



**Osaka University**

Graduate School of Engineering  
Department of Naval Architecture & Ocean Engineering

# Hydro-Seminar

by Lab. of Floating-Body Dynamics in Waves

The speaker in the 59th Hydro-Seminar is

**Mr. Zhigang Zhang (PhD candidate)**

At Department of Naval Architecture & Ocean Engineering  
Harbin Institute of Technology, Weihai, China



**Date:** November, 30 Monday, 2020

**Time:** 13:30 – 14:30

**Venue:** Using Zoom

**Meeting ID:** 929 9110 6441, **Passcode:** 411990

<https://zoom.us/j/92991106441?pwd=eUUyTkImdDdTRWZJSEdVZTR6YWUxdz09>

## Cloaking phenomenon for water waves based on scattering cancellation method

### Abstract

Cloaking is an interesting phenomenon for waves, which was originally proposed in electromagnetic field and then extended to other wave field, such as acoustic, optic, elastic, seismic, and water wave fields. Cloaking can effectively protect the structure in waves. For water waves, cloaking phenomenon has a great potential for structure protection in ocean engineering. Among different technologies, the scattering cancellation is a convenient method to realize cloaking phenomenon.

This seminar will present some numerical and experimental results on the cloaking phenomenon on multiple cylinders. The contents of the presentation are as follows: 1) Experimental studies on the wave drift force and the wave pattern inside the cloaked structure. 2) Structural defect-effects on the cloaking phenomenon. 3) Dynamic control of cloaking wave frequency. 4) New application of the scattering cancellation method.

### The Speaker: Mr. Zhigang Zhang

Mr. Zhigang Zhang received his Bachelor and Master degrees from the Harbin Institute of Technology (HIT) in 2015 and 2017, respectively. He is studying for PhD at Harbin Institute of Technology under the supervision of Prof. Guanghua He. Mr. Zhigang Zhang is currently visiting Prof. Kashiwagi's laboratory funded by Chinese Scholarship Council (CSC), under the supervision of Prof. Kashiwagi and Dr. Iida. The main focus of Zhang's research is water-wave manipulation and application in ocean engineering.



Contact Person: Prof. Masashi Kashiwagi, Tel:7572, Email: [kashi@naoe.eng.osaka-u.ac.jp](mailto:kashi@naoe.eng.osaka-u.ac.jp)