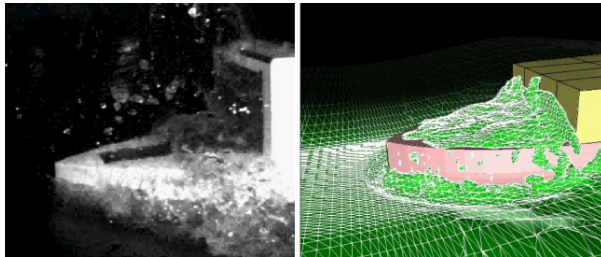




Leading Research on Hydrodynamic Wave-Body Interactions in Waves

Strongly Nonlinear Free-Surface flows

Slamming and green-water impact in rough seas are typical examples of violent free-surface flows, for which accurate and robust computation methods are developed using frontier CFD techniques, such as CIP-based Cartesian-grid method and the MPS method. Experimental validation of the methods and observation of the phenomena are also conducted.



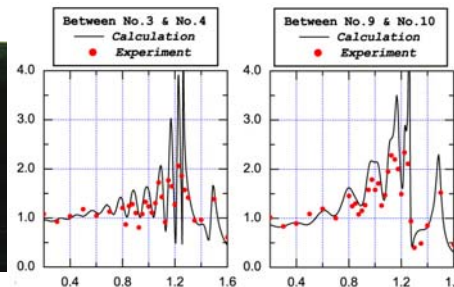
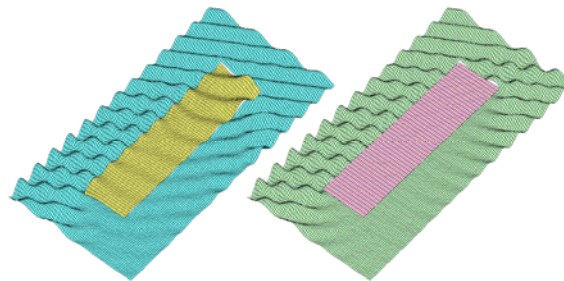
Analysis System of Ship Performance in Actual Seas

An analysis system for the performance of a ship in actual seas is constructed, using EUT (Enhanced unified Theory) proposed by Kashiwagi as the main calculation method. This system can compute accurately the propulsion and seakeeping performance of various types of ships and can be used to guarantee the long-term total performance in the design of ships.



Hydroelastic Study on Very Large Floating Structures

Very large floating structures typified by a floating airport may be regarded as an elastic membrane on the free surface due to shallow draft relative to large dimensions in plan. Hydroelastic study of these structures has been made. Furthermore, wave interactions among a great number of columns have been studied, on which highly-rated results have been produced such as the hierarchical interaction theory.



Generation of Arbitrary Waves and Its Applications

To generate arbitrary waves in a compact wave basin without being contaminated by reflection waves, a special technology is developed for generating waves and absorbing reflected waves at the same time. This technology enables us to construct wave basins for drawing animation on water and for realizing real seas, and can develop new experimental methods for the study of wave-body interactions.



Sea-State Simulations

Recent requirement in high-level evaluation of ship performance and severe design conditions in real seas prompts us to provide long-term time series data of wave and wind (sea states) in a designated sea area or ship's route. To comply with this requirement, a new simulation method is developed for realizing long-term series data of sea states by means of the stochastic process theory.

