

Abstract Submitted
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Stratified shear flow in an inclined duct: coherent structures and mixing¹ ADRIEN LEFAUVE, JAMIE PARTRIDGE, STUART DALZIEL, PAUL LINDEN, Univ of Cambridge — We present laboratory experiments on the exchange flow in an inclined square duct connecting two reservoirs at different densities. This system generates and maintains a stratified shear flow, which can be laminar, wavy or turbulent depending on the density difference and inclination angle. It is believed that the mean dissipation is set by the angle, and that high buoyancy Reynolds numbers (i.e. turbulent intensity) can be maintained, making this system suited for the study of continuously forced stratified turbulence. The talk will focus on the analysis of time-resolved, near-instantaneous 3D velocity and density data obtained by stereo particle image velocimetry (PIV) and laser induced fluorescence (LIF). This data allow for the visualisation of 3D coherent structures as well as turbulent mixing properties, which are key in understanding the dynamics of stratified turbulence.

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