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Vertical Profiling of Velocity Microstructure

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ABSTRACT

A free-fall oceanographic instrument capable of producing direct estimates of the local rate of energy dissipation has been developed. The velocity sensor in an adaptation of the two-component airfoil probe to the oceanic environment. Spectra of the velocity data show that the instrument achieves complete spatial resolution of the vertical current shear and there is no apparent contamination of the signal from vibrations or body motions in the frequency range contributing to the variance of the shear. The energy dissipation is proportional to the variance of the vertical shear. Thus, it is possible to estimate the energy dissipation without comparing the velocity spectra to any “universal curve.”

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