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Verification of Uncertainty Propagation for Equation of State Tables JOHN H. CARPENTER, Sandia National Laboratories*, ALLEN C. ROBINSON, BERT DEBUSSCHERE, Sandia National Laboratories — Costly equation of state (EOS) models are often tabulated to improve the performance of physics codes. Given a parametric representation of the uncertainty in an EOS, one must then deliver a set of tables that reproduces that uncertainty for forward propagation through the physics codes. Two candidates for a practical and efficient delivery method are a reduced set of table samples from a Markov Chain (MC) and a compressed table generated using Principal Component Analysis (PCA). These methods are verified through a simulation of an exploding wire using an aluminum EOS. The MC sample route is found to be superior, with PCA tables failing to provide sufficient accuracy with a reasonable number of modes for problems with realistic complexity.

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