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Turbulence transport in the presence of a macroscale gradient DANIELA TORDELLA, MICHELE IOVIENO, Dipartimento di Ingegneria Aeronautica e Spaziale, Politecnico di Torino — In the absence of kinetic energy production, the intermediate asymptotics of the turbulent shear-free mixing layer is considered. By means of a theoretical analysis based on the use of the two-point correlation equations and their intermediate-similarity solutions, we examine the following two results obtained via numerical experiments on the interaction between different decaying homogeneous and isotropic turbulences:

1. mixing is highly intermittent for shear-free decaying homogeneous isotropic interacting flows with kinetic-energy ratios far from unity in contrast to a Gaussian asymptotic state, and

2. the intermittency increases/decreases when the kinetic-energy gradients and integral-scale gradients are aligned/opposite.

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