

On the nonlinear transfer calculation

by Miguel Onorato, Peter Janssen and Jean Bidlot

The Direct Interaction Approximation (DIA) was introduced in 1985 and was instrumental in the development of third generation wave models. After so many years of good service researchers have suggested whether this very efficient parametrization of the nonlinear transfer is in need of replacement.

We have developed a method to calculate the nonlinear energy transfer in an elegant, simple and straightforward manner. The method has been programmed and in its research version shows good agreement with existing results. In order to apply the method to operational applications we subsample the spectra and perform the nonlinear transfer calculations in a reduced spectral space and the result is interpolated back to the original spectral space. This approach is only a factor of two-to-four slower than the DIA so it is contemplated to use it in operational wave forecasting.