Stochastic model of Rayleigh-Taylor mixing with time-dependent acceleration[1] NORA SWISHER, SNEZHANA ABARZHI, Carnegie Mellon Unviersity — We report the stochastic model of Rayleigh-Taylor (RT) mixing with time-dependent acceleration. RT mixing is a statistically unsteady process, where the means values of the flow quantities as well as the fluctuations around these means are time-dependent. A set of nonlinear stochastic differential equations with multiplicative noise is derived on the basis of rigorous momentum model and group theory analyses to account for the randomness of RT mixing. A broad range of parameter regime is investigated; self-similar asymptotic solutions are found; new regimes of RT mixing dynamics are identified. We show that for power-law asymptotic solutions describing RT mixing the exponent is relatively insensitive and pre-factor is sensitive to the fluctuations, and find the statistic invariants of the dynamics in each of the new regimes.

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