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Impact Simulations for a Pre-Stressed Ceramic JAMES CAZAMIAS, DRC, STEPHAN BILYK, ARL, MICHAEL KORNECKI, DSI — Applying a pre-stress to a ceramic using confinement increases the initial strength and ductility and helps suppress tensile failure. This confinement is not necessarily hydrostatic, so deviatoric pre-stresses may also be introduced. Although experimental testing of confined ceramic is becoming more common, numerical modeling of ceramic response in these configurations has been limited. We have developed a methodology to examine shrink-fit configurations using ALE3D. Experiments are conducted to examine the effects of ceramic confinement when impacted with projectile rods, and we are modeling these experiments using this methodology and the Johnson-Holmquist-Beissel model.

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