

Abstract Submitted
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Resonant Triad Instability in Stratified Fluid SYLVAIN JOUBAUD, Laboratoire de Physique-ENS de Lyon, JAMES MUNROE, Department of Physics and Physical Oceanography, PHILIPPE ODIER, THIERRY DAUXOIS, Laboratoire de Physique-ENS de Lyon — Internal waves are believed to be of primary importance as they affect ocean mixing and energy transport. Several processes can lead to the breaking of internal waves and they usually involve non linear interactions between waves. In this work, we experimentally study the resonant triad instability (also called Parametric Subharmonic Instability), which provides an efficient way to transfer energy from large to smaller scales. It corresponds to the destabilization of a parent wave and the spontaneous emission of two daughter waves, of different frequencies and wave numbers. We observe the experimental conditions under which a monochromatic vertical mode-1 wave is unstable. Using a time-frequency analysis, we are able to follow the evolution of the instability. We quantitatively measure the growth rate of the amplitude of the two daughter waves and compare with theoretical predictions.

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