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Internal soliton generation in closed basins

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Weakly nonlinear dynamics of the internal waves in closed basins (lakes, bays) is studied in the framework of the Boussinesq equations derived for one-mode propagation. The results of numerical solution of initial and boundary problems for Boussinesq equations are presented. Nonlinear waveforms, which can be excited by harmonic force in resonator system or as a result of initial disturbance evolution, are compared. It was found that internal solitons may be generated against the background of a large-scale standing mode in a closed basin. Bound states of two or three solitons propagating in a basin are possible.