

Egorov, Yu. A.; Molotkov, I. A.

Influence of the variable depth and of the nonlinear and dispersion second order terms on the propagation of surface gravitational waves. (Russian) [Zbl 0599.76027](#)

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The perturbed Korteweg-de Vries equation is derived for a shift of a free surface of a liquid. It is the generalization of the equation obtained earlier and includes nonlinear and dispersion second order terms in a smooth variation of the depth of the liquid layer.

An asymptotic solution of the Cauchy problem for this equation is found. The solution obtained describes the soliton deformation and the change of the phase velocity of the surface wave as a function of the surface of the bottom.

Reviewer: O.Dumbrajs

MSC:

[76B25](#) Solitary waves for incompressible inviscid fluids

[35Q99](#) Partial differential equations of mathematical physics and other areas of application

Cited in **1** Document

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perturbed Korteweg-de Vries equation; shift of a free surface; dispersion second order terms; smooth variation of the depth; liquid layer; asymptotic solution; Cauchy problem; soliton deformation; change of the phase velocity; surface wave