

Hydro-Seminar

by Lab. of Floating-Body Dynamics in Waves

The 34th Hydro-Seminar will be taken place with the following contents

Date: Tuesday, 19 July, 2016
Time: (Part-1) 14:00 – 15:30 (Part-2) 15:30 – 17:00
Venue: S1-312 (Lecture room, 3F of S1 building)
Suita Campus, Osaka University

Part-1: (14:00 – 15:30)
**Capsize of Sewol Ferry: Numerical Simulation
and Lessons Learned**

by **Professor Yonghwan Kim**

Department of Naval Architecture & Ocean Engineering
Seoul National University, Seoul, Korea



In this study, numerical simulations are conducted in order to analyze the capsizing of the passenger ship, Sewol, occurred on April 16, 2014. Since little is known about the reason of capsizing, numerical simulation aims to the finding of possible scenarios which can cause this tragic accident. Coupled surge-sway-roll-yaw-roll maneuvering equations are used for this purpose. The hydrodynamic coefficients obtained from a similar ship are applied and WISH-Maneuver program is used to perform the numerical simulation. The present analysis utilizes the probabilistic approach, which considers various physical variables and involves the simulation of a large number of cases using different combinations of the variables. The total number of simulation cases is over 20 million scenarios, and the simulation results which are close to the conditions of the actual accident situation are selected. Through this process, the effects of the simulation variables are investigated and the potential causes of the capsizing are identified. The results show the hydrostatic instability of the ship in operation condition, and such bad stability combined with cargo movement during large heel may be the decisive reason of capsizing.

Part-2: (15:30 – 17:00)
Hydrodynamic Interactions of Multiple Bodies with Water Waves
-- In commemoration of Jin Chung Award --

by **Professor Masashi Kashiwagi**

Department of Naval Architecture & Ocean Engineering
Osaka University



This presentation is essentially the same as that delivered at the 26th ISOPE Conference held in Rhodes, Greece, as a special lecture in commemoration of receiving Jin Chung Award. Some of the important works done in the past by the author will be explained, with emphasis placed on some ideas newly introduced for the study on multiple-body interaction problems. Specifically, review will be made regarding the study on tank-wall interference effects, development of the hierarchical interaction theory for a great number of bodies, and a recent topic on the cloaking phenomenon around a body surrounded by multiple vertical circular cylinders.



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