Abstract Submitted
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On the Simulation of Shock-Driven Material Mixing in High Reynolds-Number Flows[1] FERNANDO GRINSTEIN, AKSHAY GOWARDHAN, Los Alamos National Laboratory — Implicit large eddy simulation proposes to effectively rely on the use of subgrid modeling and filtering provided implicitly by physics capturing numerics. Extensive work has demonstrated that predictive simulations of turbulent velocity fields are possible using a class of high resolution, non-oscillatory finite-volume (NFV) numerical algorithms. Truncation terms associated with NFV methods implicitly provide subgrid models capable of emulating the physical dynamics of the unresolved turbulent velocity fluctuations by themselves. The extension of the approach to the substantially more difficult problem of under-resolved material mixing by an under-resolved velocity field has not yet been investigated numerically, nor are there any theories as to when the methodology may be expected to be successful. Progress in addressing these issues in studies of shock-driven scalar mixing driven by Ritchmyer-Meshkov instabilities will be reported in the context of ongoing simulations of shock-tube laboratory experiments.

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Fernando Grinstein
Los Alamos National Laboratory

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