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Energy transfers, mixing efficiency and the internal structure of stratified Rayleigh-Taylor instability MEGAN DAVIES WYKES, University of Cambridge, ANDREW LAWRIE, University of Bristol, STUART DALZIEL, University of Cambridge — Rayleigh–Taylor instability has been shown in experiments to have a high mixing efficiency ($\eta > 0.75$) when it occurs at an interface between two otherwise stably stratified layers. In this presentation, an implicit large eddy simulation (which uses numerical diffusion as a proxy for physical viscous diffusion) is used to model the instability and the resulting turbulent flow. The final state of simulations is shown to have an excellent match with experiments. The simulations allow the tracking of energy in the flow, revealing some interesting behavior with implications for the study of mixing in stratified flows more generally.

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