



Nonlinear dynamics of irregular bimodal waves in the Korteweg – de Vries framework

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The irregular wave dynamics in shallow water is studied within the framework of the nonlinear dispersive Korteweg – de Vries (KdV) equation by numerical simulation. Emphasis is placed on the specifics of the initial two-peak wave spectra of different intensities, which corresponds to the presence of two wave systems (for example, wind waves and swell). In the case of various combinations of wave field parameters, the following characteristics of such wave systems are considered: field extremes, statistical moments, wave amplitude and displacement distribution functions, and wave spectra. The influence of the initial wave spectra on the intensity of the appearance of abnormally large waves is demonstrated. Statistics and features of rogue waves are discussed. This work was supported by the Russian Science Foundation (project No. 18-77-00063).