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Technical Talk

Co-Organised by

The Joint Branch of the RINA and IMarEST (Singapore)

The Society of Naval Architects and Marine Engineers Singapore

Singapore Maritime Academy

Prediction of the Added Resistance in Seaways for Better Ship Design and Operation

by



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Date : 1st October 2019, Tuesday.
Time : 6:30 pm to 7:00 pm Registration & Refreshment
The talk begins at 7:00 pm and ends at 8:30 pm
Venue: LT12B, Singapore Polytechnic
500 Dover Rd, 139651

To register your attendance, please click the web-link as follows,



<https://www.eventbrite.sg/e/prediction-of-the-added-resistance-in-seaways-for-better-ship-design-and-operation-tickets-71524446545>



Synopsis

While digitalisation, data science, and smart technology are overwhelming the maritime industry, marine hydrodynamics, as a classic discipline, is also enjoying a dynamic development, both benefiting from the vast available data and contributing to the development of new technologies. Traditionally, the added resistance in waves is of concern for two matters: In low sea state, it affects mainly a ship's fuel consumption, thus an economic and environmental concern. In high sea state, it affects the ship's speed performance and may trigger safety issues, as it affects much the speed and manoeuvring performance of ships sailing in a seaway, thus of concern for those under-powered ships and the forthcoming autonomous ships. Besides, the fast development of the international regulatory framework and industrial standards (IMO/ISO/ITTC) calls for an efficient method to predict this quantity properly as well.

Currently, this concerned subject is still under continuous development, and it has yet to be established for practical applications. Therefore, it has been a hot research subject in the past decade. This technical talk will elaborate on the development of a new prediction method by embracing both classic ship-wave interaction theory and using data analytics. This newly developed method has the following features:

1. Use very little ship information
2. Yield accurate prediction
3. Easy and fast execution

Several case studies on the applications of this newly developed method to various practical ship design and operation problems, such as, hull form optimization for best fuel and environmental performance in seaways, determination of sea margin and sizing of machinery, simulation and assessment of ship manoeuvrability in waves, ship performance analysis, and weather routing, etc., will be presented and discussed in the talk.

About the Speaker

Dr Liu Shukui studied naval architecture and ocean engineering at Harbin Engineering University, China, and he holds a PhD in numerical simulation of large amplitude ship motions from the National Technical University of Athens, Greece. He is now a lecturer at School of Mechanical of Aerospace Engineering, Nanyang Technological University (NTU), Singapore. His scientific interest is on applied ship hydrodynamics, covering in general the subjects of seakeeping, manoeuvring, wave load, stability, and their impact on ship design and operation.

Dr Liu Shukui was involved in several European FP7 and Horizon2020 research projects, such as ASIALink, SAFEDOR, GOALDS, SHOPERA, HOLISHIP, etc. By now, he published more than 20 journals and conference papers. His work has been submitted several times to IMO-MEPC as recommended methods for the assessment of minimum power for a ship to maintain manoeuvrability in adverse weather conditions within the framework of the implementation of the Energy Efficiency Design Index (EEDI) to ship design.

Since 2018, Dr Liu Shukui is also a member of the American Society of Naval Architect and Marine Engineers (SNAME).



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Location Map



SINGAPORE POLYTECHNIC | **SP** | 500 Dover Road, Singapore 139651 | www.sp.edu.sg |

Nearest MRT Station: Dover (Green Line).

Bus 14, 74, 105, 106, 147, 166, 185.

Closest Bus Stops in Commonwealth Ave W: Dover Stn.

See the map for the location of the car parks.

All members are welcome, and admission is free, but early registration is necessary.

No filming or walk-in guest is allowed for this event.

Dress code: business casual.

Photos taken by official photographers may be used by the organizers in their published material.