

Abstract Submitted
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A connexion between turbulence in Rayleigh Taylor flows and turbulence in other buoyant flows OLIVIER POUJADE, CEA — An increasing number of numerical simulations and experiments describing the turbulent spectrum of Rayleigh-Taylor (RT) mixing layers came to light over the past few years. Results reported in recent studies allow to rule out a turbulence *à la Kolmogorov* as the main mechanism acting on a self similar RT turbulent mixing layer. In this case, the injected power is due to buoyancy motion on a broad range of length scales. We have generalised Lin's spectral equation to buoyant flows and we have shown that this injected power tends to accumulate at large scales so that big whirls can get bigger as the mixing layer thickness increases. Only a small fraction of this power is transferred to small scales through a Kolmogorov cascade and dissipated. This balance between the accumulation of energy at large scales and the buoyancy production can also be applied to Rayleigh-Bénard instabilities. It explains the Bolgiano-Obukov scaling predicted and experimentally observed for these flows.

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