



Freak waves in counterpropagating wave systems

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The kurtosis of unimodal and counterpropagating bimodal wave systems is compared by means of laboratory experiments and simulations. Both give strong evidence that a bimodal wave system with waves travelling in opposite directions has reduced kurtosis compared to the corresponding unidirectional case. We thus anticipate reduced probability of freak waves in counterpropagating waves.

The laboratory tests were performed with a JONSWAP wavefield in a long and narrow flume. The unimodal case was run with a damping beach in one end, while the bimodality was created by inserting a reflecting wall.

The simulations were carried out with a numerical wave tank based on a Higher order spectral method employing partially or non-reflecting boundary conditions.