The Interaction between a Stably-Stratified Jet and an Internal Gravity Wave Field HIEU PHAM, SUTANU SARKAR, University of California, San Diego — Direct Numerical Simulation of an internal wave field penetrating a stratified jet is performed. The jet is linearly stratified such that the gradient Richardson number is greater than 0.25 everywhere. Internal waves, generated with specified amplitude and group velocity, propagate downward toward the jet situated below. A critical layer is observed in the upper-flank of the jet where the jet velocity is equal to the wave horizontal phase speed. In the vicinity of the layer, a significant amount of wave energy is reflected back to the region above the jet while a small fraction tunnels through to the lower-flank. The wave field in the region below the jet is strongly attenuated compared to the incident field although the propagation direction remains unchanged. In the region above the jet the incident and reflected waves interact resulting in an unsteady wave field. Furthermore, the interaction results in an induced turbulent dissipation rate which is an order of magnitude higher than that inside the jet.

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