

Abstract Submitted
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Validation of High-Resolution Calculations to Inform Continuum Model Development GARRY MASKALY, Los Alamos National Laboratory — Accurately modeling shock loading of composite materials presents challenges for continuum (accurate modeling shock time and breakout velocity). In this work, we develop high-resolution models capable of capturing salient details of the material, which are then validated against experimental results. In addition, these high-resolution models are then used to validate and improve a series of continuum models (P-alpha to treat porosity). This work will focus on studying polymer foams across a series of densities where large volume collapses occur upon shock loading. These models resolve the porosity, which is not possible in large-scale continuum calculations. The approach of validating high-resolution models to aid in the development of continuum models is unusual. Validation is usually performed on the continuum level with perhaps high-resolution calculations informing additional model development. While this approach is not ideal for all applications, this work will discuss a series of applications where such approaches have large benefits.

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