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Mesh Dependence of Initiation Threshold in the Presence of Mesoscale Porosity DAVID HARDIN, Air Force Research Laboratory, Munitions Directorate, H. KEO SPRINGER, Lawrence Livermore National Lab, NIRMAL RAI, University of Iowa, SUSHILKUMAR KOUNDINYAN, Air Force Research Laboratory, Munitions Directorate, G. "CHIP" BUTLER, University of Dayton Research Institute — Mesoscale modeling is frequently performed using continuum-level simulation tools to model the behavior of porous energetic materials undergoing dynamic loading from a shock or impact. In this scenario, the pores contained in the computational domain are collapsed due to the mechanical stresses on the material. During this process, a number of different energy localization mechanisms compete to achieve this collapse with the result being a locally heated region of material or "hot spot". The shape and temperature distribution of each hot spot is a direct result of the input stress and initial pore size and shape, and the hot spot drives the chemical decomposition of the HE. This work will address the dependence of the calculated initiation threshold of an HE on the underlying computational mesh of the domain. Ideally, this numerical dependence would be minimal relative to the influence of the physical parameters which control energy localization, but this is not always the case. This work will investigate the mesh dependence of initiation threshold predictions across different simulation platforms and discuss the underlying uncertainty that this dependency introduces.

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