Abstract Submitted
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DRACO development for 3D simulations[1] MILAD FATENEJAD, GREGORY MOSES, University of Wisconsin-Madison — The DRACO (r-z) lagrangian radiation-hydrodynamics laser fusion simulation code is being extended to model 3D hydrodynamics in (x-y-z) coordinates with hexahedral cells on a structured grid. The equation of motion is solved with a lagrangian update with optional rezoning. The fluid equations are solved using an explicit scheme based on (Schulz, 1964) while the SALE-3D algorithm (Amsden, 1981) is used as a template for computing cell volumes and other quantities. A second order rezoner has been added which uses linear interpolation of the underlying continuous functions to preserve accuracy (Van Leer, 1976). Artificial restoring force terms and smoothing algorithms are used to avoid grid distortion in high aspect ratio cells. These include alternate node couplers along with a rotational restoring force based on the Tensor Code (Maenchen, 1964). Electron and ion thermal conduction is modeled using an extension of Kershaw's method (Kershaw, 1981) to 3D geometry. Test problem simulations will be presented to demonstrate the applicability of this new version of DRACO to the study of fluid instabilities in three dimensions.

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