Abstract Submitted
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Effects of Turbulence on Taylor-Sedov Blast Waves in Radially-Symmetric Geometries[1] TIBERIUS MORAN-LOPEZ, DANIEL ZAIDE, JAMES HOLLOWAY, University of Michigan, OLEG SCHILLING, Lawrence Livermore National Laboratory — Progress in extending studies of the classical Taylor–Sedov blast wave problem by incorporating effects due to turbulence is reported. Investigations consist of the analytical development and initial numerical findings describing the evolution of large and instantaneous energy releases from point explosions (in radially-symmetric systems) while coupling turbulent instabilities. The closure of the Reynolds-Favre averaged mean flow equations is accomplished using a $K-\epsilon$ model in the gradient diffusion approximation. To reduce the complexity of the problem, self-similar analysis is used to reduce the space-time dependent system of partial differential equations to coupled, nonlinear ordinary differential equations in the self-similarity variable. Preliminary approximations considered in the problem are also discussed.

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