

Water-Surface Dynamics Among a Periodic Array of Floating Bodies Subject to Regular Incident Waves

Hiroshi Kagemoto⁽¹⁾, Motohiko Murai⁽²⁾

(1) *The University of Tokyo, Tokyo, Japan*

(2) *Yokohama National University, Yokohama, Japan*

Theoretical and experimental investigation on the water-surface dynamics among a periodic array of floating bodies placed in an incident regular wave train is conducted. The structures in mind are such offshore structures as a column-supported semi-submersible oil rig or a column-supported floating airport now projected in Japan. The focus is placed on the possible wave trapping among a periodic array and the resultant water-surface movements. It is demonstrated that viscous forces play a dominant role in determining the water-surface dynamics among the array in trapped waves. Another interesting fact found in the experimental work is also shown in which noticeable non-linear double-frequency oscillations of water-surface were induced among a periodic array in some particular waves. Finally, as a possible exploitation of wave trapping, the results of experimental investigation on the transmission and reflection characteristics of waves due to a floating wave-breaker composed of a periodic array of bodies are presented.

[View the extended summary](#)