient Stress Optimization of Elastic and Viscoelastic Composite Strips RICH LAVERTY, National Research Council, GEORGE GAZONAS, US Army Research Lab — In this study we will examine transient wave propagation in elastic and viscoelastic composite strips generated by an impulse stress, a step in stress and low velocity impact by rigid and elastic strikers. In the case of impulse, step and rigid body impact we seek combinations of material parameters that lead to optimal designs, defined as the maximum stress achieved in the composite layer most distant from the applied stress. In the case of impact from an elastic body, we define an optimal design as one in which the maximum stress is achieved in the striker, not the composite. The primary purpose of these results is benchmarking larger numerical studies coupling a finite element code (DYNA3D) with several optimization routines, but these problems are also interesting from a basic mechanics perspective.

Rich Laverty
National Research Council

Date submitted: 06 Apr 2005

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