



Effect of the initial spectral shape on spatial evolution of the statistics of unidirectional nonlinear random waves

Anna Sergeeva (1) and Lev Shemer (2)

(1) Institute of Applied Physics RAS, Nonlinear geophysical processes, Russian Federation (a.sergeeva@hydro.appl.sci-nnov.ru), (2) School of Mechanical Engineering, Tel-Aviv University, Tel-Aviv, Israel (shemer@eng.tau.ac.il)

Results of extensive experiments on propagation of unidirectional nonlinear random waves in a large wave tank are presented. The nonlinearity of the wave field determined by the characteristic wave amplitude and the dominant wave length was retained constant in various series of experimental runs. In each experimental series, initial spectra of different shape and/or width were considered. Every series contained sufficient number of realizations to ensure reliable statistics. Evolution of various statistical parameters along the tank was investigated. It is demonstrated that the initial shape of the spectrum plays an important role in the evolution of the random wave field and affects strongly the variation of the wave spectrum as well as of parameters that characterize the deviation of the wave field statistics from that corresponding to the Gaussian distribution.