Defocusing of nonlinear wave packets on an ice cover

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We study nonlinear wave packets bifurcating from the quiescent state on the surface of an ideal incompressible fluid beneath an ice cover. The ice cover is modeled by a geometrically nonlinear elastic sheet of the Kirchhoff — Love type floating on the fluid surface, the ideal fluid being described by Euler's system of equations with the additional surface pressure due to the presence of the elastic sheet. There are different types of solitary waves, arising on the fluid surface, among them solitary wave packets with equal phase and group speeds. It is shown, as the depth of the fluid increases, the resonance wave number is displaced into the defocusing region where no solitary wave packets exist.

Keywords: *ice cover, elastic plate, Young module, bifurcation, resonance wave number, modulation instability, solitary waves.*

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