

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Experimental investigation of three-wave interactions of capillary surface-waves MICHAEL BERHANU, MSC Universite Paris Diderot, CNRS, UMR 7057 Paris, ANNETTE CAZAUBIEL, Ecole Normale Supérieure, Paris, LUC DEIKE, Scripps Institution of Oceanography, University of California San Diego, TIMOTHEE JAMIN, ERIC FALCON, MSC Universite Paris Diderot, CNRS, UMR 7057 Paris — We report experiments studying the non-linear interaction between two crossing wave-trains of gravity-capillary surface waves generated in a closed laboratory tank. Using a capacitive wave gauge and Diffusive Light Photography method, we detect a third wave of smaller amplitude whose frequency and wavenumber are in agreement with the weakly non-linear triadic resonance interaction mechanism. By performing experiments in stationary and transient regimes and taking into account the viscous dissipation, we estimate directly the growth rate of the resonant mode in comparison with theory. These results confirm at least qualitatively and extend earlier experimental results obtained only for unidirectional wave train. Finally we discuss relevance of three-wave interaction mechanisms in recent experiment studying capillary wave turbulence.

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Date submitted: 01 Aug 2014

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