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Determination of internal wave energy fluxes without pressure FRANK M. LEE, M.S. PAOLETTI, HARRY L. SWINNEY, P.J. MORRISON, University of Texas at Austin — Internal waves are generated in the ocean by tidal flow over bottom topography, and they are of considerable interest because of their significant contribution to the energy budget of the ocean. However, the determination of the energy flux from real world data is difficult because knowledge of both the perturbation velocity and pressure fields is required. While the velocity perturbation field can be measured, e.g., by Particle Image Velocimetry, it is difficult to obtain simultaneous precision measurements of the pressure perturbation field. We propose a straightforward computational method to circumvent this difficulty for flows that are sufficiently 2-dimensional: the energy flux can be determined using only velocity data in the complete absence of pressure field knowledge. We demonstrate our method using laboratory and simulation data, and find that the conversion rate calculated from the flux field determined by the proposed method can be accurate to within 3 percent.

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