

## An Accurate Broad-Banded Green-Naghdi Wave Model

Binbin Zhao (1), Wanqiu Yang (1), William C Webster (2), R.Cengiz Ertekin (1), and Wenyang Duan (1)

(1) College of Shipbuilding Engineering, Harbin Engineering University, Harbin, China(18363120807@163.com), (2) Civil & Environmental Engineering, The University of California, Berkeley, California, USA

The focus of the research presented here is the development of an accurate dynamic model for the time-domain simulation of a steep, nonlinear train of random waves. A new GN model with distributed directors is developed here. In the time domain simulations, a large number of water waves are expected to focus at one position. Both the narrow-banded spectrum and broad-banded spectrum cases are studied. The results show that the new GN model could simulate wave trains with broad-banded spectrum accurately. In the strongly nonlinear cases, the new GN results agree with the experimental data much better than the first-order and second-order solutions. The new GN model is useful in understanding the evolution of a train of random waves.