



ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ



Εβδομαδιαίο Σεμινάριο

OBSERVATION OF DOMAIN WALLS IN DEEP WATER SURFACE GRAVITY WAVES

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An experimental observation of a domain wall for weakly nonlinear deep water surface gravity waves is presented. The domain wall can be understood as a topological defect linking two zones of homogeneous plane waves with identical wave vector but inverted local phase. Employing the lowest order of weakly nonlinear approximation, a 2D+1 focusing nonlinear Schrödinger (NLS) equation is used as a starting point for obtaining an analytical solution for a domain wall of the desired type. Wave tank experiments are also presented at varying levels of nonlinearity, validating the relevance of the given NLS solutions within the context of the considered time- and length- scales.

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