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# Evolution of Packets of Surface Gravitywaves over Smooth Topography

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Weakly nonlinear packets of surface gravity waves over topography are governed by a nonlinear Schroedinger equation with variable coefficients (Djordjevic & Redecopp 1978). Using this equation and assuming that the horizontal scale of topography is much larger than the width of the packet, we show that, counter-intuitively, the amplitude of a shoaling packet decays, while its width grows. Such behaviour is a result of the fact that the coefficient of the nonlinear term in the topography-modified Schroedinger equation decreases with depth. Furthermore, there exists a critical depth, where this coefficient changes sign: if the packet reaches this depth, it disintegrates.

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