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Statistical evolution of a stratified flow with horizontal shear KYLE BRUCKER, SANKAR BASAK, SUTANU SARKAR, UC San Diego — When subject to large N, a shear layer with horizontal shear develops a lattice of dislocated columns of vertical vorticity. Visualizations of the vorticity and buoyancy fields have helped explain the formation of vortex cores and their subsequent dislocations by a buoyancy-related instability. The impact of the coherent dynamics on the flow statistics will be discussed. The velocity fluctuations become more anisotropic, and vertical gradients dominate the dissipation rate of both kinetic and potential energy. The mixing efficiency is significantly larger than in flows with mean vertical shear and similar Richardson number. All scales of motion are affected by buoyancy and the consequent effects on velocity and density spectra will be reported.

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