The 8th International Conference on HYDROELASTICITY IN MARINE TECHNOLOGY

September 10-12, 2018
Seoul, Korea
The 8th International Conference on Hydroelasticity in Marine Technology

HYEL 2018

September 10-12, 2018
Seoul, Korea

Organized by
Department of Naval Architecture and Ocean Engineering (NAOE), Seoul National University (SNU)

Sponsored by
Lloyd’s Register Foundation Center at Seoul National University
Institute of Engineering Research, Seoul National University
Brain Korea 21 PLUS
The Society of Naval Architects of Korea
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Preface

Hydroelasticity is concerned with phenomena involving mutual interactions between hydrodynamic, inertial and elastic forces. Significant progress has been achieved since the late seventies in reconciling conventional seakeeping and marine hydrodynamics with structural mechanics and dynamics. The increasing variety of marine structures, currently operating and proposed for development, has highlighted the importance of hydroelasticity in accurately modelling fluid-structure interaction.

The aim of this conference, which started in 1994, is to promote the development of hydroelasticity and its application in advancing the design of marine structures by providing a platform for exchange of ideas among scientists and engineers working in a range of related disciplines.

Seoul National University (SNU) is pleased to host the 8th conference of Hydroelasticity in Marine Technology. As the university which started the first naval architecture education program in Korea, SNU has educated the leaders of Korean marine engineering and has carried out high-ended researches. Therefore, SNU is an appropriate venue for the conference. I wish all the participants have a fruitful time in SNU.

Yonghwan Kim
HYEL’2018 Chairman
September, 2018
International standing committee

W.C. Cui  
C. Dalton  
R. Eatock Taylor  
R.C. Ertekin  
O.M. Faltinsen  
R. Huijsmans  
J. J. Jensen  
M. Kashiwagi  
Y. Kim  
A.A. Korobkin  
C.M. Larsen  
P. Temarel  
W. C. Webster  
Y.S. Wu

CSSRC  
University of Houston  
University of Oxford  
University of Hawaii at Manoa  
NTNU  
TU Delft  
DTU  
Osaka University  
Seoul National University  
University of East Anglia  
NTNU  
University of Southampton  
University of California  
CSSRC

CHINA  
USA  
UK  
USA  
NORWAY  
NETHERLANDS  
DENMARK  
JAPAN  
KOREA  
UK  
NORWAY  
UK  
USA  
CHINA

Local organizing committee & staffs

Yonghwan Kim  
Yooil Kim  
Dong-Min Park  
Young Chae Jeon  
Beom-Soo Kim

Seoul National University  
Inha University  
Seoul National University  
Seoul National University  
Seoul National University

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Venue

HYEL 2018 will be held in Seoul, Korea, on September 10th-12th, 2018 at the Hoam Faculty House (HFH). HFH is a facility operated by Seoul National University for its professors and staffs. HFH is equipped with Korean and occidental restaurants, comfort guest house, convention hall, and halls for conferences and seminars. And HFH is furnished with the equipment for simultaneous interpretation in three different languages, LCD projector, the latest audiovisual technology, and business center to support an efficient progress of an event. The LAN is provided to all HFH's establishment.
Location

① From Incheon airport to Hoam

1. Take the "#6017 Airport limousine bus" at the GATE 27(Terminal 2) or GATE 6B(Terminal 1) The bus fare is 15,000 won. (6017 bus Timetable: http://www.hoam.ac.kr/eng/hoamHotel/airportbus_pop.php)
2. Get off at the last stop "Hoam Faculty House"

② From Gimpo airport to Hoam

1. Take the "#6003 Airport limousine bus" at the Bus terminal #6. The bus will depart every 20minutes. The bus fare is 4,000 won.
2. Get off at the main gate of Seoul National University. Take a taxi or a shuttle from the main gate of Seoul National University
   - Shuttle service is available upon reservation only.
   - Running hour of shuttle: 08:00~18:00 (Monday to Friday).
   - Please contact at 82-2-880-0311 for reservation

③ By Taxi

1. Take a taxi from Incheon/Gimpo airport to Hoam Faculty House (HFH).
   Incheon Airport → HFH (75,000 won), Gimpo Airport → HFH (30,000 won)
2. The fare could be changeable upon traffic situation. Please contact us at +82-2-880-0311 or front@hoam.ac.kr for reservation
General Information

Registration
The conference registration starts at 8:00AM on September 10, Monday, in the 2nd floor of the annex convention building behind the main lobby building.

Conference Venue
The conference will be at MUGUNGHWA Hall in the 2nd floor of the annex convention building behind the main lobby building. You can find the direction board or post for the conference.

Coffee Breaks
Coffee breaks will be provided for all registered conference delegates at the times as stated in the program. Coffee breaks will be served at the lobbies in the second floor of convention building.

Lunches
Lunch will be at Crystal in the basement of main building (i.e. not convention building). More details will be distributed during the conference.

Welcoming Reception
Reception dinner will be prepared for all registered conference delegates as follows:

Date: Monday, September 10, 2018
Time: 19:00 – 20:30
Venue: The Café
Banquet at Han River

Banquet will be prepared for all registered conference delegates as follows:

Date: Tuesday, September 11, 2018

Time: 16:20 –

Venue: FRADIA in Han River (Transportation will be provided and more details will be distributed during the conference.)

Location: 121-9 Jamwon-dong Seocho-gu Seoul Korea (www.fradia.co.kr)
Technical Tour
Technical Tour will be prepared for all registered conference delegates as follows:

Date: Wednesday, September 12, 2018
Time: 16:00 – 18:00

Tour route: Kyujanggak Institute for Korea Studies → Kwanjeong Library → Sloshing Experimental Facility & SNU towing tank

① Kyujanggak Institute for Korea Studies

② Kwanjeong Library

③ Sloshing Experimental Facility & SNU Towing Tank
Instruction for Speakers

1. At the point of registration, please confirm your equipment needs. Please get ready your presentation 10 minutes before the start of the session.

2. All important notices including changes to program will be posted on the Secretariat Message Board near the Registration Desk.

3. Please note that each plenary talk is allocated 50 minutes (40-min presentation + 10-min discussion), each keynote lecture is allocated 30 minutes (25-min presentation + 5-min discussion) and each presentation is allocated 25 minutes (20-min presentation + 5-min discussion). The chairperson for each session will keep to the schedule strictly.

4. All speakers will be asked to fill in a “Speaker’s Information Sheet” as early as possible before the conference. Kindly fill in the information sheet and return to the secretariat at the registration desk.

Instruction for Session Chairpersons

1. If you are chairing a session, please note the above Instruction for Speakers.

2. Please adhere to the schedule of the sessions.

3. If you need any assistance, you may ask the assistants assigned to the session you are chairing.
Map

Convention Building

Convection Building
2nd Floor

“Mugunghwa”
# Technical Program

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<th>Time</th>
<th>Program</th>
<th>Venue</th>
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<td>8:00 ~ 8:45</td>
<td>Registration</td>
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<td>8:45 ~ 8:55</td>
<td>Welcome Address</td>
<td>Mugunghwa</td>
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<td>8:55 ~ 9:45</td>
<td>Plenary Talk 1</td>
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<td>9:45 ~ 10:00</td>
<td>Coffee Break</td>
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<td>10:00 ~ 11:15</td>
<td>Ship in Waves - I</td>
<td>Mugunghwa</td>
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<td>11:15 ~ 11:30</td>
<td>Coffee Break</td>
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<td>11:30 ~ 12:45</td>
<td>Ship in Waves - II</td>
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<td>12:45 ~ 12:50</td>
<td>Group Photo</td>
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<td>12:50 ~ 13:50</td>
<td>Lunch</td>
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<td>13:50 ~ 14:20</td>
<td>Keynote Lecture 1</td>
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<td>14:20 ~ 15:35</td>
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<td>17:30~18:30</td>
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<td>19:00 ~</td>
<td>Welcome Reception</td>
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<td><strong>Tuesday 11th Sep.</strong></td>
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<td>8:55 ~ 9:45</td>
<td>Plenary Talk 2</td>
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<td>Ship in Waves - III</td>
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<td>11:15 ~ 11:30</td>
<td>Coffee Break</td>
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<td>11:30 ~ 12:45</td>
<td>Offshore Structure</td>
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<td>Lunch</td>
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<td>Keynote Lecture 2</td>
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<td>Banquet at Han River</td>
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<td><strong>Wednesday 12th Sep.</strong></td>
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<td>Impact - III</td>
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<td>10:00 ~ 11:15</td>
<td>Ship in Waves - IV</td>
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<td>11:15 ~ 11:30</td>
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<td>11:30 ~ 12:45</td>
<td>Acoustics</td>
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<td>13:50 ~ 14:20</td>
<td>Keynote Lecture 3</td>
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<td>16:00 ~ 18:00</td>
<td>Technical tour</td>
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MONDAY, 10th September, 2018

8:00-8:45  Registration  Locus: Lobby
8:45-8:55  Welcome Address  Locus: Mugunghwa
8:55-9:45  Plenary Talk 1  Locus: Mugunghwa

A personal reflection of 50 years of Hydroelasticity Theory (Oral Presentation Only)
W. G. Price (University of Southampton) – Introduced by M. Kashiwagi

9:45-10:00  Coffee Break  Locus: Lobby
10:00-11:15  Ship in Waves - I  Locus: Mugunghwa

Chair: M. Kashiwagi (Osaka University)

A Study of the Hydroelastic Responses for the Large Container Ship based on the Full Scale Measurement
Byounghoon Kim, Junseok Park, Sunil Won, Yooil Kim

Numerical Analysis of Wave Loads on a Container Ship in Finite Water Depth
Dong-Min Park, Yonghwan Kim

Torsional Vibratory Response of Full Scale Large Container Carrier
Hyeok-Geun Ki, Sung-Gun Park, Yooil Kim, Sime Malenica

11:15-11:30  Coffee Break  Locus: Lobby
11:30-12:45  Ship in Waves - II  Locus: Mugunghwa

Chair: Beom-Seon Jang (Seoul National University)

Designing a Hydro-Structural Model Ship to Experimentally Measure Its Vertical-Bending and Torsional Vibrations
Houtani, H., Komoriyama, Y., Matsui, S., Oka, M., Sawada, H., Tanaka, Y., Tanizawa, K.

An Experimental Investigation on the Relationship between Flare Slamming Loads and Ship Motions of a Very Large Container Ship
Yuan Lin, Ning Ma, Deyu Wang, Xiechong Gu

Experimental Hydroelastic Responses of an Elastic Container Ship-Inspired Barge Model Produced Using Additive Manufacturing
Grammatikopoulos, A., Banks, J., Temarel, P.

12:45-12:50  Group Photo  Locus: Mugunghwa
12:50-13:50  Lunch  Locus: Crystal in the basement of main building
13:50-14:20  Keynote Lecture 1  Locus: Mugunghwa

*Interaction of Hydroelastic Waves with a Vertical Cylinder*
A. Korobkin, (University of East Anglia) – Introduced by Yooil Kim

14:20-15:35  Impact - I  Locus: Mugunghwa

Chair: Yooil Kim (INHA University)

*Impact onto an Ice Floe*
Khabakhpasheva, T., Chen, Y., Korobkin, A., Maki, K.J.

*Fluid-Structure Interaction During the Water Impact at High Horizontal Velocity of a Thick Plate: Experimental Data and Simplified Modelling*
A. Iafrati

*Investigation of Hydroelasticity and Air Compressibility on Impact Loads*
Ould el Moctar, Simon Todter, Jens Neugebauer, Thomas E. Schellin

15:35-15:50  Coffee Break  Locus: Lobby

15:50-17:30  CFD - I  Locus: Mugunghwa

Chair: A. Korobkin (University of East Anglia)

*Hydroelastic Slamming Simulations by a Fully-Lagrangian coupled MPS Method*
Higaki, T., Khayyer, A., Kashiwagi, M., Park, J.C.

*A Methodology for Hydro-Structure Simulations Based on OpenFOAM®*
Monroy, C., Seng, S., Benhamou, A., Malenica, S., de Lauzon, J.

*Non-Linear Time-Domain Hydroelasticity Computation Using MPS Method*
Sun, Z., Zhang, G.Y., Zong, Z.

*Key Aspects for Development of Reliable and Efficient Fully-Lagrangian Computational Methods for Hydroelastic Fluid-Structure Interactions*
Khayyer, A., Gotoh, H., Falahaty, H., Shimizu, Y.

17:30-18:30  Committee Meeting  Locus: Oak

19:00-  Welcome Reception  Locus: The Cafe
TUESDAY, 11th September, 2018

8:00-8:55  Registration  Locus: Lobby

8:55-9:45  Plenary Talk 2  Locus: Mugunghwa

Hydroelasticity theories of floating bodies in waves of complicated ocean geographic environment and in ocean-acoustic field of shallow sea (Oral Presentation Only)
Y.S. Wu (China Ship Scientific Research Center) – Introduced by Yonghwan Kim

9:45-10:00  Coffee Break  Locus: Lobby

10:00-11:15  Ship in Waves - III  Locus: Mugunghwa

Chair: S. Malenica (Bureau Veritas)

Numerical Analysis for the Second-order Springing of Flexible Body in Head Waves
Heo, K.U., Kashiwagi, M.

The Study of Linear and Nonlinear Hydroelastic Responses of Large Ships
Ni, X.Y., Tian, C., Zhang, Z.W., Ding, J., Lu, Z., Guan T.

Nonlinear Hydroelastic Analysis of the 6750-TEU Benchmark Containership in Time Domain
Wang, Q.B., Tian, C., Zhang, K., Wu, Y.S.

11:15-11:30  Coffee Break  Locus: Lobby

11:30-12:45  Offshore Structure  Locus: Mugunghwa

Chair: W. G. Price (University of Southampton)

Second Order Hydroelastic Model of Floating Units
Malenica S., De Hauteclocque G, Ten I., Choi Y.M.

Time Series Prediction of Mooring Line Top Tension by ANN and Volterra Model
Murat Yetkin, Yooil Kim

A Numerical Study on the VIV Responses of a Long Flexible Cylinder
Zheng, H.X., Wang, J.S.

12:45-13:50  Lunch  Locus: Crystal in the basement of main building
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<td>Keynote Lecture 2</td>
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<td>Critical Free Surface Flows in a Sloshing Tank</td>
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<td>Y.-M. Scolan (ENSTA Bretagn) – Introduced by A. Iafriti</td>
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<td>14:20-16:00</td>
<td>Impact - II</td>
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<td>Chair: A. Iafriti (CNR-INM)</td>
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<td>Prediction of extreme sloshing pressure using different statistical models</td>
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<td>Ekin Ceyda Cetin, Jeoungkyu Lee, Sangyeob Kim, Yonghwan Kim</td>
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<td>A Study on the Dynamic Response of Container Ship Subjected to Bow Flare Slamming Loads</td>
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<td>Tae-soon, C., MD Shafiqul, I., Dae Won, S., Joon Gyu, K., Kang-hyun, S.</td>
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<td>A Nonlinear Numerical Fluid-Structure Interaction Research for Hydro-Elastoplastic Behavior of VLFS</td>
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<td>Ma, C., Oka, M., Iijima, K.</td>
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<td>Comparative Study on Springing Responses of Containership 20,000TEU JIP (Oral Presentation Only)</td>
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<td>16:20-16:30</td>
<td>Banquet at Han River</td>
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**WEDNESDAY, 12th September, 2018**

8:30-8:55  **Registration**  
Locus: Lobby

8:55-9:45  **Impact - III**  
Locus: Mugunghwa  
Chair: Byoung Hoon Jung (Hyundai Heavy Industry)

- *Experimental Study on Wave Impact Loads on a Vertical Cylinder in Breaking Waves*  
  Yoon-Jin Ha, Kyong-Hwan Kim, Bo Woo Nam, Kang Su Lee

- *An Experimental Study on Bow Impact Loads of FPSO by Breaking Waves*  
  Kyong-Hwan Kim, Yoon-Jin Ha, Bo Woo Nam, Sa Young Hong, Hyun Joe Kim

9:45-10:00 **Coffee Break**  
Locus: Lobby

10:00-11:15  **Ship in Waves - IV**  
Locus: Mugunghwa  
Chair: P. Temare (University of Southampton)

- *Wetdeck Slam Force and Vibratory Response Analysis of a Fast Catamaran for FSI Investigation*  
  Dessi, D., Faiella, E., Geiser, J. S.

- *An Efficient Approach to Predict Wave-Induced Global Hydroelastic Ship Response*  
  Malte Riesner, Jens Ley, Ould el Moctar

- *Numerical Study on the Prediction of Bow Slamming load on Container Ships in Regular Wave*  
  Dae-Won Seo, Gi-Young Jeon, Joon-Gyu Kim, Kang-Hyun Song

11:15-11:30 **Coffee Break**  
Locus: Lobby

11:30-12:45  **Acoustics**  
Locus: Mugunghwa  
Chair: Yonghwan Kim (Seoul National University)

- *The Calculation Method of Underwater Acoustic Radiation of Structures Arbitrarily Covered by Acoustic Coatings*  
  Zou, M.S., Jiang, L.W., Liu, S.X.

- *Use of Impedance Mismatch in the Control of Coupled Acoustic Radiation of Ships Induced by Propeller-Shaft System based on the Three-Dimensional Sono-Elasticity Method*  
  Qi, L.B., Zou, M.S., Liu, S.X., Yu, Y.

- *Vibro-Acoustic Behavior of an Elastic Baffled Cylindrical Shell Partially Covered by Decoupling Coatings and Immersed in a Heavy Fluid*
Liu, S.X., Zou, M.S., Jiang, L.W.

12:45-13:50 Lunch Locus: Crystal in the basement of main building

13:50-14:20 Keynote Lecture 3 Locus: Mugunghwa

*Slamming: Numerical modelling vs Measurements (Oral Presentation Only)*
P. Temarel (University of Southampton) – Introduced by Y.-M. Scolan

14:20-15:35 CFD - II Locus: Mugunghwa

Chair: Y.-M. Scolan (ENSTA Bretagn)

*Hydroelastic Simulations in OpenFOAM®: An Efficient Numerical Implementation of the Modal Equations*
Sopheak Seng, Alexis Benhamou, Charles Monroy, Sime Malenica

*Hydroelastic Simulations in OpenFOAM®: A Case Study on a 4400TEU Containership*
Benhamou, A., Seng, S., Monroy, C., de Lauzon, J., Malenica, S.

*Fully Coupled CFD/FEA Investigations to Predict the Wave Loads on a Flexible Containership*
Lakshmarayanana, P.A., Temarel, P.

16:00-18:00 Technical tour Locus: SNU