



Spectrum and steepness of nonlinear deformed shallow waves

I. Didenkulova (1,2), N. Zahibo (3), E. Pelinovsky (1,2) and A. Kurkin (1)

(1) Technical University, Nizhny Novgorod, Russia, (2) Institute of Applied Physics, Nizhny Novgorod, Russia, (3) Universite des Antilles et de la Guyane, Guadeloupe, France (Contact Email: dii@hydro.appl.sci-nnov.ru)

A nonlinear deformation of water waves in a shallow zone is a well-known process described by the nonlinear shallow-water theory. Its exact solution can be written in an implicit form. Considering the generation of the sine wave by the paddle in the laboratory and numerical tank, spectrum and steepness of the nonlinear wave are calculated analytically at different distances from the wavemaker. In fact, amplitudes of high harmonics can be expressed through the variable steepness of the wave front and these formulas can be useful for practice.