

Abstract Submitted
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LES Simulations of Turbulent Combustion in a Type Ia Supernovae SRABASTI DUTTA¹, JAMES GLIMM, YONGMIN ZHANG, State University of New York, Stony Brook — We propose a 2D axisymmetric model of a successful type I_a supernova explosion, based on a front tracking sharp flame model. The calculation is free of adjustable turbulent transport parameters, and in this sense is in the spirit of LES turbulence simulations. Since the mixing is dominated by the largest eddies, resolving these and not the smaller ones results in a tolerable error. Both the 2D and the LES nature of the model greatly simplify parameter identification. The 2D model allows multiple simulations and an exploration of unknown parameters, while the LES model removes parameters from the simulation. We take first steps in the parameter identification problem, in observing that the initial conditions (initial radius and initial perturbation amplitudes, for example) are sensitive in determining the success of the explosion.

¹Membership Pending

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