

Abstract Submitted  
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**Mixing efficiency of swimming animals in stratified fluids** KAKANI KATIJA, JOHN O. DABIRI, Graduate Aeronautical Laboratories and Bioengineering, California Institute of Technology — The potential role of animal-fluid energy interactions in ocean mixing is a topic of increasing study that has been limited by the need for data at the scale of individual animals. Previous findings suggest that the energetic input by swimming animals to the ocean mixing energy budget may impact mixing at the same level as winds and tides, whose respective rates of kinetic energy dissipation are of the same order of magnitude. However, these results equate dissipation of mechanical energy with mixing; not all mechanical energy that is dissipated goes into mixing a fluid. The mixing efficiency should instead be an indicator of mixing. We present a method to determine the mixing efficiency of swimming animals that combines the techniques of DPIV, PLIF and dye visualizations. This methodology is then applied to multiple swimming cycles of *Aurelia labiata* to answer whether mechanical energy at small animal scales can achieve any substantial mixing before it is dissipated as heat.

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