



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 62nd Hydro-Seminar is

Dr. Eva Loukogeorgaki

Associate Professor of Marine Structures
Department of Civil Engineering
Division of Hydraulics and Environmental Engineering
Aristotle University of Thessaloniki



Date: January 25 (Monday), 2021

Time: 16:00 – 17:00

Zoom: <https://zoom.us/j/92034656628?pwd=a1ZyYmdzRnVzNk5jUkVUalkvcnY3QT09>

ID: 920 3465 6628, Passcode: 748578

Arrays of Heaving Wave Energy Converters in front of a Wall

Abstract

Contemporary technological advances seek the efficient exploitation of the wave energy. Aiming at enhancing the performance of arrays of heaving Wave Energy Converters (WECs), a vertical barrier (say, a wall) in the leeward side of the array could be utilized. In that case, the WECs' hydrodynamic behavior and thus, their power absorption efficiency can be improved by exploiting both incident wave and scattered wave from the wall boundary. This idea can also support the integration of WECs with other marine facilities (e.g. vertical wall-type breakwaters, floating pontoons) leading therefore to cost-efficient solutions through costs sharing. In this seminar, the performance of an array of semi-immersed oblate spheroidal WECs in front of a bottom-mounted and finite-length wall in the frequency domain will be presented. Initially, the applied numerical method (boundary integral equation method) will be shortly discussed and it will be compared for an isolated fully immersed spheroidal WEC, against a newly developed analytical method that utilizes the image singularity system to manipulate the underlying Green's function. Next, extended results will be presented focusing on: (a) a comparison of the examined array with arrays of WECs of other geometries and (b) the effect of various design parameters (e.g. array-wall distance, wall's length) on the performance of the array. Limitations of the widely used method of images along with the assumption of a "pure" wave reflecting wall of infinite length on the calculation of exciting forces applied on cylindrical WECs will be also discussed. Finally, reference to items for future investigation will be made.

The Speaker: Dr. Eva Loukogeorgaki

Dr. Eva Loukogeorgaki is Associate Professor of Marine Structures in the Civil Engineering Department of Aristotle University of Thessaloniki (AUTH), Greece. She holds a Civil Engineering degree (2002) and a PhD (2007) both from AUTH. Her main research interests include fluid-structure interaction, offshore structures for various applications (e.g. offshore wind turbines, wave energy converters), hydroelasticity, mooring systems, coastal structures (e.g. floating breakwaters), risk assessment and structural health monitoring of marine structures. She has participated in 14 EU and domestic projects and she has published more than 60 peer-reviewed papers in journals and conferences. She holds international distinctions and awards, such as Biographical inclusion in the Who's Who in Science and Engineering (2007), "ISOPE Session Organizer of the Year Award" (2016), "ISOPE Award" (2020). In 2017, she received the JSPS fellowship from the Japan Society for Promotion of Science for conducting research in collaboration with Professor Kashiwagi at Osaka University. Since June 2019, she is the Chair of the International Renewable Energy & Environment Committee of ISOPE, while recently she has been elected as the ISOPE President for 2021-2023.



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