Ingenieurfakultät Bau Geo Umwelt

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Titel des Beitrags: Hydroelastic Analysis of Pontoon-type Very Large Floating Structures in Random Seas

Abstract: The hydroelastic response of very large floating structures (VLFS) is obtained by resolving the interaction between the surface waves and the floating elastic body. We carry out the analysis in the frequency domain, assuming that the surface waves can be described by a directional wave spectrum. Applying the modal expansion method, we obtain a discrete representation of the required transfer matrices for a finite number of frequencies, while the influence of the wave direction is obtained by numerical integration of the directional components of the spectrum. The boundary element method is used to solve the Laplace equation together with the fluid boundary conditions for the velocity potential, whereas the finite element method is adopted for solving the deflection of the floating plate. Moreover, we compute the variance of the response for two different cases of mean wave angles.

Stichworte: hydroelasticity, VLFS, directional spectrum, random vibration, response statistics

Kongress- / Buchtitel: Fifth Asian-Pacific Symposium on Structural Reliability and its Applications

Jahr: 2012

Occurences:

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