The Thirty-fourth (2024) International Ocean and Polar Engineering Conference
(Offshore and Polar Engineering Conference)

Including additional ISOPE symposia:

Machine Learning, AI, Digital, CFD, …
2nd Marine Transport of H2, NH2 Carrier Symposium
Energy LNG, LH2, LCO2
Climate, Environment
Hydrodynamics
Advanced Ship Technology
7th Environment Assisted Cracking
9th Underwater Technology
13th Tsunami & Safety
15th Polar Sciences & Technology
11th Cryogenic/Arctic Materials
15th Renewable Energy & Environment
16th Sloshing Dynamics & Design
19th Deep Ocean Mining & Gas Hydrates
22nd High Performance Materials Symposium

Updated Technical Program

Refereed papers from 40+ countries in 141 technical sessions,
1 Plenary and 3 Keynotes and Focus sessions
Full Program with General Information, Advance Registration & Venue
Hotel, Paper List, Reservations, and Updates on
https://www.isope.org/conferences-symposia-and-workshops/
ISOPE-2024 Conference proceedings
ISBN 978-1-880653-78-4; ISSN 1098-6189
All ISOPE Publications: https://www.isope.org/proceedings/
Individual papers are available from www.onepetro.org/isope

Organized and Sponsored by: Technical Program Committee,
International Society of Offshore and Polar Engineers (ISOPE)
With cooperating organizations (listed inside)

ISOPE, P.O. Box 189
Cupertino, CA 95015-0189, USA
Fax: +1-650-254-2038
meetings@isope.org; www.isope.org
The 34th Annual ISOPE-2024 Conference, Rhodes, Greece

ISOPE-2024 Corporate Members and Sponsors. Additional sponsors/supporters in the updated program and online.

ISOPE-2024 Conference Co-chairs

Jin S Chung, USA  
Sa Young Hong, Korea  
Hua Liu, China  
Ivana Kubat, Canada  
Ove Gudmestad, Norway

Eva Loukogeorgaki, Greece  
Hiroyasu Kawai, Japan  
Decheng Wan, China  
Ronald Knapp, USA  
André Baeten, Germany

Presentations at ISOPE-2019 Honolulu Banquet

Awards: Scholarships, Best Session Organizer, 
Jin S Chung Award, 
C H Kim Award, 2019 Best Student Paper
Welcome to the ISOPE-2024 Conference

We greatly appreciate the excellent response, with 1,100+ abstracts, and help we have received from colleagues around the world in the successful organization of the 34th International Ocean and Polar (Arctic) Engineering Conference (ISOPE-2024), Rhodes, Greece, June 16–21, 2024. The Conference features 141 and 10 workshop sessions of peer-reviewed papers and 4 plenary and keynote presentations from more than 40+ countries, including the ISOPE specialty symposia as a part of the ISOPE-2024 Conference.

The conference program is issued in 2 versions: Session time and rooms printed and full conference program online (www.isope.org).

The purposes of the ISOPE conference are to:
* Promote technological progress and activities, international technological transfer and cooperation, and opportunities for engineers to maintain and improve technical competence; and
* Provide a timely international forum for technical activities, cooperation, opportunity and fellowship among researchers and engineers by developing focused session topics with high-quality papers (in both originality and significance) accepted through peer-review, establishing high international standards for publication and worldwide distribution, and promoting interdisciplinary interaction between academia and industry.

The International Society of Ocean and Polar Engineers (ISOPE) has already held 65 successful international meetings with all peer-reviewed papers:
- 1st (1990) Pacific/Asia Offshore Mechanics Symposium (PACOMS-90) Seoul; Beijing; Pusan; Daejeon; Vladivostok; Dalian; Bangkok; Busan; Vladivostok; Shanghai; Gold Coast; Jeju Island; Dalian.
- Annual ISOPE conferences, starting in Edinburgh, 1991, have been held in San Francisco, Singapore, Osaka, The Hague, Los Angeles, Honolulu, Montreal, Brest, Seattle, Stavanger, Kitakyushu, Honolulu, Toulon, Seoul, San Francisco, Lisbon, Vancouver, Osaka, Beijing, Maui, Rhodes, Anchorage, Busan, Hawaii Kona, Rhodes, San Francisco, Sapporo, Hybrids, and Ottawa. Since 1992, the annual ISOPE conference program has been the world’s largest of its kind with peer-reviewed papers.
- 1st (1995) ISOPE Ocean Mining & Gas Hydrates Symposium (OMS-95; OMGH), Tsukuba, 1995; Seoul, Goa; Szczecin; Tsukuba; Changsha; Lisbon; Chennai, Szczecin; Kona Hawaii, Sapporo, Honolulu, and three Hybrid.
- ISOPE HPM (High-Performance Materials) Symposium: Started in Honolulu 2003 and expanded every year with emerging topics.
- ISOPE Series of specialty symposia: ANGT; SBD; Nanotech; Frontier Energy; Sloshing Dynamics; Renewable Energy/Environment; Tsunami; Arctic; Asset Integrity; High-Mn/Cryogenic Materials; Material Reliability, EAC, LH2, Smart Ship, AI, NN, CFD,....

On behalf of the Technical Program Committee, it is our pleasure to welcome participants from all over the world to the ISOPE-2024 Conference in Rhodes, Greece.

ISOPE-2024 Rhodes Conference Technical Program Committee (TPC), and Co-chairs of the ISOPE-2024 Conference

Jin S Chung  Eva Loukogeorgaki  Sa Young Hong
USA  Greece  Korea

H Kawai  Hua Liu  Decheng Wan
Japan  China  China

Ivana Kubat  Ronald H Knapp  Ove T Gudmestad
Canada  USA  Norway

André Baeten, Germany
SUNDAY JUNE 16

09:00 ISOPE Board of Directors Meeting  Epsilon
10:30 ISOPE-2024 Executive Committee Meeting  Epsilon
        EUROMS and PACOMS Executive Committees
15:00-18:00
CONFERENCE REGISTRATION  Lobby
17:00-18:00
WELCOME RECEPTION  Outdoor Pool Garden

Tour Information
Visit tour desk in Lobby

MONDAY JUNE 17

On-Site Registration starts at 07:30  Lobby
07:30 Session Chair/Co-chair Briefing  Lobby
08:30 Conference Opening  Jupiter
Emerging Trends in Marine Energy Transport
112. Second MaTCH Symposium  Jupiter

10:30
2. HYDRODYNAMICS I: Big Data, Learning, PIN  Athena
3. RENEWABLE ENERGY I: TALOS WEC 1  Salon A
4. SPRU I: Pipeline Soil  Salon B
5. RENEWABLE ENERGY: Keynote 1: China Projects  Nafsika A
6. COASTAL I: Wave Mechanics 1  Nafsika B
7. AST I: Autonomous Ship  Nefeli B
8. POLAR TECH I: Ice Mechanics, Properties, Forces  Nefeli A
9. HYDRODYNAMICS XV: Sloshing Dynamics 1  Exec. A
10. DEEP OCEAN MINING I: Surface System  Exec. B
11. HYDRATES I: Gas Hydrates  Exec. C

14:00
12. HYDRODYNAMICS: Keynote 2: Machine Learning  Athena
Followed by Panel: AI-generated papers
13. RENEWABLE ENERGY II: TALOS WEC 2  Salon A
14. SPRU II: Riser—Top Tension  Salon B
15. RENEWABLE ENERGY XVI: FOWT 10  Nafsika A
16. COASTAL II: Wave Mechanics 2  Nafsika B
17. AST II: Collision, Impact  Nefeli B
18. POLAR TECH II: Ice Structure, Ice Breaking  Nefeli A
19. HYDRODYNAMICS XVI: Sloshing Dynamics 2  Exec. A
20. DEEP OCEAN MINING II: Seabed & Environment 1  Exec. B
21. HYDRATES II: Methane Hydrates  Exec. C

16:20
22. HYDRODYNAMICS III: Waves  Athena
23. RENEWABLE ENERGY III: WEC 1  Salon A
24. SPRU III: Riser—Catenary  Salon B
25. OFFSHORE MECHANICS I: Install, Bridge, Tunnel 1  Nafsika A
26. COASTAL III: Structures  Nafsika B
27. AST III: Drag, EEDI  Nefeli B
28. POLAR TECH III: Ice Management, Forecast, Towing  Nefeli A
29. HYDRODYNAMICS XVII: Sloshing Dynamics 3  Exec. A
30. DEEP OCEAN MINING III: Seabed and Environment 2  Exec. B
31. DRILLING & COMPLETION I: Wellhead/ Cementing 1  Exec. C

18:30 ISOPE Technical Committee Meetings  Notice on bulletin board
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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
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<td>07:30</td>
<td>Session Chair/Co-chair Briefing</td>
<td>Lobby</td>
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<tr>
<td>08:00</td>
<td>32. HYDRODYNAMICS III: Waves &amp; Forces 1</td>
<td>Athena</td>
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<td>33. RENEWABLE ENERGY IV: WEC 2</td>
<td>Salon A</td>
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<td>34. SPRU IV: Subsea—Infrastructure</td>
<td>Salon A</td>
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<td>35. OFFSHORE MECHANICS II: Install, Bridge, Tunnel2</td>
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<td>36. COASTAL IV: AI, Big Data, Remote Sensing</td>
<td>Nafsika B</td>
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<td>37. AST IV: Ultimate Strength</td>
<td>Nefeli A</td>
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<td>38. POLAR TECH IV: Arctic Transport, Propulsion 1</td>
<td>Nefeli A</td>
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<td>39. HYDRODYNAMICS XVIII: VIV 1</td>
<td>Exec. A</td>
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<td>40. DEEP OCEAN MINING IV: Hydraulic Lift and Pipe</td>
<td>Exec. B</td>
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<td>41. DRILLING &amp; COMPLETION II: Wellhead/Cementing 2</td>
<td>Exec. C</td>
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<tr>
<td>10:30</td>
<td>42. HYDRODYNAMICS IV: Waves &amp; Forces 2</td>
<td>Athena</td>
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<td>43. RENEWABLE ENERGY V: WEC 3</td>
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<td>44. SPRU V: Subsea, Installation</td>
<td>Salon B</td>
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<td></td>
<td>45. OFFSHORE MECHANICS III: Jackup, Fixed Struct 1</td>
<td>Nafsika A</td>
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<td>46. COASTAL V: Coastal Processes</td>
<td>Nafsika B</td>
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<td>47. AST V: ACV</td>
<td>Nefeli B</td>
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<tr>
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<td>48. POLAR TECH V: Arctic Transport, Propulsion 2</td>
<td>Nefeli A</td>
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<tr>
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<td>49. HYDRODYNAMICS XIX: VIV 2</td>
<td>Exec. A</td>
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<td>50. MECHANICS I: Risk and Reliability 1</td>
<td>Exec. B</td>
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<td>51. DRILLING &amp; COMPLETION III: Ocean and Polar</td>
<td>Exec. C</td>
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<tr>
<td>14:00</td>
<td>52. HYDRODYNAMICS XI: Wave Suite Mini Symposium</td>
<td>Athena</td>
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<td>53. RENEWABLE ENERGY VI: Tidal Power</td>
<td>Salon A</td>
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<tr>
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<td>54. SPRU VI: Cable/Flex Pipe 1</td>
<td>Salon B</td>
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<td>55. OFFSHORE MECHANICS IV: Jackup, Fixed Struct 2</td>
<td>Nafsika A</td>
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<tr>
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<td>56. COASTAL VI: Ports &amp; Terminals</td>
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<td>57. AST VI: ASV, USV 1</td>
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<td>58. POLAR TECH VI: Drilling, Icing</td>
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<td>59. HYDRODYNAMICS XX: VIV 3</td>
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<td>60. MECHANICS II: Risk and Reliability 2</td>
<td>Exec. B</td>
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<td>61. GEOTECH I: Soil Liquefaction 1</td>
<td>Exec. C</td>
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<tr>
<td>16:20</td>
<td>62. HYDRODYNAMICS V: Floating Dynamics 1</td>
<td>Athena</td>
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<td>63. RENEWABLE ENERGY VII: FOWT 1</td>
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<td>64. SPRU VII: Cable/Propulsion Pipe 2</td>
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<td>65. OFFSHORE MECHANICS V: VLFS, Hydroelastic 1</td>
<td>Nafsika A</td>
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<td>66. HPM VII: EAC 1</td>
<td>Nafsika B</td>
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<td>67. AST VII: ASV, USV 2</td>
<td>Nefeli B</td>
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<td></td>
<td>68. UNDERWATER I: Sensors and Detection</td>
<td>Nefeli A</td>
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<tr>
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<td>69. AST XVI: Propulsion 2</td>
<td>Exec. A</td>
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<td>70. MECHANICS III: Collision and Impact 1</td>
<td>Exec. B</td>
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<td>71. GEOTECH II: Soil Liquefaction 2</td>
<td>Exec. C</td>
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<tr>
<td>15:30</td>
<td>Awards Committee Meeting</td>
<td>Epsilon</td>
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<tr>
<td>16:30</td>
<td>Board of Editors Meeting</td>
<td>Epsilon</td>
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<tr>
<td>19:30</td>
<td>ISOPE-2024/2025 TPC Meeting</td>
<td>TBA at registration desk</td>
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</table>

Find Digital Conference Program Updates in https://www.isope.org/conferences-symposia-and-workshops/
07:30  Session Chair/Co-chair Briefing  Lobby

08:00
72. HYDRODYNAMICS VI: Floating Dynamics 2  Athena
73. RENEWABLE ENERGY VIII: FOWT 2  Salon A
74. SPRU VIII: Pipeline Flow Assurance  Salon B
75. OFFSHORE MECHANICS VI: VLFS, Hydroelastic 2  Naftiska A
76. HPM VII: EAC 2  Naftiska B
77. AST VIII: Ship Maneuvering 1  Nefeli B
78. UNDERWATER II: Cables  Nefeli A
79. AST XVII: Propulsion 3  Exec. A
80. MECHANICS IV: Collision and Impact 2  Exec. B
81. GEOTECH III: Pile, Anchor  Exec. C

10:30
82. HYDRODYNAMICS VII: Internal/Solitary Waves  Athena
84. SPRU IX: Pipeline Mechanics I  Salon B
85. OFFSHORE MECHANICS VII: FPSO, Compliant  Naftiska A
86. HPM VIII: EAC 3  Naftiska B
87. AST IX: Ship Maneuvering 2  Nefeli B
88. UNDERWATER III: Acoustics  Nefeli A
89. AST XVIII: Propulsion 4  Exec. A
90. MECHANICS V: Collision and Impact 3  Exec. B
91. GEOTECH IV: Foundation  Exec. C

12:00  ISOPE Board of Directors Meeting III  Epsilon
14:00  Keynote 3: Japan’s Cryogenic Matls R&D for LH2  Naftiska B

14:00
92. HYDRODYNAMICS VIII: Tsunami and Hazard  Athena
93. RENEWABLE ENERGY X: FOWT 4  Salon A
94. SPRU X: Pipeline Mechanics 2  Salon B
95. OFFSHORE MECHANICS VIII: Offshore Syst, General 1  Naftiska A
96. HPM: Keynote 3: Japan’s Cryogenic Matls R&D for LH2  Nafiska B
97. AST X: Ship Maneuvering 3  Nefeli B
98. UNDERWATER IV: Design  Nefeli A
99. AST XIX: Cavitation  Exec. A
100. MECHANICS VI: Additive Manufacturing  Exec. B
101. GEOTECH V: Soil Properties  Exec. C

16:20
102. HYDRODYNAMICS IX: Metocean  Athena
103. RENEWABLE ENERGY XI: FOWT 5  Salon A
104. SPRU XI: Pipeline Mechanics 3  Salon B
105. OFFSHORE MECHANICS IX: Offshore System, General 2  Naftiska A
106. HPM I: Adv Materials & Structures 1  Naftiska B
107. AST XI: Optimization 1  Nefeli B
108. UNDERWATER V: AUV  Nefeli A
109. AST XX: Nuclear and Photovoltaic Platform  Exec. A

19:00  Annual Conference Banquet  Super Dome Pool
34th ISOPE Cultural Event, Best Paper, Best Student Paper, Outstanding Student Scholarships, Best Organizer(s) and ISOPE Awards
Don’t forget the banquet ticket.
07:30 Session Chair/Co-chair Briefing Lobby

08:00

110. HYDRODYNAMICS X: Instruments, Measurement Athens
111. RENEWABLE ENERGY XII: FOWT 6 Salon A
112. AST XXIII: MaTCH Symposium-Moved to Opening Jupiter
113. OFFSHORE MECHANICS X: Environ, Climate 1 Salon B
114. HPM II: Adv Materials & Structures 2 Nafsika A
115. AST XII: Optimization 2 Nafsika B
116. UNDERWATER VI: Path Tracking Nefeli B
117. AST XXI: Ship AI Nefeli A
118. MECHANICS VII: Materials, Structures Exec. A

10:30

119. HYDRODYNAMICS XII: CFD 1 Athens
120. RENEWABLE ENERGY XIII: FOWT 7 Salon A
121. UNDERWATER IX: Tsinghua (SZ) Focus Exec. C
122. OFFSHORE MECHANICS XI: Environment, Climate 2 Salon B
123. HPM III: Fatigue & Fracture 1 Nafsika A
124. AST XIII: Drag/Resistance 1 Nafsika B
125. UNDERWATER VII: Vehicles in Internal Waves Nefeli B
126. AST XXII Clean Fuel: Hydrogen, Ammonia Nefeli A
127. MECHANICS VIII: Explosion Exec. A

13:00 Student Forum: Adv. reservation req’d. Exec. C

14:00

128. HYDRODYNAMICS XIII: CFD 2 Athens
129. RENEWABLE ENERGY XIV: FOWT 8 Salon A
130. HPM IV: Fatigue & Fracture 2 Salon B
131. AST XIV: Drag/Resistance 2 Nafsika A
132. UNDERWATER VIII: Robotics Nafsika B
133. MECHANICS IX: Buckling Nefeli A
138. AST XXIV: CAD/Design Nefeli B

16:20

134. HYDRODYNAMICS XIV: Model Test Athens
135. RENEWABLE ENERGY XV: FOWT 9 Salon A
136. HPM V: Corrosion Salon B
137. AST XV: Propulsion 1 Nafsika A

THURSDAY JUNE 20

FRIDAY JUNE 21

Sunday – Thursday

Author Practice Individual session rooms
On-site Registration Lobby
ISOPE Headquarters VIP Lounge
Proceedings Pickup Registration Desk, Lobby
Committee Meetings Epsilon, Mezzanine

Tours: Click on General Information
ISOPE-2024 Rhodes, Greece
The Thirty-fourth (2024) International
Ocean and Polar Engineering Conference in person
Rodos (Rhodes), Greece, June 16–21, 2024

This 34th annual conference features 141 technical and opening general sessions, 1 plenary and 3 keynote presentations from top experts from industry, academia and government. After peer review of the manuscripts selected from 1,300+ abstracts, some 650+ peer-reviewed papers will be presented and discussed by researchers, engineers, and managers from more than 40+ countries. The ISOPE-2024 Conference Proceedings with peer-reviewed papers in PDF files will be available in a set of 4 volumes on USB (4,489 pp.) — paginated during the conference and later for worldwide post-conference mail order from ISOPE: ISBN 978-1-880653-78-4; ISSN 1098-6189. Only the changes in titles or authors the Technical Program Committee received in writing before May 1, 2024 are reflected in this program.

All ISOPE publications are indexed by Engineering Index, EI Compendex, Google Scholar, Scopus, Scientific and Technical Proceedings (ISTP/ISI), Web of Science and others.

FULL CONFERENCE PROGRAM WITH SESSION / PAPER LIST:
any updates at
https://www.isope.org/conferences-symposia-and-workshops/

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Past President: Eva Loukogeorgaki, Greece
Executive Director: Jin S Chung, USA
Executive Committee: Jin S Chung, Ronald H Knapp, Wan C Kan, H W Jin, USA, President John M Niedzwecki, USA, Claude Chung

List of ISOPE Board of Directors, Officers, Technical Program Committee members and Cooperating Organizations at https://www.isope.org/conferences-symposia-and-workshops/.

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EUROMS Executive Committee
S Berg (Norway), J S Chung (USA), I Langen (Norway)

ISOPE Cooperating Organizations and
ISOPE-2024 Technical Program Committee
Members are listed in digital version of the program on https://www.isope.org/conferences-symposia-and-workshops/
SESSION LIST BY TOPICS

1. Conference Opening, Monday Morning

Opening /Plenary Session Monday 08:30
Navigating the Future: Emerging Trends in Marine Energy
Transport [Oral presentation]
YoungBum Lee, Vice President, Hanwha Ocean, Korea

The Second MaTCH Symposium
H W Jin, ExxonMobil Technology & Engineering, USA

Keynote 1
Floating Offshore Wind Farm Projects in China: Part I Coupled Aero-Hydro-Elastic Behaviors
Decheng Wan, et al., Shanghai Jiao Tong Univ; et al., Zhongnan Engineering Corporation; Xiaolong Yang, et al., Offshore Oil Engineering Co; Shengxiao Zhao, et al. Huadong Engineering Corp, China

Ongoing Floating Offshore Wind Farm Projects in China: Part II Safety Examination and Optimization
Decheng Wan, et al., Shanghai Jiao Tong University; Youwan Mi, Liangming Fu, Jinguang Wang, Zhongnan Engineering Corp; Xiaolong Yang, Junji Li, Offshore Oil Engineering Co; Shengxiao Zhao, et al. Huadong Engineering Corp, China

Keynote 2
Exploring Applications of Machine Learning to Numerical Modelling of Nonlinear WSI (Oral Presentation Only)
Qingwei Ma, Ningbo Zhang, Shiqiang Yan, City, University of London, UK
Followed by Panel: AI-generated papers

Keynote 3
Japan’s Cryogenic Materials R&D for Liquefied Hydrogen Storage (Oral Presentation Only)
Tomoya Kawabata, University of Tokyo, Japan

SESSION LIST BY TOPICS

OFFSHORE MECHANICS AND OCEAN TECHNOLOGY

25. OFFSHORE MECHANICS I: Install, Floating Bridge, Tunnel 1
35. OFFSHORE MECHANICS II: Install, Floating Bridge, Tunnel 2
45. OFFSHORE MECHANICS III: Jackup, Fixed Structure 1
55. OFFSHORE MECHANICS IV: Jackup, Fixed Structure 2
65. OFFSHORE MECHANICS V: VLFS, Hydroelastic 1
75. OFFSHORE MECHANICS VI: VLFS, Hydroelastic 2
85. OFFSHORE MECHANICS VII: FPSO, Compliant
95. OFFSHORE MECHANICS VIII: Offshore System, General 1
105. OFFSHORE MECHANICS IX: Offshore System, General 2
113. OFFSHORE MECHANICS X: Environment, Climate 1
122. OFFSHORE MECHANICS XI: Environment, Climate 2

DEEP OCEAN MINING AND HYDRATES
10. DEEP OCEAN MINING I: Surface System
20. DEEP OCEAN MINING II: Deep Seabed and Environment 1
30. DEEP OCEAN MINING III: Deep Seabed and Environment 2
40. DEEP OCEAN MINING IV: Hydraulic Lift and Pipe
11. HYDRATES I: Gas Hydrates
22. HYDRATES II: Methane Hydrates
31. DRILLING & COMPLETION I: Wellhead/Cementing 1
41. DRILLING & COMPLETION II: Wellhead/Cementing 2
51. DRILLING & COMPLETION III: Ocean and Polar

RENEWABLE ENERGY (Ocean and Wind)
5. RENEWABLE ENERGY: Keynote I: China Project
3. RENEWABLE ENERGY I: TALOS WEC 1
13. RENEWABLE ENERGY II: TALOS WEC 2
23. RENEWABLE ENERGY III: WEC 1
33. RENEWABLE ENERGY IV: WEC 2
43. RENEWABLE ENERGY V: WEC 3
53. RENEWABLE ENERGY VI: Tidal Power
63. RENEWABLE ENERGY VII: FOWT I
73. RENEWABLE ENERGY VIII: FOWT 2
93. RENEWABLE ENERGY X: FOWT 4
103. RENEWABLE ENERGY XI: FOWT 5
111. RENEWABLE ENERGY XII: FOWT 6
120. RENEWABLE ENERGY XIII: FOWT 7
129. RENEWABLE ENERGY XIV: FOWT 8
135. RENEWABLE ENERGY XV: FOWT 9
15. RENEWABLE ENERGY XVI: FOWT 10

GEOTECHNICAL ENGINEERING
61. GEOTECH I: Soil Liquefaction 1
71. GEOTECH II: Soil Liquefaction 2
81. GEOTECH III: Pile, Anchor
91. GEOTECH IV: Foundation
101. GEOTECH V: Soil Properties

SUBSEA, PIPELINES, RISERS AND UMBILICALS (SPRU)
4. SPRU I: Pipeline Soil
14. SPRU II: Riser—Top Tension
24. SPRU III: Riser—Catenary
34. SPRU IV: Subsea—Infrastructure
44. SPRU V: Subsea, Installation
54. SPRU VI: Cable/Flex Pipe 1
64. SPRU VII: Cable/Flex Pipe 2
74. SPRU VIII: Pipeline Flow Assurance
84. SPRU IX: Pipeline Mechanics 1
94. SPRU X: Pipeline Mechanics 2
104. SPRU XI: Pipeline Mechanics 3

UNDERWATER TECHNOLOGY
68. UNDERWATER I: Sensors and Detection
78. UNDERWATER II: Cables
88. UNDERWATER III: Acoustics
98. UNDERWATER IV: Design
108. UNDERWATER V: AUV
116. UNDERWATER VI: Path Tracking
121. UNDERWATER IX: Tsinghua (SZ) Focus
125. UNDERWATER VII: Vehicles in Internal Waves
132. UNDERWATER VIII: Robotics
POLAR TECHNOLOGY

8. POLAR TECH I: Ice Mechanics, Properties, Forces
18. POLAR TECH II: Ice Structure, Ice Breaking
28. POLAR TECH III: Ice Management, Forecast, Towing
38. POLAR TECH IV: Arctic Transport, Propulsion 1
48. POLAR TECH V: Arctic Transport, Propulsion 2
58. POLAR TECH VI: Drilling, Icing

HYDRODYNAMICS

12. HYDRODYNAMICS: Keynote 2
   Followed by Panel: AI-generated papers
2. HYDRODYNAMICS I: Big Data, Learning, PIN
22. HYDRODYNAMICS II: Waves
32. HYDRODYNAMICS III: Waves & Forces 1
42. HYDRODYNAMICS IV: Waves & Forces 2
62. HYDRODYNAMICS V: Floating Dynamics 1
72. HYDRODYNAMICS VI: Floating Dynamics 2
82. HYDRODYNAMICS VII: Internal/Solitary Waves
92. HYDRODYNAMICS VIII: Tsunami and Hazard
102. HYDRODYNAMICS IX: Metocean
110. HYDRODYNAMICS X: Instruments, Measurement
52. HYDRODYNAMICS XI: Wave Suite Mini Symposium
119. HYDRODYNAMICS XII: CFD 1
128. HYDRODYNAMICS XIII: CFD 2
134. HYDRODYNAMICS XIV: Model Test
9. HYDRODYNAMICS XV: Sloshing Dynamics 1
19. HYDRODYNAMICS XVI: Sloshing Dynamics 2
29. HYDRODYNAMICS XVII: Sloshing Dynamics 3
39. HYDRODYNAMICS XVIII: VIV 1
49. HYDRODYNAMICS XIX: VIV 2
59. HYDRODYNAMICS XX: VIV 3

COASTAL ENGINEERING

6. COASTAL I: Wave Mechanics 1
16. COASTAL II: Wave Mechanics 2
26. COASTAL III: Structures
36. COASTAL IV: AI, Big Data, Remote Sensing
46. COASTAL V: Coastal Processes
56. COASTAL VI: Ports & Terminals

HIGH-PERFORMANCE MATERIALS (HPM)

96. HPM: Keynote 3
106. HPM I: Adv Materials & Structures 1
114. HPM II: Adv Materials & Structures 2
123. HPM III: Fatigue & Fracture 1
130. HPM IV: Fatigue & Fracture 2
136. HPM V: Corrosion
66. HPM VI: EAC 1
76. HPM VII: EAC 2
86. HPM VIII: EAC 3

MECHANICS, COLLISION, RELIABILITY

50. MECHANICS I: Risk and Reliability 1
60. MECHANICS II: Risk and Reliability 2
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Scott Polar Research Institute (SPRI), U.K.
The Institution of Engineers Indonesia (PII)
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The Gesellschaft für Maritime Technik
Taiwan Society of Ocean Engineering (TSEO)
Technical Chamber of Greece (TCG)
Turkish Ocean Committee (TOC)
Engineering Institute of Thailand (EIT)
International Association of Hydraulic Research (IAHR)
SUNDAY 17:00-18:00
Conference Welcome Reception
17:00 Outdoor Pool Garden

MONDAY 08:30
1. OPENING SESSION
Monday June 17 08:30 Jupiter
Chair: HW Jin, Exxon Mobil Technology & Engineering, USA
Co-Chair: Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

Navigating the Future: Emerging Trends in Marine Energy Transport [Oral presentation]
YoungBum Lee, Vice President, Hanwha Ocean, Korea

112. AST XXIII: Second MaTCH Symposium
(Following Conference Opening Session)
Monday June 17 09:20 Jupiter
Chair: HW Jin, Exxon Mobil Technology & Engineering, USA

Materials Challenges/opportunities for L-CO2/L-H2 Value Chain: Review of Technology Development [Oral presentation]
HyunWoo Jin, ExxonMobil Technology and Engineering Co, USA

Hydrogen Embrittlement of SAW and SMAW Welded Joints from the SUS316L at Low Temperatures
Rafael Magalhães de Melo Freire, Shohei Uranaka, Mitsuo Kimura, Tomoya Kawabata, University of Tokyo, Japan

Effects of Deformation-Induced Martensitic Transformation on Cryogenic Toughness of Austenitic Weld Metals
Shohei Uranaka, Xuecheng Yuan, Tomoya Kawabata, University of Tokyo; Ryuko Ishizuka, Takanori Ito, Yasuhiro Takashima, Yoshihiko Kitagawa, Kobe Steel, Japan

Effect of TRIP on Crack Opening and Closure Behavior of Low Cycle Fatigue in Metastable Austenitic Stainless Steel
Yuji Ando, Ritsuki Morohoshi, Shohei Uranaka, Tomoya Kawabata, University of Tokyo, Japan

Effect of Pre-Strain on Ductile Fracture Resistance in Metastable Austenitic Stainless Steel
Ritsuki Morohoshi, Tomoya Kawabata, University of Tokyo, Japan

Assessment of the Necessary Nickel Content in High-Nickel Steel for Liquefied Hydrogen Storage Tanks
Tetsuya Namegawa, Teppei Okawa, Nippon Steel Corp, Japan

MONDAY 10:30

15
2. HYDRODYNAMICS I: Big Data, Learning, PIN

Monday June 17 10:30 Athena

Chair: Qingwei Ma, City, University of London, UK

Ship Manoeuvring Model Identification based on Big Data Analysis and Genetic Optimization Algorithm
Camille Chauvigné, François Rongère, Lucas Letournel, Sofien Kerkeni, D-ICE Engineering, France

A Solution for Constructing Semi-Submersible Platform Digital Twins Based on Deep Learning
Xiaozhou Guo, Bo Wu, Xin Li, Shanghai Jiao Tong University, China

Integrating Second-Order Wave Theory with PINNs for Wave Prediction
Yue Liu, Taihu Laboratory of Deepsea Technological Science; Shuxia Bu, Min Gu, Qing Dong, China Ship Scientific Research Center; Gang Chen, Xiantao Zhang, Shanghai Jiao Tong University, China

Influence of Deep Learning Model’s Structure and Type on Very Short-term Prediction of Irregular Long-crested Waves
Qing Dong, China Ship Scientific Research Center; Xiantao Zhang, Yue Liu, Shanghai Jiao Tong University; Zhihao Ren, Kai Zhang, China Ship Scientific Research Center; Ziwen Chen, China Three Gorges Corporation, China

Multi-objective Optimization Design of Two-dimensional Hydrofoils Based on Machine Learning [Proceedings only]
Yangjian Li, Ziru Li, Pengpeng He, Wei He, Wuhan University of Technology, China

3. RENEWABLE ENERGY I: TALOS WEC 1

Monday June 17 10:30 Salon A

Chair: Mitra Kamidelivand, University College Cork, Ireland

Optimizations for Improving Energy Absorption of TALOS WEC
Wanan Sheng, George Aggidis, Lancaster University, UK

Effects of Mooring Lines on the TALOS WEC Performance
Eva Loukogeorgaki, Aristotle University of Thessaloniki; Constantine Michailides, International Hellenic University, Greece; Wanan Sheng, George Aggidis, Lancaster University, UK

Exploring Uncertainties and Challenges in Wave Energy Resource Assessment
Charikleia Oikonomou, Hellenic Centre for Marine Research, Greece; Igor G Rizaev, University of Hull, UK; Gerasimos Korres, Hellenic Centre for Marine Research, Greece; Wanan Sheng, George Aggidis, Lancaster University, UK

4. SPRU I: Pipeline Soil

Monday June 17 10:30 Salon B

Chair: A.M. Gresnigt, TU Delft, The Netherlands
Experimental Study on Local Scour Propagation below Two Crossing Pipelines on a Sandy Seabed under Currents
Xing Zou, Botao Xie, Jing Hou, CNOOC Research Institute; Limeng Zhao, Zhipeng Zang, Tianjin University, China

Sediment Flushing of Different Angle on Density Outflow
Chen-Shan Kung, Siu-Yu Pan, Pei-Yu Lee, Ya-Cing You, ATE Energy International, Taiwan China

Field Experimental Study on Concentration Distribution Characteristics of Medium Coarse Sand in Long-distance Pipelines
Jin Xing, Shufeng Cheng, Jifu Yin, Feixing Wang, National Engineering Research Center of Dredging Technology and Equipment, China

Research on Cutting Dilatancy Characteristics of Saturated Dense Fine Sand and Optimization of Rake Tooth
Gongxun Liu, Xin Liang, Kang Xie, Jifu Yin, Guojun Hong, CCCC National Engineer Research Center of Dredging Technology and Equipment, China

5. Keynote 1: Renewable
Monday June 17 10:30 Nafsika A
Chair: Jin S Chung, ISOPE, USA

Floating Offshore Wind Farm Projects in China: Part I Coupled Aero-Hydro-Elastic Behaviors
Decheng Wan, Weiwen Zhao, Shan Xu, Yingjie Xue, Maokun Ye, Shanghai Jiao Tong University; Youwan Mi, Liangming Fu, Jinguang Wang, Zhongnan Engineering Corporation; Xiaolong Yang, Junji Li, Offshore Oil Engineering Co; Shengxiao Zhao, Yan Zhao, Nina Wang, Huadong Engineering Corporation, China

Ongoing Floating Offshore Wind Farm Projects in China: Part II Safety Examination and Optimization
Decheng Wan, Weiwen Zhao, Shan Xu, Yingjie Xue, Maokun Ye, Shanghai Jiao Tong University; Youwan Mi, Liangming Fu, Jinguang Wang, Zhongnan Engineering Corporation; Xiaolong Yang, Junji Li, Offshore Oil Engineering Co; Shengxiao Zhao, Yan Zhao, Nina Wang, Huadong Engineering Corporation, China

6. COASTAL I: Wave Mechanics 1
Monday June 17 10:30 Nafsika B
Chair: Pietro Prestininzi, Unvirsity Roma Tre, Italy

The Impacts of Future Climate Change on Storm Surges and Wave Heights in Three Major Bays of Japan
Yuuya Narita, Kazuhiko Honda, National Institute for Land and Infrastructure Management; Kanta Okamoto, Alpha Hydraulic Engineering Consultants Co; Fumiya Doukai, Ministry of Land, Infrastructure, Transport and Tourism, Japan

On Modeling the Coastal Floods and Assessing the Impacts on Inundated Urban Areas of Miami (FL, USA)
Christos V. Makris, Yannis S Androulidakis, Zisis C Mallios, Aristotle University of Thessaloniki, Greece; Villy H Kourafalou, University of Miami, USA

Uncertainties in Estimation of a Possible Upper Limit for Environmental Extremes
Jesper Rydén, Swedish University of Agricultural Sciences, Sweden

Analysis of Inundation Vulnerability due to Wave Overtopping Considering Typhoon Intensity and Sea-Level Rise
Hyeon-Jeong Kim, Byung-Il Min, Yoomi Choi, Sora Kim, Korea Atomic Energy Research Institute, Korea

Relationship between Extreme Tidal Levels and Typhoons along the Coast of Zhejiang Province
Yanping Chen, Wenxi Yuan, Zhejiang Design Inst. of Water Conservancy & Hydro-Electric Power; Ao Chu, Hohai University, China

7. AST I: Autonomous Ship
Monday June 17 10:30 Nefeli B
Chair: André Baeten, Augsburg Univ of Applied Sci, Germany

Compatibility Assessment of Dual Fuel Vessel against Bunker Industry Standard
Peng Liu, Chang Xu, Marine Design & Research Institute of China; Liancheng Wang, Beijing COSCO Shipping Ship Trading Co, China

The Development Status and Future Direction of Maritime Autonomous Surface Ship (MASS)
Yao Qin, Ziyi Luo, Yiqing Gu, Xiang Fan, Shanghai Merchant Ship Design and Research Institute; Xuan Wang, Shanghai Shipbuilding Technology Research Institute, China

A Probabilistic Model for Ship Overtaking Decision-making in a Straight Channel
Yihua Liu, Nian Liu, Fei Lin, Shanghai Maritime University, China

Measurement and Program Development of Two-dimensional Strain Field based on Images
Xinghua Liu, Jingxi Liu, Yiyang Liu, Zhengxin Li, Huazhong University of Science and Technology, China

Maneuverability Index Correction for Restricted Waterways Based on the RANS-MMG Approach
Xin Zhang, Yan Jin, Jie Xie, Hao Wu, Min Wang, Wuhan University of Technology, China

8. POLAR TECH I: Ice Mechanics, Properties, Forces
Monday June 17 10:30 Nefeli A
Chair: Ivana Kubat, National Research Council Canada, Canada

Bedstead Simulator of Sea Ice Ridging
Victor V. Kharitonov, AARI; Ruslan I May, Krylov State Research Center; Vladimir A Borodkin, AARI, Russia
Response of Ship Structure under Ice Impact in Two Loading Scenarios
Xirui Chen, Qiyu Liang, Ling Zha, Yunbin Chen, Wuhan University of
Technology; Jia Zeng, Marine Design and Research Institute of China;
Shaoing Dai, Huanghai Shipbuilding Co, China

Distributions of Ice blocks Composing Ice Ridges and Stamukhas of the
Kara, Laptev and East Siberian Seas
Konstantin A. Kornishin, Yaroslav O. Efimov, Petr A. Tarasov, Arctic
Research Center; Roman B Guzenko, Yevgeny U. Mironov, Victor S
Porubaev, AARI; Alexander T. Bekker, Oleg A. Makarov, Denis Z.
Gogoladze, Far East Federal University, Russia

Experimental Determination of the Friction Coefficient between
Construction Materials and Sea Ice
A.T. Bekker, P.V. Anokhin, T.E. Uvarova, E.E. Pominikov, G.V. Bezruk,
Far East Federal University, K.A. Kornishin, Y.O. Efimov, P.A. Tarasov,
Arctic Research Center, Russia

Morphometric Features of Composite Ice Ridges of the Arctic Seas
Konstantin A. Kornishin, Yaroslav O. Efimov, Petr A. Tarasov, Arctic
Research Center; Roman B. Guzenko, Yevgeny U. Mironov, Victor S.
Porubaev, Yuri G. Gavrilov, Stepan V. Khotchenkov, Yevgeny I.
Makarov, AARI, Russia

Evolution of Morphometry and Internal Structure of First-Year Ridge
during Many Months of Observations at the Drifting Station "North
Pole-41"
Roman B. Guzenko, AARI; Ruslan I. May, Krylov State Research
Center; Yuri G. Gavrilov, Victor V. Kharitonov, Stepan V. Khotchenkov,
AARI, Russia

9. HYDRODYNAMICS XV: Sloshing Dynamics 1
Monday June 17 10:30 Exec. A
Chair: Nicolas Couty, GTT, France

Application of Long-term Approach for Prediction of Sloshing Loads in
LNG Cargo
Taehyun Park, Yonghwan Kim, Seoul National University; Yangjun Ahn,
Sungshin Women’s University; Jeoungkyu Lee, HD Hyundai Heavy
Industries, Korea

Investigating Water Flow in a U-shaped Ballast Tank in Presence of
Baffles and Air Vent
Babak Ommani, Equinor; Reza Firoozkoohi, SINTEF Ocean; Øystein
Johannessen, Svein-Arne Reinholdtjen, Equinor, Norway

Numerical Study of Sway-roll Compound Tank Sloshing under
Resonance Frequency Using a Modified MPS Method
Zhenghao Liu, Xiaoling Li, Weidong Liu, Tao Fan, Jiangnan Shipyard
Group Co, Ji Zeng, Shanghai Maritime University; Decheng Wan, Shanghai
Jiao Tong University, China

Study on the Liquefaction Mechanism of Shipping Iron Ore by
Adopting Perspective Materials
Peng Chen, Jianwei Zhang, Zhejiang Ocean University, China
MPS Method for Simulation of Liquid Sloshing in a Spherical Tank
Yujia Liu, Shanghai Jiao Tong University; Hailua Deng, Wuhan Second Ship Design and Research Institute; Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong University, China

Numerical Investigation on Sloshing and Fluid Exchange in the Freeflooding Tank Based on CFD
Chaofan Li, Renchuan Zhu, Yuehu Teng, Shanghai Jiao Tong University, China

10. DEEP OCEAN MINING I: Surface System
Monday June 17 10:30 Exec. B
Chair: C. Janarthanan, NIOT, India

Experimental Investigation on Flow-induced Vibration of Flexible Riser Transporting Spiral Flow in Deep Sea Mining
Jiayu Zhang, Nianzhong Chen, Tianjin University, China; Svein Sævik, Norwegian University of Science and Technology; Naiquan Ye, SINTEF Ocean, Norway

Self-propelled Deep Sea Miner Preparations for Nodule Collection and Local Slurry Transport Trials

Hydrodynamic Analysis of Deep-Sea Mining Machine during Descent: Insights from Experimental and Numerical Investigations

Deep Sea Slurry Pumping by Positive Displacement Pump
Rajesh S, Gnanaraj A.A, Gopkumar K, Immanuel Keba J, National Institute of Ocean Technology, India

Viscous Characteristics of Bentonite Suspension for Carrier Materials in Deep Sea Mining Evaluated by Falling Head Flow Test
Yu Kawai, Shun Nomura, Kazuo Tani, Tokyo University of Marine Science and Technology; Hiroshi Yabe, Akihiro Tomita, Akihiko Suzuki, Fudo Tetra Corp, Japan

11. HYDRATES I: Gas Hydrates
Monday June 17 10:30 Exec. C
Chair: Tianlong Yin, CNPC Tianjin Bo-Xing Eng Sci & Tech, China

Numerical Modeling Study of Sand Production Process in Natural Gas Hydrate Extraction Reservoirs and Its Impact on Gas Production
Zhiliang Wen, Jin Yang, Ting Sun, Laiao Ren, Zengcheng Han, Wencheng Wang, China University of Petroleum (Beijing); Huizhen Ma, Song Liu, Haitao Nie, Shandong Qilong Offshore Petroleum Steel Pipe Co, China

Research and Application of Spacer Fluid System for Resistance to Organic Salt Drilling Fluid Pollution
Heat Preservation and Heating of Production Wells to Improve Productivity of Heavy Oil
Seonghak Cho, Hyunsang Yoo, Jeonghwan Lee, Chonnam National University, Korea

Development and Application of a New Type of Casing Buoyancy Sub
Jiandong Wang, Lingxiao Zhao, Biao Wang, CNPC Tianjin Bo-Xing Engineering Science & Technology; Sutao Ye, CNPC Tarim Oilfield Co; Xiangrui Zhang, Yuanbo Xia, CNPC Tianjin Bo-Xing Engineering Science & Technology; Shujiang Zou, CNPC Offshore Engineering, China

MONDAY 14:00

Monday June 17 14:00 Athena
Chair: Jin S Chung, ISOPE, USA

Exploring Applications of Machine Learning to Numerical Modelling of Nonlinear WSI
Qingwei Ma, Ningbo Zhang, Shiqiang Yan, City, University of London, UK

Panel: AI-generated papers

13. RENEWABLE ENERGY II: TALOS WEC 2
Monday June 17 14:00 Salon A
Chair: Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

Enhancing Long-Term Predictive Accuracy in Wave Energy Converters through a Dual-Model Approach
Yueqi Wu, Wanan Sheng, C James Taylor, George Aggidis, Xiandong Ma, Lancaster University, UK

PTO Control Design for a Multi-Axis WEC Device
Carrie M Hall, Illinois Institute of Technology, USA; Wanan Sheng, Lancaster University, UK; Hakan Yavuz, Çukurova University, Turkey; George Aggidis, Lancaster University, UK

Design and Performance Evaluation of a Resistive Control Using a Hydraulic PTO System for the TALOS Wave Energy Converter
Jorge A Leon-Quiroga, Sandia National Laboratories; David Ogen, Salman Husain, National Renewable Energy Lab, USA; Wanan Sheng, George Aggidis, Lancaster University, UK; Aidan Bharath, National Renewable Energy Lab, USA

Evaluating the Long-Term Investment Opportunities of Wave Energy Conversion with Real Options
14. SPRU II: Riser—Top Tension

Monday
June 17
14:00
Salon B
Chair: Ping Liu, Worley Offshore Energy, The Netherlands

Numerical Study of the Effect of Internal Viscous Damping on the Dynamic Behavior of a Rotating Drill Pipe Model
Hanny Tun, Hiroyoshi Suzuki, Kanto Miyamoto, Osaka University; Thant Zin Htun, OWC; Tomoya Inoue, JAMSTEC, Japan

Operation Window Analysis for Deepwater Drilling Riser System in 3000m WD
Jinlong Wang, Leixiang Sheng, Zhiming Yin, Mengbo Li, Deqiang Tian, CNOOC Research Institute, China

Global Strength Analysis on Deepwater Workover Riser System
Jinlong Wang, Leixiang Sheng, Mingchun Wang, Yichen Wang, CNOOC Research Institute, China

Research on Stability of Drilling Conductor System under Environmental Loads
Yuxiang Yang, Jin Yang, Long Zhang, Minghe Zhang, China University of Petroleum (Beijing), China

Stability Analysis of Drilling Risers in Shallow Water Subsea Production System
Shuzhan Li, Jin Yang, Kun Jiang, Jia Kang Wang, China University of Petroleum (Beijing); Chen Yu, CNOOC China; Guojing Zhu, China University of Petroleum (Beijing); Renjun Xie, Gang Tong, CNOOC Research Institute, China.

Dynamic Response Analysis of Interference and Vibration between Deep-water Drilling Riser and Production Riser
Deqiang Tian, CNOOC Research Institute, China

Collision Mechanism of Marine Drilling Riser and Internal String in Deep-water Drilling
Minghe Zhang, Longlian Cui, Haige Wang, CNPC Engineering Technology R&D Co; Jin Yang, China University of Petroleum (Beijing); Guobin Yang, Guobin Zhang, Qi Liu, Lulin Kong, Ke Sun, Wanting Jia, CNPC Engineering Technology R&D Co, China

15. RENEWABLE ENERGY XVI: FOWT 10

Monday
June 17
14:00
Nafsika A
Chair: Qing Wang, Powerchina Huadong Engineering, China

A Detection Method for Structural Vibration Anomalies in Offshore Wind Turbines
Qing Wang, Power China Huadong Engineering Corporation; Qiang Liu, Xiaoming Zhan, Zhejiang Huadong Mapping and Engineering Safety Technology; Xingyu Yan, Power China Huadong Engineering Corporation, China
Experimental Study of Lateral Responses of a Novel Hybrid Foundation for Supporting Offshore Wind Turbines
Yongqing Lai, Ben He, Wei Li, Gen Xiong, PowerChina Huadong Engineering Corp, China

Dynamic Analysis of an Oscillating Water Column with Artificial Stems
Fatih Cüneyd Korkmaz, Yildiz Technical University, Turkey; Ersegun Deniz Gedikli, University of Hawaii at Manoa, USA

Optimal Site Selection for Wave Energy Converter Installation on Pantelleria
Giulia Cervelli, Claudio Moscoloni, Giuseppe Giorgi, Giuliana Mattiazzo, Politecnico di Torino, Italy

Reconstruction of Typhoon Wind Field in the South China Sea: A Case Study during Typhoon Chaba [Proceedings only]
Caiyu Wang, Chen Gu, Shanghai Investigation, Design & Research Institute; Mengjiao Du, China Three Gorges Corporation; Yue Zheng, Bihong Zhu, Shu Dai, Shanghai Investigation, Design & Research Institute, China

16. COASTAL II: Wave Mechanics 2
Monday June 17 14:00 Nafsika B
Chair: Luca Martinelli, University of Padova, Italy

LES of the Turbulent Flow Outside and Inside an Artificial Reef on the Seabed
Georgios A. Leftheriotis, Hellenic Open University; Ioannis A. Sibetheros, University of West Attica; Athanassios A. Dimas, University of Patras, Greece

Wave-current Coupling Based on SWAN Wave Model and a Three-dimensional Nodal Discontinuous Galerkin Hydrodynamic Model
Zereng Chen, Qinghe Zhang, Jinfeng Zhang, Tongqing Chen, Tianjin University, China

Behavior Analysis of Open Ocean Water in the Seto Inland Sea by Using Particle Tracking
Chihiro Kashima, Yusuke Nakatani, Osaka University, Japan

The Generation of Multi-humped ISWs
Giovanni La Forgia, ISMAR-CNR; Giampiero Sciortino, University of Rome “Roma Tre”; Valentina Lombardi, ISPRA; Pietro Prestininzi, University of Rome “Roma Tre”, Italy

17. AST II: Collision, Impact
Monday June 17 14:00 Nefeli B
Chair: Gwangsoo Go, HD Hyundai Heavy Industries, Korea

Numerical Analysis on the Gas Replacement of LNG Cargo Operations
Gwangsoo Go, Cheonjin Park, Hoonkyu Oh, Byungki Choi, HD Hyundai Heavy Industries; Jiheon Ryu, HD Korea Shipbuilding & Offshore Engineering, Korea
The Effect of Cargo Hold Shape on the Vertical Dynamic Load due to Dry Bulk Cargo Based on 3D DEM-FEM
Wakaba Tsuruta, Fuminori Yanagimoto, Kinya Ishibashi, Nippon Kaisji Kyokai (ClassNK), Japan

Evaluation about Thermal Insulating Performance of Powder-type Insulation Materials
Kwangmin Bae, Kwanghyun Kim, Kyu Jin Juhn, Jaeho Lee, Dongju Lee, HD Korea Shipbuilding & Offshore Engineering; Juhong Kim, Joon Sang Kang, Korea Advanced Institute of Science Technology, Korea

18. POLAR TECH II: Ice Structure, Ice Breaking

Monday June 17 14:00 Nefeli A
Chair: Andrew T Metzger, U.S. Naval Academy, USA

A Rapid Method to Assess Ice-impact Tolerance of Non-ice-class Ships with Operational Insights: A Conservation of Energy Approach
Andrew T Metzger, Ahmed Ibrahim, United States Naval Academy, USA

Experimental Study on Impact Dynamic Response of Hull Grillage Structure under Multiple Ice Indenter Impacts
Junji Xiang, Tongqiang Yu, Kun Liu, Yaoyuan Zhang, Jiangsu University of Science and Technology, China

Resistance Investigation of Ship Navigating in Ice Floes Using CFD-DEM Coupling Method
Ying Kou, Xuhao Gang, Yukui Tian, China Ship Scientific Research Center, China

Repeated Ice Impacts Response Characteristics of PVC Foam Core Sandwich Plates
Wen Xiao, Yinggang Li, Yong Hu, Xiaobin Li, Wuhan University of Technology, China

Analysis of Ice-breaking Performance of Polar Ship in Broken Ice Area
Haoyun Gu, Ji Zeng, Shanghai Maritime University, China

Effect of In-Plane Compression on Interplay between Ice Compressive and Flexural Failure for Sloped Structures [Oral presentation]
R.S. Taylor, T. Anwar, Memorial University; J. Wang, National Research Council of Canada; J. Pinsent, Memorial University, Canada

19. HYDRODYNAMICS XVI: Sloshing Dynamics 2

Monday June 17 14:00 Exec. A
Chair: Se-Min Jeong, Chosun University, Korea

Scaling Laws for Experimental Characterization of Sloshing Effect in Liquid Hydrogen Tanks
Samuel Ahizi, Pedro A. Marques, Francisco M. F. Monteiro, Von Karman Institute, Belgium; Leo M Gonzalez, Universidad Politècnica de Madrid, Spain; Francesco Gambioli, Henning Scheufler, Ramón Abarca, Airbus Operations Ltd, UK; Miguel A. Mendez, Von Karman Institute, Belgium
Sloshing Effect on BOG/BOR in Cryogenic Liquid Storage Tank Using Multiphase-thermal Simulations
Se-Min Jeong, Chosun University; Gyu-Mok Jeon, Jong-Chun Park, Pusan National University; Sunho Park, Korea Maritime and Ocean University, Korea

Experimental Study on the Energy Dissipation Process of Wave-induced Fluid Resonance in Narrow Gap of Two Stationary Structures
Yu-qing Zhang, Shandong Jiaotong University; Xin-yu Wang, Fu Wang, Zi-bo Xia, Shao-dong Gong, Ocean University of China; Sheng-qiang Yin, Qingdao Water Conservancy Survey, Design and Research Institute Co; Shu-qing Wang, Ocean University of China, China

Investigating of Wave Slamming Loads on Cylindrical FPSO by Mooring Model Tests
Xueping Bai, Da Li, Cong Yi, Shenglei Fu, CNOOC Research Institute; Wenyue Lu, Shanghai Jiao Tong University, China

Numerical Study of Liquid Sloshing in Partially Filled Spherical Tanks under Different Excitation Parameters
Chengjiang Xiao, Shanghai Jiao Tong University; Jifei Wang, Shanghai Aerospace System Engineering Institute; Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong University, China

Jiawei Xiao, Shanghai Jiao Tong University; Xiao Wen, Marine Design and Research Institute of China; Jianhua Wang, Decheng Wan, Shanghai Jiao Tong University, China

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20. DEEP OCEAN MINING II: Deep Seabed and Environment 1
Monday June 17 14:00 Exec. B
Chair: Siva Rajesh, NIOT, India

Research on Measurement and Control System of Deep-sea Self-contained Static Cone Penetration Probe
Peng Zhou, Junrong Chen, Zhenwu Yu, Jin Guo, Hang Zhou, Ziqiang Ren, Bo Han, Jiale Wu, Jiawang Chen, Yulin Si, Zhejiang University, China

Experimental Methods for Measuring the Disturbance of Polymetallic Nodule Collecting on Deep-sea Sediments Ex-Situ
Guocheng Zhao, Longfei Xiao, Baiyuan Zhang, Shanghai Jiao Tong University; Lixin Xu, Jiangsu Marine Technology Innovation Center; Andrew Lipman, American Bureau of Shipping; Guobin Zhang, SJTU, China

Experimental Study on the Force Characterization of the Nodule in the Coandă-effect-based Hydraulic Collection
Zihan Liu, Longfei Xiao, Guocheng Zhao, Baiyuan Zhang, Shanghai Jiao Tong University, China

Design of a One-Button Dredging Fully Automatic Control System for Grab Dredgers
21. HYDRATES II: Methane Hydrates
Monday June 17 14:00  Exec. C
Chair: Yuhuan Bu, Qingdao University of Technology, China

Experimental Study on Hydrate Deposition and Blockage in Undulating Pipeline
Jihao Pei, Jiayi Shen, Jianbo Zhang, Zhiyuan Wang, China University of Petroleum (East China), China

Study of Hydrate Formation in Bubble Flow Considering Mass and Heat Transfer Interactions
Nan Ma, China University of Petroleum (East China); Wenguang Duan, Yang Zhao, PetroChina Dagang Oilfield Co; Jianbo Zhang, Peng Liu, Weian Huang, Zhiyuan Wang, China University of Petroleum (East China), China

Characterizing Hydrate Formation and Plugging in Water-dominated Bubbly Flow Containing Ethylene Glycol
Qingwen Kong, Peng Ji, China University of Petroleum (East China); Yang Zhao, PetroChina Dagang Oilfield Co; Jie Mu, Shandong Shihua Natural Gas Co; Weiqi Fu, China University of Mining and Technology; Jianbo Zhang, China University of Petroleum (East China); Zhiyuan Wang, Baojiang Sun, China University of Petroleum (East China), China

Method and Feasibility of Cementing Hydrate Layers to Ensure Safe and Long-lasting Production of Deepwater Oil and Gas Wells
Shengda Shen, Yuhuan Bu, Huajie Liu, China University of Petroleum (East China); Chang Lu, Qingdao University of Technology; Shenglai Guo, China University of Petroleum (East China), China

22. HYDRODYNAMICS II: Waves
Monday June 17 16:20  Athena
Chair: Julie Kristoffersen, Aarhus University, Denmark

Performance Study of Cost-effective LiDAR Instruments Measuring Breaking Surface Waves in a Laboratory
Julie Carøe Kristoffersen, Thomas Kabel, Christos Thomas Georgakis, Niranjan Desai, Aarhus University, Denmark

YunHo Kim, Korea Research Institute of Ships and Ocean Engineering; Heejin Kang, Korea National University of Science and Technology, Korea

**A Comparative Study between Wall-Resolved and Wall-Modeled Large Eddy Simulation of Turbulent Channel Flows**
Guoqing Fan, Shanghai Jiao Tong University; Jie Zhu, Wuhan Second Ship Design and Research Institute; Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong University, China

**Traveling Wave Solutions and Harmonic Solutions of Steady-state Capillary-gravity Waves in Deep Water**
Wenhao Cheng, Zeng Liu, Huazhong University of Science and Technology, China

**Research on a Fast Forecast Model of Ocean Wave Heights Based on Deep Learning Algorithms**
Haiyue Tan, CNOOC Research Institute; Heng Xiao, Beijing Normal University; Zhenya Song, Ministry of Natural Resources; Botao Xie, CNOOC Research Institute, China

**An Optimization Method of Intelligent Wave Prediction Models in Real Sea Area based on Frequency-band Proprocessing**
Hangyu Chen, Limin Huang, Xuewen Ma, Runsong Zhou, Shijie Wang, Harbin Engineering University, China

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**23. RENEWABLE ENERGY III: WEC 1**

**Monday June 17 16:20 Salon A**

**Chair:** George Aggidis, Lancaster University, UK

**Response of a U-Oscillating Water Column Installed in a Variable Bathymetry Region**
Kostas Belibassakis, Alexandros Magkouris, National Technical University of Athens, Greece; Giovanni Malara, Felice Arena, Mediterranea University of Reggio Calabria, Italy

**Numerical Study of the Hydrodynamic Performance of the Offshore Oscillating Water Column Device with Varying Tilt Angle**
Limin Song, Qiaorui Wu, Yonghe Xie, Zhejiang Ocean University, China

**Incorporating Objective Weights in the Risk Assessment of Wave Energy Converters**
Mitra Kamidelivand, Jimmy Murphy, University College Cork, Ireland; José Miguel Rodrigues, SINTEF Ocean; Paula B. Garcia-Rosa, SINTEF Energy Research, Norway; Giacomo Alessandri, VGA s.r.l. Engineering Innovations, Italy; Mairead Atcheson Cruz, Yavin Four Consultants, Portugal

**Study on Applicability of Floating OTEC Platform Configurations**
Hongrui Guo, Mingyue Liu, Shanghai Jiao Tong University; Jingjing Li, Shanghai Marine Equipment Research Institute; Lin Guo, Zoomlion Heavy Industry Science And Technology Co, China

**Optimizing Wave Energy Harvesting with Model-Free Reinforcement Learning [Proceedings only]**
Jiwen Song, CNOOC Information Technology Co; Haowen Su, Hao Qin, China University of Geosciences; Lin Mu, Shenzhen University, China

24. SPRU III: Riser—Catenary
Monday June 17 16:20 Salon B
Chair: A.M. Gresnigt, TU Delft, The Netherlands

Gimbal Joint Riser (GJR): Improvements in Steel Catenary Riser’s (SCR) Behaviour in Harsh Environments
Andre Ramiro Amorim, Peyman Asgari, Fernanda Cristina de Moraes Takafuji, Rodrigo Klim Gomes, Peter Tanscheit, Subsea7, Brazil

Dynamic Response of a Flexible Riser Undergoing Three-layered Internal Solitary Wave
Jinlong Duan, Zhan Wang, Zhan Wang, Jifu Zhou, Xu Wang, Mingzhu Wei, Inst. of Mech., CAS, China

Investigation of Steel Lazy Wave Riser during Prelay on Seabed
Song Liu, Yang He, Ye Chen, Jianwen He, Zhen Tian, Offshore Oil Engineering Co, China

Approaches for Resilience Assessment of Steel Catenary Riser Based on Dynamic Bayesian Networks
Xueying Chang, Zhengwei Zhang, China Ship Scientific Research Center; Yang Yu, Jingyi Wu, Tianjin University; Qun Cao, China Ship Scientific Research Center, China

25. OFFSHORE MECHANICS I: Install, Floating Bridge, Tunnel 1
Monday June 17 16:20 Nafsika A
Chair: Yongjun Chen, Bechtel Energy, USA

Building Submerged Floating Tunnel in Kanas Lake
Wei Lin, University of Melbourne, Australia; Lingfeng Liu, CCCC Guangdong-Hong Kong-Macao Greater Bay Area Innovation Research Institute, China; Yinghui Tian, Mark Cassidy, University of Melbourne, Australia

Research on the Hydroelastic Responses and Connector Forces of a Floating Bridge in Frequency Domain
Yuji Miao, China Ship Scientific Research Center; Xujun Chen, PLA Army Engineering University; Xinyun Ni, Zhenwang Li, China Ship Scientific Research Center; Junyi Liu, PLA Army Engineering University, China

Optimizing Onsite Installation Methods for Floating Offshore Wind: Effect of Lifting Arrangement Strategies and Mechanical Damping on Relative Motion Reduction
Sunghun Hong, Houxiang Zhang, Karl Henning Halse, Norwegian University of Science and Technology, Norway

26. COASTAL III: Structures
Monday June 17 16:20 Nafsika B
Chair: Thomas Mazarakos, University of West Attica, Greece
Wave-Induced Forces on Composite Vertical Breakwaters with Retreated Crown Wall
Matteo Centorami, Alessandro Romano, Claudia Cecioni, Giorgio Bellotti, Leopoldo Franco, Università degli Studi Roma TRE, Italy

Hydrodynamic Performance of an Array of Truncated Cylinders in Front of Different-Shape Vertical Walls
Thomas P. Mazarakos, University of West Attica, Greece

Attenuation Capacity a Novel Multi-cylindrical Floating Breakwater
Luca Martinelli, Omar Mohamad, Matteo Volpato, Chiara Favaretto, Piero Ruol, University of Padova; Manuele Aufiero, Sizable Energy Srl, Italy

Numerical Simulation and Experimental Test of Extreme Waves Interaction with Novel Cylindric-type Breakwater [Oral presentation]
Tianyu Zheng, Southeast University; Wei Liu, CCCC Guangdong-Hong Kong-Macao Greater Bay Area Innovation Research Inst, China

Updates to Tsunami Design in ASCE 7-22
Ian Nicol Robertson, University of Hawaii, USA

Comparative Analysis Framework for Route-Based Fuel Oil Consumption
Seyong Jeong, Joonghoo Park, Hyungtaek Kim, HD Korea Shipbuilding & Offshore Engineering, Korea

Optimization of Resistance Performance of Semi-Small Waterplane Area Twin-Hull
Xuyu Ouyang, Zhailiu Hao, Shuwen Shi, China Ship Scientific Research Center, China

A Numerical Study on Estimating the Minimum Required Power in Adverse Conditions Considering Short-Crested Irregular Wave Conditions
Myeong-Min Kim, Kwang-Jun Paik, Soon-Hyun Lee, Jun-Hee Lee, Inha University, Korea

Experimental Study of Influence of Bubble Flows on Plate Flow Field in Shallow Water Environment
Qidi Gao, Jianhua Wang, Decheng Wan, Shanghai Jiao Tong University, China

Study on the Impact of Cargo Capacity and Voyage on Battery Capacity Configuration of Inland Hybrid Electric Ships [Proceedings only]
Bao Zhang, Lizheng Wang, Wuhan University of Technology; Zhenguo Zou, Liuyong Huang, Changsha Waterway Service Center; Hao Wang, Zhen Zhang, Yan Jin, Wuhan University of Technology, China

28. POLAR TECH III: Ice Management, Forecast, Towing
Large Deformation Finite Element Analyses to Evaluate the Influence of the Ice Gouging Process on Buried Pipes
Orestis Zarzouras, Raian Sharif, CATHIE Group, Belgium; George E Varelis, Anne Briffett, Worley, UK

A New Coupled Modeling System Developed for Arctic Sea Ice Prediction [Oral presentation]
Jiping Liu, Chao-yuan Yang, Sun Yat-sen University, China

Estimation of Landfast Ice Occurrence Frequency in the Laptev Sea Based on the Polygons Analysis of Electronic Ice Charts
Anna B Timsfoeveva, Arctic and Antarctic Research Institute; Ruslan I May, Krylov State Research Center; Andrey V Rubchenia, State Oceanographic Institute, Russia

Fine Simulation and Parameter Zoning of Sea Ice in Bohai Sea under Climate Change
Botao Xie, Hang Sun, Qi Zhang, CNOOC Research Institute; Junrong Wang, Ocean University of China, China

Ethical Perspectives Integration in Crisis Management in Complex Environments
Mohsen Vahhabi, Abbas Barabadi, Ali Nouri Qarahasanlou, Javad Barabady, UiT The Arctic University of Norway, Norway

Rodrigo Ezeta Aparicio, MARIN, Netherlands; Anaïs Messaoudi, Nicolas Couty, Nicolas Couty, Laurent Brosset, GTT, France

Thibault Laurent, GTT, France; Rodrigo Ezeta Aparicio, MARIN, Netherlands; Cyprien Marion, Nicolas Couty, Laurent Brosset, GTT, France

CFD Simulation of Breaking Waves Created by Wave Maker and Comparison with Experimental Results – Consideration of Free Surface Instabilities [Oral presentation/Under review for Journal]
Stéphane Etienne, Cédric Béguin, Ecole Polytechnique de Montréal, Canada; Nicolas Couty, Laurent Brosset, GTT, France

Simulation of Liquid Hydrogen Wave Impacts on a Corrugated Membrane
Charles Audiffren, Julien Nugue, Richard Mercer, PRINCIPIA; Nicolas Couty, Thibault Laurent, Gaztransport & Technigaz, France

30. DEEP OCEAN MINING III: Deep Seabed and Environment 2
Observation and Modeling of Flow in a Deep-Sea Seamount for Environmental Assessment of Cobalt-Rich Crusts Mining
Naoki Saito, Masayuki Nagao, Atsushi Suzuki, National Institute of Advanced Industrial Science and Technology; Hiroko Kamoshida, Japan Organization for Metals and Energy Security, Japan

Sediment Plume Generation by Deepsea Mining Vehicles: A Discrete Phase Model Based on Investigation of the Effect of Relative Dimensions
Shihang Liu, Jianmin Yang, Haining Lu, Pengfei Sun, Bei Zhang, Shanghai Jiao Tong University, China

Effect of Inclination Angle on Particle Dynamics and Energy Dissipation in Dense Pipe Particulate Flows
Yan Zhang, Wanlong Ren, Xuhui Zhang, Xiaobing Lu, Inst of Mech, CAS, China

Peng Jin, Xiaodan Mao, Jifu Yin, Feixin Wang, Guojun Hong, National Engineering Research Center of Dredging, China

Study on Production Behaviour of Gas Hydrates during Depressurization under Different Ambient Temperature by Numerical Simulation
Ye Chen, Ning He, Song Liu, Zhen Tian, Hui Wang, Jiawen He, Offshore Oil Engineering; Yonghai Gao, China University of Petroleum (East China), China

Cementing Integrity Evaluation of Lingshui 25-1 Deepwater High-Pressure Gas Well
Yi Wu, Jianliang Zhou, Jin Yang, China University of Petroleum (Beijing); Wei Qin, Tianwei Zhang, CNOOC Research Institute, China

Research and Evaluation of a Plugging System with Integrated Cementing and Bridging Properties
Qianrong Sa, Sinopec Zhongyuan Petroleum Engineering Co; Xu Jiang, Hui Yin, China University of Petroleum (East China); Xiaolong Ma, Jiansheng Zhao, Sinopec Zhongyuan Petroleum Engineering Co; Yuhuan Bu, Shenghai Guo, Huajie Liu, China University of Petroleum (East China);

Numerical Simulation Study on Hydraulic Fracturing in Marine Hydrate Reservoir
Xiaoyang Li, Chinese Academy of Geoscience; Shiyu Zhang, Jilin University; Shanshan Shi, Jixiu Wu, Chinese Academy of Geoscience; Yinong Ma, Jilin University; Yingli Wang, Chinese Academy of Geoscience, China
Study on Cementing Prefluids for Improving Interfacial Bonding Quality
Siqi Tu, Yangtze University College of Resources and Environment; Wei Hou, Jiandong Wang, CNPC Tianjin Boxing Engineering Science & Technology; Hongjing Zhao, Yangtze University College of Resources and Environment; Shuang Zou, Fuquan Sun, Feiyan Xie, Tianyi Zhang, CNPC Tianjin Boxing Engineering Science & Technology; Mingming Zhu, CNPC Chuanqing Drilling Engineering Co; Yayun Shen, CNPC Tianjin Boxing Engineering Science & Technology, China

Analysis and Research on the Contamination Mechanism of Cement Slurry and Sulfonated Drilling Fluid
Biao Wang, CNPC Tianjin Boxing Engineering Science & Technology Co; Zongfei Liu, PetroChina Tarim Oilfield Co; Lingxiao Zhao, Lei Yang, CNPC Tianjin Boxing Engineering Science & Technology Co; Lv-chao Yang, PetroChina Tarim Oilfield Co; Yuan-bo Xia, Jian-dong Wang, CNPC Tianjin Boxing Engineering Science & Technology Co, China

TUESDAY 08:00

32. HYDRODYNAMICS III: Waves & Forces 1

Tuesday June 18 08:00 Athena

Chair: Kei Sugimoto, ClassNK, Japan

A Practical Method of Predicting Wave-induced Steady Forces and Yaw Moment Acting on a Ship Advancing in Oblique Waves
Ryosuke Suzuki, National Maritime Research Institute, Japan

Grid Resolution Requirements for Wall-Resolved Large Eddy Simulation of Wall Pressure Fluctuations in Turbulent Channel Flow
Yihang He, Shanghai Jiao Tong University; Fuchang Zhou, Wuhan Second Ship Design and Research Institute; Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong University, China

Development of Practical Simplified Formula of Wave Pressure in Equivalent Design Wave
Kei Sugimoto, Kyohesi Shinomoto, ClassNK; Sadaoki Matsui, National Maritime Research Institute, Japan

Load Calculation of Cylinder Moving in Waves
Jing Li, Junyi Wang, Xianzhuo Wang, Huazhong University of Science and Technology; Qing Wang, Wuhan Second Ship Design and Research Institute, China

Numerical Prediction of Wave Loads by Direct Hydrodynamic Pressure-integration and Elastic Mode Superposition Method
Mingyang Chen, Peng Yang, Huazhong University of Science and Technology, China

Hydrodynamic Performance of Undulating Fins under Flow Excitation Near the Free Surface
Chenxiang Liu, Chenglong Wang, XianTao Zhang, Shanghai Jiao Tong University, China; Wenhua Zhao, University of Western Australia, Australia
33. RENEWABLE ENERGY IV: WEC 2
Tuesday June 18 08:00 Salon A
Chair: Chun-Han Ko, National Chung Hsing Univ, Taiwan China

Experimental Study of Wave Pressure on Breakwater-integrated OWC Wave Energy Converter
Ching-Piao Tsai, Chun-Yu Fan, Ying-Chi Chen, Chun-Han Ko, National Chung Hsing University, Taiwan China

Digital Twin Supported Structural Health Monitoring of Test Rigs for Wave Energy Applications
Terje Rølvåg, SINTEF Ocean, Norway; Giaocomo Alessandri, VGA S.r.l., Italy; José Miguel Rodrigues, SINTEF Ocean, Norway; Bjørn Haugen, NTNU, Norway

On the Role of Modelling Uncertainty in Optimal Control and Performance Assessment of Wave Energy Conversion Systems
Nicolas Faedo, Maria Luisa Celesti, Politecnico di Torino, Italy

Structural Optimization for the Hawai‘i Wave Surge Energy Converter Comparing Experimental and Simulated Results
Kyle Anthony Pappas, Patrick S. Cross, Ersegun Deniz Gedikli, University of Hawai‘i at Manoa, USA

Stabilisation and Energy Absorption Control for Wind-Wave Hybrid Platforms: A Generalised LQG Approach
Maria Luisa Celesti, Nicolas Faedo, Giuliana Mattiazzo, Politecnico di Torino, Italy

34. SPRU IV: Subsea—Infrastructure
Tuesday June 18 08:00 Salon B
Chair: Ping Liu, Worley Offshore Energy, The Netherlands

Perspectives and Investigations on Re-purposing of Large Diameter Offshore Pipelines for H₂ Transport
Lars Magne Haldorsen, Equinor ASA, Norway; Xing Sun, TWI, UK; Jørund Fonneland, Gassco AS, Norway

Pipeline Crossing Optimization Design
Xuexin Dai, Khac Kien Vu, Subsea7, Singapore; Rejukumar Nediyam Paramabath, Mohd Fadhil Jamirin, Subsea7, United Arab Emirates; M Faizal Chenoth T, Subsea7, Singapore

Design and Risk Analysis of Anchor Impact on Protection Structure for Subsea Production System
Hui Zhang, CNOOC Research Institute; Zhihao Gao, Rui Li, China University of Petroleum (Beijing); Xiaolei Wang, CNOOC Research Institute; Fuheng Hou, Shengjun Chen, Weidong Zhang, China University of Petroleum (Beijing), China

Experimental Investigation on Effectiveness of Gravel Backfilled Offshore Pipeline Protection against Anchor Dragging
Jun Huang, CNOOC Research Institute; Yi Wang, China University of Petroleum (Beijing); Liwei Li, CNOOC Research Institute, China
Risk Assessment Methods for Water Supply Pipeline Networks in Coastal Cities Under Ground Settlement are Investigated through a Case Study in Shanghai
Qiuping Wang, Shuguang Liu, Guihui Zhong, Lei Lu, Shengxin Xu, Yu Liu, Tongji University, China

Investigation on the Coupling Dynamic Response of Dynamic Positioning Crane Vessel and Offshore Platform Topside during Lifting Operations
Xuexian Liang, Bing Li, Huaimiang Li, Offshore Oil Engineering; Xiaodong Bai, Hanbing Luo, Guangqi Yao, Tianjin University, China

Experimental Investigation on the Dynamic Response of the Continuous Floatover Load Transfer Operations for Mega Topsides
Weiwei Xie, Licheng Qin, Xinchao Li, Offshore Oil Engineering; Xiaodong Bai, Hanbing Luo, Xuan Wu, Tianjin University, China

Influence of Various Factors on the Structural Stability of Conductors during Piling
Jiakang Wang, Jin Yang, Qianling Xue, Zhan Yang, Mingyu Ma, Hongyu Wan, China University of Petroleum (Beijing), China

Hydraulic Character of Floaters of High Way above Sea
Chengjun Li, Yufan Zhang, Yong Zhang, Marine Design & Research Institute of China; Pu Wang, China Offshore Engineering & Technology, China

Duration Prediction of Ship Lifting Machine Based on LIWOA Optimal Neural Network [Proceedings only]
Zhi-wei Fan, Yan Jin, Wuhan University of Technology; Xin Meng, Three Gorges Navigation Authority; Liang Luo, Li-zheng Wang, Hao Yuan, Wuhan University of Technology, China

Intercomparison of Global Wave Reanalysis Products. Revisited
Christos Stefanakos, SINTEF Ocean, Norway

Comparative Analysis of Wave Data Assimilation Techniques for OI and EnOI on the Wave Model in Nearshore and Offshore Areas
Hanna Kim, Kyeong Ok Kim, Korea Institute of Ocean Science and Technology; Young Ho Kim, Pukyong University; Taemin Ha, Kangwon National University; HaJin Kim, Korea Institute of Ocean Science and Technology, Korea

Advancing Coastal Safety: HPC-based Early Warning System in Gulf of Naples
Aniello Florio, Diana Di Luccio, Ciro Giuseppe De Vita, Guido Benassai, University of Naples Parthenope, Italy

**Accuracy of 3D Models of Coastal Facilities Created from Aerial Photographs Captured by UAV**
Daiki Satomura, National Institute for Land and Infrastructure Management, Japan

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### 37. AST IV: Ultimate Strength

**Tuesday June 18 08:00 Nefeli B**

**Chair:** Chong Ma, National Maritime Research Institute, Japan

**Nonlinear Numerical Simulation on Ship Structural Response Based on SPH Method**
Chong Ma, Masayoshi Oka, National Maritime Research Institute, Japan

**The Ultimate Strength of Sandwich Plates under in-plane Compressive Load Based on Submodel Method**
M.J. Zhao, D.Y. Wang, C.T. Li, Shanghai Jiao Tong University, China

**Experimental and Nonlinear Numerical Analysis of Ultimate Strength of Hull Structures Subjected to Vertical Bending Moment**
Diyi Chen, South China University of Technology; Xin Lu, CSSC Guangzhou Huangpu Shipbuilding Co; Yang Qu, South China University of Technology; Zhao Wang, Southern University of Science & Tech; Baoyang Geng, Weihai Vocational College, China

**Dynamic Ultimate Strength of Rectangular Plate Considering Parameter Instability**
Zhongyuan Ma, Zhiyong Pei, Bin Yang, Qingning Yuan, Tianchen Li, Weiguowu, Wuhan University of Technology, China

**Research on Structure Design and Material Selection of the Truss Type Vent Mast**
Xiaobing Kong, Fengchao Yan, Xudong Wu, Ding Zhang, Qingzhi Tang, Marine Design & Research Institute of China, China

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### 38. POLAR TECH IV: Arctic Transport, Propulsion I

**Tuesday June 18 08:00 Nefeli A**

**Chair:** Ove T. Gudmestad, Univ of Stavanger, Norway

**Enhancing Energy Efficiency and Transient Reliability through Optimal Design of a Hybrid Power System for an Icebreaker Ship**
Shen Wu, Tie Li, Run Chen, Ping Yi, Liang Li, Bin Wang, Shanghai Jiao Tong University, China

**Three-dimensional Simulations of Tsunamis Induced by Rigid Landslide by Resolved MPS-DEM Method**
Fengze Xie, Shanghai Jiao Tong University; Jifei Wang, Shanghai Aerospace System Engineering Institute; Decheng Wan, Shanghai Jiao Tong University, China

**A Numerical Analysis of Ice Load on Ship Structures Based on a Power-law Distribution of Ice Floe Size**
39. HYDRODYNAMICS XVIII: VIV 1
Tuesday June 18 08:00 Exec. A
Chair: Howard H Chung, formerly Argonne National Lab, USA

A Comparative Study of Different Artificial Neural-Network Architectures in the Prediction of Riser VIV
Maokun Ye, Shanghai Jiao Tong University; Chunhui Ma, Nantong University; Decheng Wan, Shanghai Jiao Tong University, China; Hamn-Ching Chen, Texas A&M University, USA

Active Flow Control of Hydrodynamic Characteristics around a Square Cylinder with Symmetric Synthetic Jets
Hao Ding, Mingyue Liu, Shanghai Jiao Tong University; Jihui Zhou, System Design Institute of Hubei Aerospace Technology Academy; Shenglong Zhu, Shanghai Jiao Tong University, China

Experimental and Numerical Study on Vortex-Induced Motion of a Platform with Motion Suppression Structure
Yanqi Zhu, Xiaofeng Kuang, Zhanhua Zhao, China Ship Scientific Research Center; Hongtao Yuan, Shanghai Waigaoqiao Shipbuilding Co, China

Numerical Simulation of Three-dimensional and Two-dimensional NACA0009 Hydrofoils with Different Oblique Truncation Ways
Tonghua Chen, Wei He, Qian Liu, Wuhan University of Technology, China

40. DEEP OCEAN MINING IV: Hydraulic Lift and Pipe
Tuesday June 18 08:00 Exec. B
Chair: C. Janarthanan, National Inst of Ocean Technology, India

Experimental Study of Closed-circulation Ore Lifting System and Hydraulie Ore Injector for Seafloor Massive Sulfide Mining
Kiyotaka Orita, Seiya Kawano, Tatsuya Shinkawa, Japan Organization for Metals and Energy Security; Hideaki Asai, Masahiro Masuda, Atsushi Takata, Mitsubishi Heavy Industries; Masao Shimokawa, Mitsubishi Shipbuilding Co, Japan

Ore Particle Transportation Characteristic in Deep-sea Mining Pump under Bad Conveying Conditions [Proceedings only]
Liwen Deng, Haining Lu, Jianmin Yang, Bei Zhang, Pengfei Sun, Rui Qin, Shanghai Jiao Tong University, China

Numerical Simulation Study on the Influence of Power Source Parameters on the Characteristics of Collecting Flow Field Based on Overset Mesh [Proceedings only]
Bei Zhang, Haining Lu, Jianmin Yang, Pengfei Sun, Shanghai Jiao Tong University, China

41. DRILLING & COMPLETION II: Wellhead/Cementing 2
Tuesday June 18 08:00 Exec. C
**Chair:** Xiaoyang Li, Chinese Academy of Geoscience, China

**Scheme Design of Annular Pressure Control by Rupture Disk Technology**
Gang Wang, CNPC Engineering Technology R&D Co; Shengming Lv, China National Oil and Gas Exploration and Development Co; Ying Xiang; Yuhan Liu, CNPC Engineering Technology R&D Co; Yu Ye, Fei Ji, China National Oil and Gas Exploration and Development Co; Tao Zhou, Quanyu Jiang, CNPC Engineering Technology R&D Co; Jinyan Cao, China University of Petroleum (Beijing), China

**A Wellhead Lift Model for Deep-water High Temperature and High Pressure Wells Considering Casing Thermal Stresses**
Lei Li, Jin Yang, Mengke Dong, Tiancong Cui, XinYue He, JiaHao Li, China University of Petroleum (Beijing), China

**Application of Secondary Cementing Technology in Shale Gas Casing Damage Wells**
Kunpeng Yang, CNPC Tianjin Bo-Xing Engineering Science & Technology Limited Co; Liang Zhao, Baoyu Sun, Kai Chen, Shuhai Zhao, Tao Jiang, Wenming Liu, Yufeng Dang, Yue Li, GWDC Cementing Services Co, China

**Research and Application of Managed Pressure Well Cementing Technology of Ultra-deep Wells in Tarim Fuman Oilfield**
Ling-Xiao Zhao, Jian-Dong Wang, Biao Wang, CNPC Tianjin Boxing Engineering Science & Technology; Gang Yu, CNPC Tarim Oilfield Co; Peng-Xiao Li, Yuan-Bo Xia, CNPC Tianjin Boxing Engineering Science & Technology, China

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**TUESDAY 10:30**

42. HYDRODYNAMICS IV: Waves & Forces 2
Tuesday June 18 10:30 Athena

**Chair:** Panos Skarlas, Worley UK, UK

**Numerical Evaluation of Hydrodynamic Forces on Bottom-Mounted Subsea Cables**
Panagiotis Skarlas, Hossam Ragheb, Georgios E Varelis, Worley; Dominic van der A, University of Aberdeen, UK; Panagiotis Delizisis, Asso Subsea S.A., Greece

**Research on the Influence of Wing Edge Sharpness on the Hydrodynamic Performance of a Sagging Plate**
Yajiao Liu, Peilin Dou, Xiu Li, Jiangsu University of Science and Technology, China

**Estimating Wind Drag Coefficient Acting on a Large Surface Area Ship Using CFD**
Ngo Van He, Hoang Cong Liem, Hanoi University of Science and Technology, Vietnam

**A Study on Mesh Sensitivity for Quadratic Transfer Functions of Wave Forces and Moments on a Vessel**
Research on the Resistance Components and Deck Wetting of a Submersible Surface Vessel (SSV) Based on CFD
Duanfeng Han, Yuliang Wu, Chunhui Wang, Fenglei Han, Liangtian Gao, Jiawei Zhang, Harbin Engineering University, China

An In-House Developed Software Tool for Modelling Installation Analysis of a Deepwater Suction Pile [Oral presentation]
Lucas do Vale Machado, Subsea7, Brazil; Anbin Wang, Subsea7, France; Daniela Bark, Subsea7, Brazil

43. RENEWABLE ENERGY V: WEC 3
Tuesday June 18 10:30 Salon A
Chair: Terje Rølvåg, SINTEF Ocean, Norway

Experimental Study on the Hydrodynamics of Oscillating Surge WEC with Different Power Take-Off Damping
John Samuel, Madjid Karimirad, Gautam Baruah, Queen's University Belfast, UK

Numerical Simulation of Wave Loads on a 3D Land-fixed OWC Wave Energy Converter
Yawei Sun, Dalian University of Technology; Ming Qin, China Three Gorges Corp; Dezhi Ning, Robert Mayon, Dalian University of Technology, China

Analysis of a Piezoelectric Floating System for Wave Energy Harvesting in Coastal Area
Daniele Dessi, Fabio Passacantilli, Andrea Cucco, Giovanni Quattroccoli, National Research Council, Italy

Performance Assessment of a Parametric-Resonance Wave Energy Converter: Change of Instability Intensity Going from Regular to Irregular Waves
Giuseppe Giorgi, Marine Offshore Renewable Energy Lab, Politecnico di Torino, Italy

Second-Order Forces on a Cylindrical Wave Energy Converter Using Theoretical, Numerical and CFD Formulations
Panagiotis Delizisis, Dimitrios N. Konispoliatis, Spyridon A. Mavrokos, Ioannis K. Chatjigeorgiou, National Technical University of Athens, Greece

Integrative Simulation Analysis of Multi-floating Wave Energy Converter Based on Simulink
Shuo Huang, Xuelian Tang, Kai Wang, Kaisheng Wen, Sun Yat-sen University, China

44. SPRU V: Subsea, Installation
Tuesday June 18 10:30 Salon B
Chair: Frank Lim, 2H Offshore, UK
Linking J-lay Installation Strain & In-place Behaviour of Deepwater Pipe-in-pipe Systems
Bertrand Delrieu, Simon Grevet, Eric Giry, Diego Pavone, Saipem SA, France

Pipeline Installation Challenges and Design Optimization for Ultra-Deep Water: Case Study of S-lay and J-lay Methods
Jihan Herdiyanti, Per R Nystrøm, IKM Ocean Design, Norway

Residual Curvature Method Design for Flowline Installation In Ultra-Deep Water
Julien Caine, TechnipFMC, UK; Alexandre S Hansen, Petrobras, Brazil; Mahir Abdullayev, TechnipFMC, UK; Adel Jebali, TechnipFMC, France; Ludovic Krauss, TechnipFMC, UK; Rafael F Solano, Petrobras; Jonylson Amarante, TechnipFMC, Brazil

Installation of Synthetic Mooring Lines Using Flexlay Vessels
Nicolas Chazot, SAIPEM, France; Hubert Cheverry, SAIPEM, USA; Gregory Germain, SAIPEM, France; Karel Devos, Bexco, Belgium; José Canedo, Lankhorst, Portugal

Model-Based Control System Design for Subsea Umbilical Installation
Felix S Rantow, Engineering Training LLC, USA

45. OFFSHORE MECHANICS III: Jackup, Fixed Struct 1
Tuesday June 18 10:30 Nafsika A
Chair: Jason Liu, COOEC, China

Modified Acceptance Criteria for Extreme Storm Conditions for Fixed Offshore Structures in Malaysian Waters
Riaz Khan, Luong Ann Lee, Sok Mooi Ng, Petronas Carigali Sdn Bhd, Malaysia; Paul Frieze, Timbul Suryatin, Nigel Wayne Nichols, PAFA Consulting Engineers, UK

Analysis on Breakout Force of Jack-up Platform
Qishuai Yin, Qianling Xue, Jin Yang, Jiakang Wang, China University of Petroleum (Beijing); Baojian Yang, CNOOC China, China

Integration Technology and Application of Fast Flushing Pile for Jack-Up Drilling Platform
Baojian Yang, Zhuangwei Li, Nan Jin, CNOOC; Xiaotong Zhou, Bin Zhao, Zhengqiang Zhao, CNOOC EnerTech-Drilling & Production Co; Wenlong Li, CNOOC; Shu Jia, China University of Petroleum (Beijing), China

New Site Specific CPT-based Suction Bucket Jacket Installation Coefficients from Field Measurements
Lorenzo Zuccarino, Carlo Brandolini, Claudio Piatti, Geowynd SRL; Domenico Gioffrè, Università degli Studi di Pavia, Italy

Research on Remote Monitoring System of Marine Simulation Platform Based on Land and Sea Integration
Jin Shi, Zhejiang Ocean University; Zailiang Liu, Zhejiang International Maritime Vocational and Technical College; Yonghe Xie, Marine Design and Research Institute of China; Detang Li, Zhejiang Ocean University, China

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Research on the Construction Method of Neural Network-based Surrogate Model for Wave Load Prediction of Offshore Platforms [Proceedings only]
Bingquan Yang, Jingxi Liu, Huazhong University of Science and Technology, China

46. COASTAL V: Coastal Processes
Tuesday June 18 10:30 Nafsika B
Chair: C Michailides, International Hellenic Univ, Greece

Constructing Digital Surface Terrain Models on Algal Reefs and Stone Tidal Weirs with UAV Techniques in Coastal Zones [Oral presentation]
Zhi-Cheng Huang, National Central University, Taiwan China

An Empirical Study on Wave Attenuation by a Dry Type of Vegetative Floating Island
Yuan-Jyh Lan, Chia-Hsuan She, Xiang-Lei Jui, Cheuk Yin Fan, Jen-Yen Pai, National Taiwan Ocean University, Taiwan China

A Numerical Model for Landslide Tsunami Hazard Assessment
Claudia Cecioni, Giorgio Bellotti, Roma Tre University, Italy; Stephan T Grilli, Rhode Island University, USA

The Influence of Soil Bed Response on the Vegetation Wave Absorption [Proceedings only]
Jun Zhang, Yingbiao Shi, Zhejiang Institute of Hydraulics & Estuary; Lizhu Wang, Nanjing Normal University, China

47. AST V: ACV
Tuesday June 18 10:30 Nefeli B
Chair: Dario Boote, University of Genova, Italy

Effect of Flexible Skirt Free Floating in Water on ACV Water-borne Stability
Zongke Zhang, Haipeng Zhang, Marine Design & Research Institute of China; Yujia Tang, Shanghai HaiXun Mechanical and Electronic Corp; Yifan Xiong, Shengjie Xu, Marine Design & Research Institute of China, China

Research on the Shape Calculation of an Air Cushion Vehicle Skirt with back-to-back Fingers by the Finite Element Method
Shengjie Xu, Yuyao Yang, Yifan Sun, Yujia Tang, Marine Design & Research Institute of China; Xiaocheng Yuan, Tianjin Rubber Industry Institute Co; Zongke Zhang, Marine Design & Research Institute of China, China

Transformation of a Light Alloy Patrol Vessel into a Composite Pleasure Yacht
Dario Boote, Gianmarco Vergassola, University of Genova; Venus Hydar, Azimut – Benetti Research and Development, Italy

48. POLAR TECH V: Arctic Transport, Propulsion 2
Tuesday June 18 10:30 Nefeli A
Chair: Ivana Kubat, National Research Council Canada, Canada

Enhanced Horizontal Hover Control for AUV in Polar Environments
Peiyan Gao, Yuliang Wang, Yiping Li, Shuxue Yan, Shuo Li, Shenyang Inst. of Automation, CAS, China

Summary of Safety Research on Ships Sailing in Inland Ice Area
Kai Yang, Guoqing Feng, Harbin Engineering University, China

Numerical Study of Ice Resistance for an FPSO Model Ship in an Ice Floe Channel under Constant Speed
Jing Yuan, Guiyong Zhang, Dalian University of Technology, China

A Dynamics-constrained Rapid Path-planning Method for Shipping in Arctic Waters
Youguo Sun, Da Wu, Jinfen Zhang, Wuhan University of Technology, China; Xiao Lang, Jonas W Ringsberg, Wengang Mao, Chalmers University of Technology, Sweden; Meng Cui, Marine Design and Research Institute of China, China

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49. HYDRODYNAMICS XIX: VIV 2
Tuesday June 18 10:30 Exec. A
Chair: Rodolfo T. Gonçalves, University of Tokyo, Japan

Optimizing VIV Strakes Arrangements for Rigid Risers: A Study in the Brazilian Ultra-Deepwater Field
Diego Garcia Barroso, Felipe Oliveira Ribeiro, Mohammad Mobashramini, Subsea7, Brazil

Application of IMUs in Vortex-Induced Vibration Monitoring of Flexible Structures
Aline Leal de Lima Gontarski, São Paulo University; Luiz Guilherme de Oliveira Appel, Alexandre Mikowski, André Luis Condino Fujarra, Federal University of Santa Catarina; Carlos Alberto Duarte de Lemos, Petrobras, Brazil; Rodolfo Trentin Gonçalves, Hideyuki Suzuki, University of Tokyo, Japan

Modal Decomposition Analysis of Two-Degree-of-Freedom Vortex-Induced Vibrations
Erdem Aktosun, İzmir Katip Çelebi University, Turkey; Ersegun Deniz Gedikli, University of Hawaii at Manoa, USA

Vortex-Induced Vibration of a Power Cable Extending from the Offshore Wind Turbine Foundation
Chi Yu, Yong Yao, Zhichao Wu, Yuqi Liu, Li Li, Guangdong Energy Group Science and Technology Research Institute Co; Sheng Zhang, Cheng Zhang, South China University of Technology, China

Experimental Investigation on Vortex-Induced Vibration of a Rigid Cylinder Attached with Fixed Fairing Under Different Inflow Angles
Zhibo Niu, Shanghai Jiao Tong University; Jing Hou, Xianhong Feng, CNOOC Research Institute; Yaopeng Chu, China Power Complete Equipment Co; Shixiao Fu, Mengmeng Zhang, Jiawei Shen, Yilong Hua, Shanghai Jiao Tong University, China
50. MECHANICS I: Risk and Reliability 1
Tuesday June 18 10:30 Exec. B
Chair: Yunho Kim, KRISO, Korea

Ensuring Mechanical Integrity in Liquified Petroleum Gas and Liquified Natural Gas Facilities
Brian A. Ott, Laurent Delafontaine, Nick Welchert, Ali Reza, Exponent, USA

Resistance Of Lockbolt Systems Made from Carbon and Stainless Steel Subjected to Combined Tension and Shear Loading
Alexander Holch, Fraunhofer IGP; Ralf Glienke, University of Applied Sciences Technology, Business and Design; Maik Dörre, Fraunhofer IGP; Knuth-Michael Henkel, University of Rostock, Germany

Equivalent Static Design Load for Helicopter Landing Deck
Zhihan Guo, Ling Zhu, Wei Cai, Wuhan University of Technology; Shaoing Dai, Weihai Huanghai Shipbuilding Co, China

Safety Evaluation of Shield Tunnel Lining Structure under High Earthquake During Water Filling Operation
Mingliang Tie, China Petroleum Pipeline Engineering Co; Mingming Zhu, CNPC Chuansheng Drilling Engineering Co; Jinrui Niu, Pengliang An, China Petroleum Pipeline Engineering Co; Linlin Ma, Langfang Traffic Highway Engineering Co, China

51. DRILLING & COMPLETION III: Ocean and Polar
Tuesday June 18 10:30 Exec. C
Chair: Zunzhao Li, SINOPEC Research Inst of Petroleum and Petrochemicals, China

Vertical Position Prediction Method of Riser RCD for Deepwater Managed Pressure Drilling under Random Wave and Platform Surge Motion
Yuanjiang Chang, Xiuquan Liu, Lei Xu, Chao Wang, China University of Petroleum (East China); Bin Chen, Kunxiang Liu, China National Offshore Oil Corporation China

Numerical Simulation of Shallow Gas Blowout in Polar Drilling
Li Li, Qishuai Yin, Long Cheng, China University of Petroleum (Beijing); Ke Ke, Lei Wang, Zhiqiang Hu, SINOPEC Research Institute of Petroleum Engineering Co, China

Altering of the Rheological Behavior of Drilling Fluids by Adding Nanoparticles
Xinghui Tan, Zhangyong Jin, Dongqing Ma, Jian Huang, Yuan Lin, Zhejiang University, China

Study on the Theoretical Model of the Equation of State of Soluble Gas Foam
Zunzhao Li, SINOPEC (Dalian) Research Institute of Petroleum and Petrochemicals; Jun Ma, Sinopec Group Limited; Wengchang Zhang, Sinopec; Jianxi Cao, Zhongke Wyse (Beijing) Technology Co; Wei Wang, Peixian Wang, Qian Xue, Mingrui Liu, Kai Ding, Xiaozhe Sun,
52. HYDRODYNAMICS XI: Wave Suite Mini Symposium
Tuesday June 18 14:00 Athena
Chair: Qingwei Ma, City, University of London, UK

A Spectral Boundary Integral Method for Computing Surface-Wave Inducing Underlying Hydrodynamics
Qianyue Chen, Xianlong Lin, Jinghua Wang, The Hong Kong Polytechnic University, China

AM-LSTM Neural Network for Short-Term Prediction of Ship Navigation Combined with Wave Features
Jiaye Gong, Jinya Xu, Yunbo Li, Shanghai Maritime University, China

Fluid Structure Interactions with the Method of Large Eddy Simulations--Free Fall Impact of a Triangular Wedge
Aristos Christou, Cardiff University; Shiqiang Yan, Qingwei Ma, City, University of London; Zhihua Xie, Cardiff University, UK

Preliminary Investigation on Predicting Wave Pressure in Single-phase ISPH by GNN Trained Using Two-phase Navier-Stokes Solutions
Pai Liu, Ningbo Zhang, Shiqiang Yan, Qingwei Ma, Qian Li, City, University of London, UK

A GNN Supported ISPH Method for Numerical Simulation of Wave Interaction with Fixed Structures
Ningbo Zhang, Qingwei Ma, Shiqiang Yan, Qian Li, City, University of London, UK

Extreme Short-term Prediction of Offshore Floating Wind Turbine Motion Based On LSTM Neural Network
Ruidong Ni, Shuling Chen, Yueyue Zhuo, Fuyin Cui, Haibin Ye, Jiangsu University of Science and Technology, China

Hydrodynamic Characteristics of Flapping Hydrofoil Supported by Machine Learning
Yueyue Zhuo, Shuling Chen, Yang Li, Haibin Ye, Kang Chen, Jiangsu University of Science and Technology, China

53. RENEWABLE ENERGY VI: Tidal Power
Tuesday June 18 14:00 Salon A
Chair: Terje Rølvåg, SINTEF Ocean, Norway

Numerical Wave Tank Development for Hydrodynamic Analysis of a Tidal Turbine
Kai Xu, William Finnegan, University of Galway; Fergal O’Rourke, Dundalk Institute of Technology; Jamie Goggins, University of Galway, Ireland
Effects of Stator Current and Maximum Current Speed on Tidal Power Generation Using the Control Scheme of Constant Rotor Voltage
Kentaro Tsuji, Mitsuhiro Shiono, Nihon University, Japan

Practicalities of Standard-Compliant Incident Resource Measurement for Floating Tidal Energy
Jan Dillenburger-Keenan, Calum Miller, Orbital Marine Power; Brian Sellar, University of Edinburgh, UK

54. SPRU VI: Cable/Flex Pipe 1
Tuesday June 18 14:00 Salon B
Chair: Eric Giry, SAIPEM, France

A Novel Test Method for the Assessment of the Hoop Performance of Composite Pipes
Milan Bujdoso, Angelos Mintzas, Baker Hughes, UK

Dynamic Responses of a Monorail-cum-road Long-span Cable-stayed Bridge under Cross Winds and Moving Vehicles
Weiwei Guo, He Xia, Beijing Jiaotong University, China

Cable Reliability Under Extreme and Fatigue Loads
Muhammad Tedy Asyikin, Jon Årstein, Elisabeth Gjølmesli, Audun Johanson, Nexans Norway AS, Norway

55. OFFSHORE MECHANICS IV: Jackup, Fixed Struct 2
Tuesday June 18 14:00 Nafsika A
Chair: Frank Lim, 2H Offshore, UK

Study on Dynamic Responses of Offshore Platform under Ship Collision
Yamin Tang, Shanghai Key Laboratory of Ship Engineering; Zhe Kang, Marine Design & Research Institute of China; Bo Xu, Shanghai Key Laboratory of Ship Engineering; Jia Zhou, Marine Design & Research Institute of China; Zhengyao Wang, Jiangsu University of Science and Technology, China

Research on Improving the Platform's Bearing Capacity Based on Load Transfer to the Conductors
Honglin Pang, Jingjian Wu, Peng Liang, Mengning Wu, Mengyue Zhang, Huan Zeng, Xuan Jiang, CNOOC China Limited, China

Time-History Analysis of Offshore Substation Considering Soil Strength Reduction
Wang Liao, Shanghai Investigation, Design & Research Institute; Xinlei Ban, Shanghai Electric Power Design Institute Co; Bibo Li, Shanghai Investigation, Design & Research Institute, China

Prediction and Analysis of Penetration Depth of Jack-up Rig Based on Finite Element Method
Qishuai Yin, Qianling Xue, Qianyu Li, Jin Yang, Jiakang Wang, China University of Petroleum (Beijing); Baojian Yang, CNOOC China Limited, China
Tubular Welded Connections in Offshore Steel Floating Platform: Structural Design Optimization
Ilias Gavriilidis, Theocharis Papateocharis, George T. Plakias, Spyros A. Karamanios, University of Thessaly, Greece

Tests on Anchored T-bolt Connected to Concrete-filled Stainless Steel Tubes
Ying-Lei Li, Xiao-Ling Zhao, The Hong Kong Polytechnic University; Min Lei, Southwest Jiaotong University, China

56. COASTAL VI: Ports & Terminals
Tuesday June 18 14:00 Nafsika B
Chair: Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

Research on Port Waterway Capacity Considering Safety and Waterway Service Level
Yue Deng, Jin Li, Lianjie Guo, Qi Zang, Yingzhi Cao, Jingli Zhao, National Marine Data and Information Service, China

Stability Study of Radiation Sandbar Port Construction
Jianhui Liu, Keli Shen, Zezhou Ji, Changyi Yang, CCCC First Harbor Consultants, China

Application of Local Time-Stepping in Hydrodynamic Modeling of Marine Terminal Engineering
Guolin Liu, Tao Ji, Ocean University of China; Shichun Song, Qingdao Military-Civilian Integration Development Group; Guoxiang Wu, Ocean University of China; Pubing Yu, Zhejiang Institute of Hydraulics and Estuary, China

Physical Modeling of a Moored Container Ship at the Phase II Project of Kribi Deep Sea Port [Proceedings only]
Yuanzhe Zhi, Wanwei Zhang, Shichang Yan, Yue Yang, Guoping Chen, Guanqin Zhang, Victor Edem Setordije, Minhui Jin, Hohai University, China

57. AST VI: ASV, USV 1
Tuesday June 18 14:00 Nefeli B
Chair: Ziming Wang, Wuhan University of Technology, China

Model-based Reinforcement Learning for Trajectory Tracking Control of Autonomous Surface Ship
Kouki Wakita, Osaka University, Japan

Study of Maritime Autonomous Surface Ships (MASS) Trustworthiness: Hardware Point of View
Hosna Namazi, Lokukaluge Prasad Pereira, UiT The Arctic University of Norway, Norway

Numerical Investigations on Vertical Motions of a Trimaran Equipped with T-Foil in Head Waves Based on URANS Hydrodynamic Coefficient Method
An Li, Juntao Niu, Fengchao Yan, Kai Xi, Marine Design and Research Institute of China, China
Research on Trimaran Resistance Characteristics under Different Navigation States Based on CFD
Hao-yun Tang, De-yuan Ren, Dalian Maritime University; Qian Wan, Dalian Shipbuilding Industry Co; Jiayi Meng, Dalian Maritime University, China

Parameter Identification and Trajectory Tracking Control of Unmanned Ships Based on Measured Data [Proceedings only]
Ziming Wang, Shunhuai Chen, Wuhan University Of Technology, China

58. POLAR TECH VI: Drilling, Icing
Tuesday June 18 14:00 Nefeli A
Chair: R.S. Taylor, Memorial University, Canada

A Novel Device for Accurate Measurement of Spray Frequency and Duration Using Capacitive Liquid Sensors in Marine Icing Estimation
Sushmit Dhar, Masoud Naseri, Tiantian Zhu, Kåre Edvardsen, UiT The Arctic University of Norway, Norway

Research on the Influence Factors of Wellhead Thaw-Settlement in Polar Drilling
Lei Li, Jin Yang, China University of Petroleum (Beijing); Ke Ke, Lilin Li, SINOPEC Research Institute of Petroleum Engineering Co; Mengke Dong, Guojing Zhu, Tiancong Cui, China University of Petroleum (Beijing), China

Statistical Analysis of Spatial Variability in the Position of Ship Routes in the Barents and Kara Seas
Ruslan I. May, Maria I. Finn, Sofya V. Tsedrik, St. Petersburg State University; Tatiana A. Alekseeva, Vladimir D. Kotelnikov, Arctic and Antarctic Research Institute, Russia

Motion Response and Ice Load Analysis of an Arctic Mooring Platform Based on Multi-Dilated Polyhedron Elements
Bihui Zhang, Jiancheng Zhao, Anwen Zhang, Yong Hong, Yi Wang, Jiangsu University of Science and Technology; Jindong Zhang, Dalian Maritime University; Huizhong Zhang, Power China Huadong Engineering Co, China

59. HYDRODYNAMICS XX: VIV 3
Tuesday June 18 14:00 Exec. A
Chair: André Fujarra, Federal University of Santa Catarina, Brazil

Analysis of Fatigue Damage of Deep-water Drilling Riser Induced by Cross-flow Vortex-induced Vibration
Yanhui Wang, Guangrui Zhang, Deli Gao, Jinduo Wang, China University of Petroleum (Beijing), China

Measurement of the Damping Coefficients in a Gradually Dissected Riser Sample
André Luís Condino Fujarra, Thiago Antonio Fiorentin, Andrea Piga Carboni, Rafael D’Amaro Chiara, Federal University of Santa Catarina; Aline Leal de Lima Gontarski, Polytechnique School of São Paulo
University; Fábio Pompeo da Silva Mineiro, Carlos Alberto Duarte de Lemos, Petrobras, Brazil

Vortex-Induced Vibrations of Low Mass Ratio Cylindrical Cantilever Beams
Clara Vanessa Encke, Ersegun Deniz Gedikli, University of Hawaii at Manoa, USA

Coupled In-line and Cross-flow Vortex-induced Vibration Responses of a Variable Tension Riser in Shear Flow
Zhenhua Li, Jian Su, Universidade Federal do Rio de Janeiro, Brazil; Yangye He, China University of Petroleum (Beijing), China; Chengbin Liu, Yujin Yuan, Junfeng Zhao, CNODC Brazil Petroleo e Gas, Brazil

60. MECHANICS II: Risk and Reliability 2
Tuesday June 18 14:00 Exec. B
Chair: Ali Reza, Exponent, USA

Rapid Cognition and Assessment Method for Hull Structural Stress State
Huilong Ren, Yuchao Liu, Harbin Engineering University, China

Safety Assessment of Semi-submersible Platform Structures Based on Hybrid Twin Technology
Haiyang Ge, Bo Wu, Xin Li, Yong Luo, Shanghai Jiao Tong University, China

A Fire Safety Assessment Method for Cruise Cabin Space Based on Firefighting Equipment Contribution
Wei Cai, Zhiyan Yu, Min Hu, Xinyun Zhang, Ziyu Wang, Wuhan University of Technology, China

Study on Fire Risk Assessment Method for FPSO Upper Module Based on FDS Numerical Simulation [Proceedings only]
Di Li, Ji Zeng, Shanghai Maritime University, China

61. GEOTECH I: Soil Liquefaction 1
Tuesday June 18 14:00 Exec. C
Chair: Shinji Sassa, Port and Airport Research Institute, Japan

Geohazards to Offshore Wind Farms on the U.S. Atlantic Coast
Sanjeev Malhotra, University of Oxford, UK; Daniel O’Connell, Department of the Interior, USA

Numerical Investigation of Wave-current Induced Seabed Liquefaction around the Pipeline: Design of a Rubber Berm for Pipeline Protection
Ke Sun, Shandong Jiaotong University; Jisheng Zhang, Yuan Gao, Hohai University; Bing Chen, Shandong Jiaotong University, China

Numerical Modeling of Soil Liquefaction During Seismic Action in Nordvik Bay of the Laptev Sea
Oleg Makarov, Tatiana Chernova, Denis Gogoladze, Igor Kuzovatkin, Alexander Bekker, Far Eastern Federal University; Konstantin A
Kornishin, Yaroslav O Efimov, Petr A Tarasov, Arctic Research Center, Russia

The New Compaction Grouting Method with Improved Upheaval Control and Enhanced Liquefaction Countermeasure Effect
Malino M Takata, Sanshin Corporation; Shinji Sassa, Port and Airport Research Institute; Kanji Takenouchi, Sanshin Corporation; Masaki Adachi, Mirai Construction Co; Tetsuya Iwaki, Fukken Co; Kiyotaka Ono, Toko Geotech Corp; Chikai Kaneko, ATON Civil Engineering & Technology, Japan

Analysis of Dynamic Strength Characteristics of Saturated Sand with Fines under Cyclic Loading [Proceedings only]
Kang Xie, CCCC National Engineering Research Center of Dredging Technology and Equipment Co; Zhendong Cheng, Jiaxing Vocational and Technical College; Jifu Yin, CCCC National Engineering Research Center of Dredging Technology and Equipment Co; Zhongquan Chang, Jiaxing Vocational and Technical College; Feixin Wang, CCCC National Engineering Research Center of Dredging Technology and Equipment Co; Chunlei Xiao, Cangzhou Maritime Safety Administration, China

TUESDAY 16:20

62. HYDRODYNAMICS V: Floating Dynamics 1
Tuesday June 18 16:20 Athena
Chair: Tormod Landet, DNV, Norway

Dynamic Modeling for the Submarine Part of the Wave Glider Based on Experimental Data
Ranran Liu, Peng Wang, Xinliang Tian, Rui Huang, Shanghai Jiao Tong University, China

Hydroelastic Effects of Slamming Impact on the Stiffened Wedge by Two-Way Coupling Method
Miaozhu Wang, Yiwen Wang, Hantao Zhang, Cheng Zheng, Weiguo Wu, Wuhan University of Technology, China

Interval Prediction of the Heave Motions of a Semi-submersible Platform Based on QR-GRU
Qiangqiang Wei, Bo Wu, Xin Li, Shanghai Jiao Tong University; Fan Zhang, Det Norske Veritas (Shanghai) Limited, China

QSR: Fast Estimation of Semi-Linear Vessel Responses in Realistic Non-Linear Irregular Waves
Tormod Landet, Jens Bloch Helmers, DNV, Norway

63. RENEWABLE ENERGY VII: FOWT 1
Tuesday June 18 16:20 Salon A
Chair: Rodolfo T Gonçalves, The University of Tokyo, Japan

An Experimental Investigation on the Motion Responses and Tower Loads Characteristics of a 12 MW Semi-Submersible Floating Wind Turbine
Key Considerations and Challenges in Developing U.S. Ports for Floating Offshore Wind Farms
Yongjun Chen, Xin Hai, Bert Chua, Wenzhi Li, Ramadevi Duraisamy, Bechtel Energy, Inc., USA

Motion Control of a Semi-Submersible Platform for Offshore Wind Turbines Using Gyrostabilizer
Ping Cheng, Xuhui Yang, Shanghai Maritime University; Decheng Wan, Shanghai Jiao Tong University, China

Shun Xu, Shanghai Jiao Tong University; Nina Wang, Huadong Engineering Corp; Decheng Wan, Shanghai Jiao Tong University, China

Numerical Investigation of Aero and Hydrodynamic Response of Floating Offshore Wind Turbine under Ochi-Hubble Bi-Modal Wave Spectrum
Yingjie Xue, Shanghai Jiao Tong University; Xiaolong Yang, Offshore Oil Engineering Co., Decheng Wan, Shanghai Jiao Tong University, China

Stress and Failure Analysis of Composite Flexible Riser Subjected to Torsion and Thermomechanical Loading
Rui Bao, Junpeng Liu, China University of Petroleum (Beijing), China; Zhongmin Xiao, Nanyang Technological University, Singapore

On the Design of a Combined Cyclic Axial Compression and Bending Test Program for a Subsea Power Cable
Kjetil André Karlson-Husøy, Christine B Osnes, Widyasatka Dwikartika, Lars Jordal, Nexans Norway AS, Norway

A Novel Test Rig Built to Determine the Structural and Material Damping in Subsea Power Cables and Umbilicals Installed with a Horizontal Free Span
Lars Jordal, Kjetil André Karlson-Husøy, Nexans Norway AS; Erwin Vermeer, Combiteq AS, Norway

Integrating Machine Learning for Real-Time Structural Monitoring of Net Cages
Eirini Katsidoniotaki, Massachusetts Institute of Technology, USA; Biao Su, Eleini Kelasidi, SINTEF Ocean, Norway; Themistoklis Sapsis, Massachusetts Institute of Technology, USA
Fundamental Study on Time Domain Motion Prediction of an Array of Floating Bodies
Ryo Yoshimura, Takahito Iida, Md Shahidullah Kaiser, Kazuki Irifune, Osaka University, Japan

Mooring System Compatibility Analysis of Large LNG Carrier
Ding Zhang, Ying Chen, Feng Chao Yan, De Hai Li, Marine Design & Research Institute of China, China

66. HPM VI: EAC 1
Tuesday June 18, 16:20  Nafsika B
Chair: Hyun Jo Jun, ExxonMobil Tech & Eng, USA
Co-Chair: Nobuyuki Ishikawa, JFE Steel, Japan

H2Pipe JIP: C-Mn Pipelines for Hydrogen Transport – What is Governing the Fracture Toughness?
Erling Østby, DNV, Norway; Ramgopal Thodla, DNV, USA; Jan Frederik Helgaker, Leif Collberg, Anges Marie Horn, DNV, Norway

Influence of Coatings on Steel Pipe Hydrogen Embrittlement in Small-Scale Test Coupons
Tom McGaughy, Joshua James, Jesse Rhodes, EWI (Edison Welding Institute), USA

Investigation of Existing Distribution Network Steel Pipe Compatibility for Hydrogen Blended Natural Gas Transportation
Tahrim Alam, Enbridge Gas Inc; Md. Aminul Islam, Kay Ton, Emma Storimans, National Research Council Canada, Canada

Effect of Strain Paths on Hydrogen Absorption Under Various Environments
Taishi Fujishiro, Kento Hani, Yusaku Tomio, Taro Muraki, Nippon Steel Corporation; Takuya Haru, Tohoku University Japan

Analysis of Hydrogen Induced Failure by Hydrogen Injection Methods in Micro-alloyed Steels [Oral presentation]
Jae Myeong Kim, Hyundai Steel, Korea

Investigating the Impact of Heat Treatment Conditions on the Cryogenic Toughness of 5% Nickel Steel
Jong Chul Kim, Jung Bin Park, Hyung Sub So, Min Ho, Park, Woo Hyuk Choi, Seung Hwan Cheon, Hyundai Steel, Korea

67. AST VII: ASV, USV 2
Tuesday June 18, 16:20  Nefeli B
Chair: Liwei Yu, Ocean University of China, China

Development of a Control System for Core-sampling USV That Combines Sliding Mode Control and Neural Network
Makoto Morito, Shun Fujii, Kouki Yoshimura, Tokyo University of Marine Science and Technology; Yukihisa Sanada, Japan Atomic Energy Agency; Shoichiro Baba, Japan Agency for Marine-Earth Science and Technology; Hiroshi Matsunaga, Takami Mori, Kenichiro Sato,
MARINE WORKS Japan Ltd.; Junichiro Tahara, Tokyo University of Marine Science and Technology, Japan

Obstacle Avoidance for an Intelligent Ship: A Deep Deterministic Policy Gradient Method with Risk Potential Field
Puzhe Zhang, Yiting Wang, Lei Wang, Shanghai Jiao Tong University, China

A Study on Collision Avoidance Timing for Autonomous Ships Using Machine Learning
Mu-Yeong Seo, Kwang-Jun Paik, Won-Jun Yoo, Sang-Hyeon Kim, Hyo-Geun Lee, Inha University, Korea

Trajectory Tracking Control of an Intelligent Ship Based on Deep Reinforcement Learning
Donglin Liu, Chaobang Yao, Jiawei Yu, Dakui Feng, Huazhong University of Science and Technology; Xiaoshuai Sun, China Marine Development and Research Center, China

Research on Real-time Obstacle Avoidance Control Algorithm Based on Motion Response Characteristics of Unmanned Surface Vehicle
Xiaopeng Gao, Dongyu Liu, Cong Huo, Naval University of Engineering, Wuhan, China

Analysis of Ship Motion Performance under Real Sea with Measured Wave Spectrum
Menghao Yang, Liwei Yu, Ocean University of China, China

68. UNDERWATER I: Sensors and Detection

Chair: Guohua Xu, Huazhong Univ of Science and Tech, China

Pressure-Adaptive Flexible Capacitive Sensor for Underwater High Static Pressure Measurements
Haijun Wang, Dongrui Ruan, Letian Gan, Qingqing Wang, Tiefeng Li, Zhejiang University, China

Enhancing DeeplabV3+ for Underwater Equipment Detection and Segmentation
Duanfeng Han, Jiawei Zhang, Fenglei Han, Harbin Engineering University; Zhihao Su, Marine Design and Research Institute of China; Jianfeng Yang, Wangyuan Zhao, Harbin Engineering University, China

Deep Ocean Hydrographic Element Acquisition Device Based on Edge Computing Technology
Bingzhen Gao, Jin Yang, Qishuai Yin, Kejin Chen, Zehua Song, Guojin Zhu, China University of Petroleum (Beijing), China

Technical Study on Underwater Target Detection and Recognition of Unmanned Surface Vehicles in Complex Environment
Shuai Zhang, Fei Wang, Feifan Deng, Xiaochuan Wang, Liang Chang, Zhengyi Jiang, China Ship Scientific Research Center, China

Study of Fish Swimming Data Reconstruction and Analysis of Vortex Flow Field Characteristics Based on the Deep Learning Algorithm
69. AST XVI: Propulsion 2
Tuesday June 18 16:20 Exec. A
Chair: André Baeten, Augsburg Univ of Applied Sci, Germany

Numerical Study on the Effect of Sill Height of Ball-and-sill Combination Deflector Cap on the Open-water Performance of Pump-jet Propulsion
Feng Zhang, Wei He, Zi-ru Li, Qian Liu, Wuhan University of Technology, China

Research of Carbon Dioxide Migration Patterns in Deep Saline Aquifers Under High-Pressure Conditions
Shu Jia, Jin Yang, Ting Sun, Zhiliang Wen, Laiao Ren, Kejin Chen, China University of Petroleum (Beijing); Xuebin Ning, Shandong Qilong Offshore Petroleum Steel Pipe Co, China

Effects of Reynolds Number on Open-water and Self-propulsion Performance of Propeller with Short Chord Length
Jingyu Li, Wei He, Ziru Li, Wuhan University of Technology, China

Analysis of the Hydrodynamic Performance of a Gate Rudder Propeller System
Jiangping Zhang, Wei He, Ziru Li, Wuhan University of Technology, China

Research on the Open-Water Performance and Tip-Vortex of Toroidal Propeller
Zixuan Tang, Wei He, Ziru Li, Wuhan University of Technology, China

70. MECHANICS III: Collision and Impact 1
Tuesday June 18 16:20 Exec. B
Chair: Bin Yang, University of Edinburgh, UK

Experimental Investigations of the Preload-time-behaviour of Lockstud Systems Enhanced by Finite Element Analysis
Melanie Hagemann, University of Applied Sciences Technology, Business and Design; Mathias Schwarz, Fraunhofer IGP; Markus Schröder, University of Applied Sciences Technology, Business and Design, Germany; Christoph Blunk, Howmet Fastening Systems, UK; Ralf Glienke, Daniela Schwerdt, University of Applied Sciences Technology, Business and Design, Germany; Knuth-Michael Henkel, University of Rostock, Germany

A Comparative Study of Non-contact Underwater Explosion Shock Wave Propagation in the Single and Two-Layer Water-Separated Plate Model
Caiyu Yin, Huazhong University of Science and Technology; Zeyu Jin, Wuhan University of Technology; Jingxi Liu, Huazhong University of Science and Technology, China

Study on the Phenomenon of Cavitation of Sandwich Plate-water-plate Structure with Elastic Support in Underwater Explosion
Guocai Chen, Caiyu Yin, Huazhong University of Science and Technology; Zeyu Jin, Wuhan University of Technology, China

Fatigue Prediction Methods for Wideband Stress Processes and Application to Field Data
Bo Wu, Shanghai Jiao Tong University; Yue Yang, Marine Design & Research Institute of China; Qiangqiang Wei, Xin Li, Shanghai Jiao Tong University, China

Micro-computed Tomography Characterisation of Low-velocity Impact Damage in Sandwich Panel with UHMWPE Facings [Oral presentation]
Bin Yang, Dongmin Yang, University of Edinburgh, UK; Kunkun Fu, Tongji University, China; Raj Das, RMIT University, Australia

Interaction between Underwater Explosion Bubble and Double-layer Structure with Hole [Proceedings only]
Yanwu Chen, Yuanxiang Sun, Beijing Institute of Technology, China

71. GEOTECH II: Soil Liquefaction 2
Tuesday June 18 16:20 Exec. C
Chair: Vincenzo Silvestri, Polytechnique Montreal, Canada

Dangerous Height of Deep Soil Deposits
Vincenzo Silvestri, Claudette Tabib, Polytechnique Montreal, Canada

Design of Triaxial Test System for Deep-sea Pressurized Core
Zhangyong Jin, Xinhui Tan, Zhenwu Yu, Yuhong Wang, Qiaoling Gao, Jingkun Ai, Jiawang Chen, Zhejiang University, China

Influence of Soil and Pile Properties on the Critical and Rotation Length of Laterally Loaded Piles
Wei Wei, Fuming Wang, Fan Yang, Chengchao Guo, Sun Yat-Sen University, China

Long-Term and Cyclic Pull-Out Behaviors of Plate Anchor in Soft Clay
Zhichuan Li, CNOOC; Cun Hu, Tsinghua University (Shenzhen); Xinhai Lei, Zhanjiang Consultants; Zijian Zhang, Tsinghua University (Shenzhen), Min Wu, Beijing Jiaotong University, China

WEDNESDAY 08:00

72. HYDRODYNAMICS VI: Floating Dynamics 2
Wednesday June 19 08:00 Athena
Chair: Gerard Fernandez, SBM Offshore, Monaco

Hydrodynamic Behavior of Multi-Body Floating Solar Platform with Beam or Shell Connectors and Comparison of Design Capacity
Byoung Wan Kim, Kangsu Lee, Korea Research Institute of Ships & Ocean Engineering, Korea

A Time-Frequency Deep Learning Model for Motion Prediction of Semi-submersible Using Wave-Excitation Inputs
Yan Li, Longfei Xiao, Mingyue Liu, Deyu Li, KeLu Li, Shanghai Jiao Tong University, China

A Comprehensive Study on Roll Decay Testing with the Aid of CFD
Gerard Fernandez, Georgios Gikas, SBM Offshore, Monaco

A Fast Forecasting Method for Parametric Rolling and Synchronous Rolling of Container Ship Based on GRNN Neural Network
Qiang Sun, Shanghai Dianji University; Yaohua Zhou, China Classification Society, China

73. RENEWABLE ENERGY VIII: FOWT 2
Wednesday June 19 08:00 Salon A
Chair: Qun Cao, China Ship Scientific Research Center, China

Use of Fossil Free Steels in Thick-walled Offshore Wind Energy Plants: An Overview of the Current Market and Production Situation
Hermann Lücken, UAS Esslingen University; Judith M. Pütter, Hamm-Lippstadt University of Applied Sciences; Peter Britz, Weserbergland University, Germany

Impact of Sea States to the Aerodynamic Performance of a Floating Offshore Wind Turbine
Xiaojin Zhang, Xiuqing Xing, Chang Wei Kang, Xuan Liu, Institute of High Performance Computing; Chin Lee Lim, Seatrium Ltd; Vinh Tan Nguyen, Venugopalan S G Raghavan, Institute of High Performance Computing, Singapore

Indirect Load Measurement Method and Experimental Verification of Floating Offshore Wind Turbine [Oral presentation]
Xiangheng Feng, Zhejiang University, China

Study on the Support Structure of V-type Offshore Wind Turbine
Kai Liu, Jingxi Liu, Huazhong University of Science and Technology, China

A Numerical Reconstruction Method of Complex Wind Field Acting on Floating Wind Turbines Based on Wind Speeds at Finite Spatial Points
Qun Cao, Ying Chen, Kai Zhang, China Ship Scientific Research Center; Zhengshun Cheng, Longfei Xiao, Shanghai Jiatong University; Jun Yu, Xueying Chang, China Ship Scientific Research Center, China

74. SPRU VIII: Pipeline Flow Assurance
Wednesday June 19 08:00 Salon B
Chair: Kristian Solheim Thinn, SINTEF Energi AS, Norway

Operation Track Record and Repair of Direct Electrical Heating System
Kristian Solheim Thinn, Jens Kristian Lervik, Hallvard Farenmo, Katharina K Klusmeier, SINTEF Energi AS; Christian Brede Willumsen, Atle Harald Bornes, Equinor, Øyvind Iversen, Nexans Norway AS, Norway

An Application of Superhydrophilic Coating to Enhance the Water Film Retention for Core Annular Flow
Wei Wang, SINOPEC Dalian Research Institute of Petroleum and Petrochemicals Co; Yang Yu, SINOPEC Fuel Oil Sales Co; Fan Ye, Deyin
Prevention of Hydrates Plugging in the Subsea Pipeline of LNG-FPSO
Chayoung Song, Hyunsang Yoo, Ingu Kang, Jeonghwan Lee, Chonnam National University, Korea

Flow Assurance of Offshore Hydrogen Pipelines – A Review
Antonie Oosterkamp, Torbjorn Egeland-Eriksen, NORCE Technology, Norway

Vibration Analysis of a Pipe Conveying Two-phase Flow for Full Flow Pattern Domain and Full Dip Range
Boying Wang, Guangming Fu, Xiao Wang, China University of Petroleum (East China), China; Jian Su, COPPE/UFRJ, Brazil; Huilin Jiao, Baqiang Sun, China University of Petroleum (East China), China

Friction Characteristics of Bi-directional Pig under Different Lubrication Conditions in Oil and Gas Pipeline
Xiaoxiao Zhu, Yichen Zhang, China University of Petroleum (Beijing); Jungang Chuan, YiBin Vocational and Technical College; Haokun Wang, China University of Petroleum (Beijing), China

The Interaction between Two Floating Platforms under North Sea Wave Conditions [Oral presentation]
Wendi Liu, Raynold Tan, Science and Technology Facilities Council; Edward Ransley, Scott Brown, University of Plymouth; Omar A Mahfoze, Stephen Longshaw, David R Emerson, Science and Technology Facilities Council; Deborah Greaves, University of Plymouth, UK

Hydro-viscoelastic Analysis of the Interaction between Water Waves and a Floating Laminated Structure
Ai-jun Li, Mingyue Song, Xinyu Wang, Xinying Pan, Yu Xu, Ocean University of China, China

Selection of Mooring Specification of Elastic Mooring System for Very Large Floating Structures
Hiroaki Eto, Wataru Suzuki, Nihon University; Mikimasa Sugahara, Toyo Engineering Corp; Hitomi Kashima, Infinity Co; Yuichi Okazaki, Cress Feed Inc, Japan

Global Performance Analyses of a Donut-Type Platform Suitable for SCRs
Hui Yang, Song Liu, An ke Song, Ning Yang, Offshore Oil Engineering; Zhen-Zhe Shi, Ying Li, Tianjin University, China

Resilience Assessment Framework for Maintenance Decision of Wind Turbines
Jingyi Wu, Yang Yu, Siyi Du, Yu Pan, Tianjin University, China
76. HPM VII: EAC 2  
Wednesday June 19 08:00 Nafsika B

Chair: Zachary Buck, NIST, USA

Hydrogen-Induced Transgranular to Intergranular Fracture Transition at Atomistic Scale [Oral presentation]
Jianying He, NTNU, Norway

A Unified Mechanisms-Based Predictive Framework for Hydrogen Embrittlement [Oral presentation]
Zhiliang Zhang, NTNU, Norway

Comparative Study on the Effect of Hydrogen on the Deformation Micro-Mechanism in a High Mn Steel and Inconel [Oral presentation]
Chang-Gun Jeong, Pohang University of Science and Technology, Korea; Jin-Yoo Suh, Yoon-Uk Heo, Pohang University of Science and Technology, Korea

Development of Heavy-Gauge Plate for Linepipe with Excellent Sour Resistance and Low-Temperature Toughness
Yoshinori Nomura, Taishi Fujihiro, Nobuaki Yoshimura, Nippon Steel Corporation, Japan

Investigation of Stress Corrosion Cracking (SCC) in Pipeline Steels for CO2 Transportation in Wet Environments with CO and O2 as Impurities for CCS Application [Oral presentation]
Hyun Jo Jun, Neeraj Thirumalai, Fang Cao, Garret Wu, Chong Li, ExxonMobil Technology and Engineering Company, USA

77. AST VIII: Ship Maneuvering 1  
Wednesday June 19 08:00 Nefeli B

Chair: Decheng Wan, Shanghai Jiao Tong Univ, China

Development of a Control Model Estimation Method for a Simplified Dynamic Positioning System Using a Nonlinear Kalman Filter
Hiroaki Koike, Yuhei Noborio, Osaka University, Japan

Adaptive Kalman Filter-based Estimator with Sea Trial Data to Calculate Ship States in Complex Navigation Conditions
Yufei Wang, Lokukaluge Prasad Perera, Bjorn-Morten Batalden, UiT The Arctic University of Norway, Norway

Global Path Planning Based on Improved A* Algorithm and Cubic B-spline Interpolation Curve
Quan Jiang, Huazhong University of Science and Technology; Gang Liu, Wuhan Second Ship Design and Research Institute; Xiong Li, Kunming Shipborne Equipment Research & Test Center; Guohua Xu, Huazhong University of Science and Technology; Meng Zhang, Ocean Smart Technology, China

Time-series Forecasting of Ship Maneuvering Motion in Waves Based on EMD-DMD Method
Chao Peng, Jun Ding, Qiaosheng Zhao, China Ship Scientific Research Center, China
Research on Mechanism-data Dual-driven Ship Maneuvering Mathematical Modeling
Wenhe Shen, Jialun Liu, Xinjue Hu, Shijie Li, Song Zhang, Wuhan University of Technology, China

78. UNDERWATER II: Cables
Wednesday June 19 08:00 Nefeli A
Chair: Satoru Yamaguchi, Kyushu Univ, Japan
Dynamic Simulation of Umbilical Cable Operated in Moonpool Space
Qingzhi Tang, Hao Cheng, Xiaoyin He, Xudong Wu, Marine Design and Research Institute of China, China
Experimental Investigation on Adsorption Force of Marine Cable during Lift Motion from Seabed
Li Guo, Yuchao Yuan, Wenyong Tang, Hongxiang Xue, Zhongdi Duan, Jun Liu, Shanghai Jiao Tong University, China
Level Control of Tension-leg Stable Platform Ballast Tank Based on Gaussian Function Nonlinear Decoration
Hongjun Qiao, Haochen Hong, Chaosheng Hu, Huazhong University of Science and Technology; Xiong Li, Kunming Shipborne Equipment Research & Test Center; Guohua Xu, Huazhong University of Science and Technology, China
Cable Disturbances on Trajectory Tracking During ROV Deployment in a Limited Space
Jianming Wang, Qi Yang, Bolun Huang, Wenya Lvu, Shanghai Jiao Tong University, China
Research on Variable Tension Control Strategy for UUV Arresting Gear System
Xikun Wang, Huazhong University of Science and Technology; Laiyu Liang, Ming Lei, Wuhan Second Ship Design and Research Institute; Junlei Huang, Huazhong University of Science and Technology, China

79. AST XVII: Propulsion 3
Wednesday June 19 08:00 Exec. A
Chair: Ann Rigmor Nerheim, NTNU, Norway
Auxiliary Propulsion Based on Wave Energy Converters
Nick Markov, Grigor Nikolov, Silvia Kirilova, Rumen Kishev, Bulgarian Academy of Sciences, Bulgaria
Carbon Neutral Fuel Alternatives for Norwegian Coastal Shipping – Status Reaching for the Global Climate Targets
Ann Rigmor Nerheim, Tor Hennum, Lene Æsøy and Vilmar Æsøy, NTNU, Norway
Thrusters Interactions in Dynamic Positioning Operations with Numerical Methods
Agnieszka Pieklo, Pawel Hoffmann, Maritime Advanced Research Centre; Anna Witkowska, Tomasz Zubowicz, Gdańsk University of Technology, Poland
Experiment and Study of Flow Field Display of Water Jet Propulsion Pump Based on Endoscopic PIV Method
Chao Feng, Zonglong Wang, Baoju Xu, Hualun Zhu, Marine Design & Research Institute of China, China

Research on Propulsion Model of Full Azimuth Thruster Considering Both Drift and Steering Angles
Hongji Zuo, Yaofeng Huang, Xianzhou Wang, Huazhong University of Science and Technology; Lixiang Guo, China Ship Development Design Center, China

CFD-based Parametric Design of Pre-swirl Stators for an Oil Tanker
Lei Huang, Hailiang Yu, Shuai Yuan, Marine Design and Research Institute of China; Hongjun Dai, Shanghai Leading Energy Shipping Co; Jie-jie Zhang, Qun Sun, Marine Design and Research Institute of China, China

An Efficient Method for Calculating Slamming Loads on Offshore Jacket Structures under Extreme Waves Utilizing Simulated Wave Kinematics
Nikolas Panagiotis Anastasiadis, Luigi Caglio, Technical University of Denmark; Jesper Tychsen, TotalEnergies Denmark; Henrik Stang, Evangelos Katsanos, Technical University of Denmark, Denmark

Ship Collision Detection Employing AIS Data
Michele Martelli, University of Genova, Italy; Srdan Žuškin, University of Rijeka, Croatia; Elena Cellenero, Raphael Zaccone, University of Genova, Italy

Research on the Effect of Rock Berm Protection for Submarine Pipelines in Channel Area
Yi Wang, China University of Petroleum (Beijing); Jun Huang, CNOOC Research Institute; Yong Wang, CNOOC Offshore Engineering Solution Co; Yuchen Gu, China University of Petroleum (Beijing), China

Research on Strength Evaluation Method for a Grounding Container Ship During Salvage
Wei Zhang, Jingjing Liu, YanTai Salvage Bureau Technology Center; Puyang Zhang, Tianjin University, China

Dynamic Safety Zone Assessment for COLREG Compliant Navigation DSS in Integrated Navigation Systems
Igor Rudan, Matthew Sumner, Dani Mohović, David Brčić, Marko Gulić, Sanjin Vlačić, Davor Šakan, Marko Strabić, Ivan Vilić, Martina Žuškin, Maro Car, Miho Kristić, Ana Perić Hadžić, Srdan Žuškin, University of Rijeka, Croatia

An Efficient Method for Calculating Slamming Loads on Offshore Jacket Structures under Extreme Waves Utilizing Simulated Wave Kinematics
Nikolas Panagiotis Anastasiadis, Luigi Caglio, Technical University of Denmark; Jesper Tychsen, TotalEnergies Denmark; Henrik Stang, Evangelos Katsanos, Technical University of Denmark, Denmark

81. GEOTECH III: Pile, Anchor
Wednesday June 19 08:00 Exec. C
Chair: Norman Goldau, Leibniz University Hannover, Germany
Behaviour of Offshore Steel Piles under Cyclic Vertical Loading Using CDM with Hypoplasticity
Khalid Abdel-Rahman, Shuhan Cao, Martin Achmus, Leibniz University of Hannover, Germany

Study on Stability of Suction Pile in Deep Sea Drilling
Guojing Zhu, Jin Yang, Shuzhan Li, Fangfei Huang, Jiakang Wang, Kejin Chen, Qianling Xue, Shu Jia, Kun Jiang, China University of Petroleum (Beijing), China

Proof of Concept of the Prediction of Pile Driving Performance using Extreme Gradient Boosting
Daniele Bertalot, Jamie Alexander, Geowynd Ltd; Saeed Abyaneh, Scottish Power Renewables, UK

A Scaling Approach for the Behaviour of Different Sand Materials in Cyclic Direct Simple Shear Tests
Norman Goldau, Jann-Eike Saathoff, Martin Achmus, Leibniz University Hannover, Germany

Monitoring System Design for Stress-Strain Analysis of Piled Foundations in Dock Sediment Areas Using Fiber Bragg Grating Sensors
Jingkun Ai, Jiawang Chen, Zhangyong Jin, Yongqiang Ge, Xinghui Tan, Xveyu Ren, Qixiao Zhou, Zhejiang University, China

WEDNESDAY 10:30

82. HYDRODYNAMICS VII: Internal/Solitary Waves
Wednesday June 19 10:30 Athena
Chair: Hua Liu, Shanghai Jiao Tong University, China

Numerical Study of Internal Waves Induced by a Moving Submarine Model in Two-Layer Fluids
Linjie Li, Shanghai Jiao Tong University; Qingjie Meng, Wuhan Second Ship Design and Research Institute; Liu Shuai Cao, Decheng Wan, Shanghai Jiao Tong University, China

Numerical Analysis on Run-Up of Multi-Solitary Waves on a Planar Slope
Xingjian Yan, New York University; Yiyang Xu, Brown University, USA; Hua Liu, Shanghai Jiao Tong University, China

Multiple Stable Falling Postures of Objects at Low Reynolds Numbers
Shuyue Sun, Xinliang Tian, Yakun Zhao, Xing Chen, Binrong Wen, Xin Li, Yufeng Kou, Shanghai Jiao Tong University, China

Water Entry of a Sphere in Regular Waves [Oral presentation]
Changze Zhao, Yao Hong, Hua Liu, Shanghai Jiao Tong University, China

Experimental Investigation of Internal Waves Excited by a Sphere via Multiline Array Acquisition
Zhechao Yang, Yunxiang You, Changhong Zhi, Linxin Lan, Shanghai Jiao Tong University, China
Analysis of Internal Wave Characteristics on the Northern South China Sea Land Slopes
Botao Xie, Hang Sun, Qi Zhang, Bigui Huang, CNOOC Research Institute, China

Modulation of Two-dimensional Cylindrical Wake by Free Liquid Surface in Linear Density Stratified Flow
Minmin Zheng, Yadong Liu, Yuying Tang, Jiaying Sun, Shanghai Jiao Tong University; Wei-huang Liu, Shanxi University; Bo Pang, Shanghai Jiao Tong University, China

On the Steady-State Triad Resonance in the Acoustic–Gravity Waves
Xiaoyan Yang, Guangzhou Maritime University; Jie Yang, China Energy Engineering Group Guangdong Electric Power Design Institute Co, China

High-resolution Numerical Simulation of Internal Tides in the Northern South China Sea [Proceedings only]
Xiaoyong He, Jinli Yang, Jing Guo, Ying Zhang, CNOOC Research Institute; Haoyue Li, Guangxi Key Laboratory of Beibu Gulf Marine Resources, Environment and Sustainable Development; Cheng Wei Luo, Jialong Peng, China University of Geosciences, China

84. SPRU IX: Pipeline Mechanics 1
Wednesday June 19 10:30 Salon B
Chair: Rodolfo T. Gonçalves, University of Tokyo, Japan

FOWT Hull Concept Assessments Considering the Design for Operability
Giovanni A. Amaral, Kazuo Nishimoto, University of São Paulo; Edgard B. Malta, Technomar Engenharia Oceânica, Brazil; Henrique M. Gaspar, Norwegian University of Science and Technology, Norway; Mehrnoosh Nickpasand, Siemens Gamesa Renewable Energy, Denmark; Rodolfo T. Gonçalves, University of Tokyo, Japan

On Gas-liquid Flow Pattern Evolution and Flow-induced Forces in a Subsea Jumper with Multiple Bends
Inima Tamunodienye, Newcastle University upon Tyne, UK; Hongjun Zhu, Southwest Petroleum University, China; Narakorn Srinil, Newcastle University upon Tyne, UK

Slugging Flow Induced Fatigue Analysis for Submarine Pipeline
Kunming Ma, Hairong Xiong, Chunhong Hu, Ying Zhang, Song Liu, Offshore Oil Engineering, China

Prediction and Treatment of Secondary Hydrogen Sulfide in Bohai Heavy Oil Thermal Recovery Development
Wenguang Wang, Shanghai Jiao Tong University; Yaji Yang, Yufei Wan, Zhaoqiang Qu, Chunyu Liu, CNOOC China Ltd, China

Hydrodynamic Response of a Floating Offshore Wind Turbine Using OpenFOAM
Gabriel Barajas, Javier L Lara, Iñigo J Losada, IHCantabria, Spain

Wind and Wave Prediction Based on Multi-task Learning
Zhu Fu, Li Chen, Shanghai Jiao Tong University; Weimin Chen, Shanghai Ship and Shipping Research Institute Co, China

85. OFFSHORE MECHANICS VII: FPSO, Compliant
Wednesday June 19 10:30 Nafsika A
Chair: Aijun Wang, Lloyd's Register, UK

Motion-based Surface Current Estimation with Neural Networks: A Numerical Study from Data of a Spread-Moored FPSO
Gustavo A. Bisinotto, Fabio G. Cozman, Eduardo A. Tannuri,
Universidade de São Paulo, Brazil

Long Term Extreme Analysis of Mooring with Monte Carlo Simulation
Aijun Wang, Lloyd's Register, UK

The Study of General Layout and Integrated Design of Cylindrical FPSO
Wei Chen, Zhiyuan Ji, Huailiang Li, Shi Deng, Junjie Lei, Offshore Oil Engineering Co., China

Optimization Analysis of FPSO Mooring Reinforcement Structure
Yan Wen, Hongtao Yuan, Haidong Liu, Huan Zhang, Shangjun Yang, Shengjun Hu, Shanghai Waigaoqiao Shipbuilding Co, China

86. HPM VIII: EAC 3
Wednesday June 19 10:30 Nafsika B
Chair: Erling Østby, DNV, Norway
Co-Chair: Hyun Jo Jun, ExxonMobil Tech & Eng, USA

Closing the Gap for Offshore Hydrogen Pipelines: Saipem Testing Welds in Hydrogen Gas
Daniele Scarsciafratte, Angelo Santicchia, Salvatore Terracina, Enrico Torselletti, Elvira Aloigi, Giorgio Arcangeletti, SAIPEM S.p.A.; Luigi Francesco Di Vito, Francesco Iob, Andrea Fonzo, RINA Consulting-CSM S.p.A., Italy

Assessing Girth Weld Quality of Pipeline Steels and Their Susceptibility to Hydrogen Embrittlement
Zachary N Buck, Newell Moser, Nicholas Derimow, May L Martin, Damian Lauria, Enrico Lucon, NIST; Douglas Stalheim, DGS Metallurgical Solutions Inc; Peter Bradley, Matthew Connolly, NIST, USA

Fracture Toughness of Bainitic Steel and Ferrite-Pearlite Steel in High Pressure Gaseous Hydrogen
Daichi Izumi, Yoshihiro Nishihara, Nobuyuki Ishikawa, JFE Steel Corporation, Japan; Pello Uranga, CEIT and University of Navarra-Tecnun, Spain; Douglas Stalheim, DGS Metallurgical Solutions, USA; David Martin, CMBB Asia, Singapore

Design Challenges and Considerations for Hydrogen Transportation in Shallow Water and Deep Water Pipelines
Alex Liu, Joost Brugmans, Ping Liu, Martijn van Driel, Worley Offshore Energy (formerly Intecsea), Netherlands
Kijung Park, Hyundai Steel, Korea

87. AST IX: Ship Maneuvering 2
Wednesday June 19 10:30 Nefeli B
Chair: Jianhua Wang, Shanghai Jiao Tong Univ, China

Comparison of Stick/Slip Phenomena at Transfer Points Between Different Hull-type CTVs
Kazuhisa Otsubo, Kei Ishida, National Maritime Research Institute, Japan

Numerical Study of Flow Structure and Air Entrainment around a Shallowly Submerged Hydrofoil
Yuming Shao, Wentao Wang, Jianhua Wang, Decheng Wan, Shanghai Jiao Tong University, China

Construction of Simulation Model and Scheme Optimization for Ship Towing through Tunnels
Zhengchen Lian, Lizheng Wang, Wuhan University of Technology, China

Maneuvering Prediction of a Twin-propeller Twin-rudder High-speed Craft Based on Integrated CFD and Empirical Methods
Yuxuan Duan, Jialun Liu, Song Zhang, Xinjue Hu, Shijie Li, Wuhan University of Technology, China

Data-driven Modeling of 4-DOF Ship Maneuvering Motion with Recurrent Neural Networks
Tianhua Wang, China Ship Science Research Center; Zhiliang Wang, Tianjin University; Ke Zeng, Chen Yang, Jian Gu, Shuo Xie, China Ship Science Research Center, China

88. UNDERWATER III: Acoustics
Wednesday June 19 10:30 Nefeli A
Chair: Francesco Di Nardo, Univ Politecnica delle Marche, Italy

Cost-effective Architectures for Underwater Sound-recording Systems
David Scaradozzi, Università Politecnica delle Marche; Rocco De Marco, CNR; Francesco Di Nardo, Università Politecnica delle Marche; Daniel Li Veli, CNR; Daniele Costa, Laura Serepanti, Università Politecnica delle Marche; Alessandro Lucchetti, CNR, Italy

Numerical Investigation of Hydrodynamic Noise by Flows around Three-Dimensional Circular Cylinder
Jiajia Qin, Shanghai Jiao Tong University; Hailong Deng, Wuhan Second Ship Design and Research Institute; Yuan Zhuang, Decheng Wan, Shanghai Jiao Tong University, China

Automatic Classification of Underwater Sounds Measured under a Shipping Lane Using Machine Learning and Its Validation with AIS Data
Masahiro Sakai, Osaka University, Japan
Correlation Analysis between Vibration and Radiated Noise of a Power Cabin for Underwater Vehicles
Yaoze Zhuang, Deqing Yang, Qing Li, Shanghai Jiao Tong University, China

Multi-Objective Optimization on Underwater Radiated Noise of Rim-Driven Thruster
Zhongwan Wu, Jie Gong, Jiangming Ding, Junjun Su, Wuhan University of Technology, China

Hydroacoustic Pattern of Twin Propellers
Giovanni Petris, Marta Cianfera, Vincenzo Armenio, University of Trieste, Italy

89. AST XVIII: Propulsion 4
Wednesday June 19 10:30 Exec. A
Chair: Munehiko Minoura, Osaka University, Japan

Numerical and Experimental Design of a Helix Coil Hydrogen Cooling System
Johannes Reitenberger, Sabrina Barm, Paul Bersiner, André Baeten, Technical University of Applied Sciences Augsburg; Christian obliger, University of Augsburg, Germany

Factor Analysis of Ship Propulsive Performance Including Fouling and Aging Deterioration for On-board Monitoring Data
Munehiko Minoura, Tomoka Kato, Madoka Tanabe, Takaaki Hanaki, Osaka University, Japan

Evaluation of Shaft and Rudder System Deformation in Shipbuilding Process Based on Finite Element Analysis
Jae-Sung Lee, Bong-Gook Kang, Dong-Ju Lee, HD Korea Shipbuilding & Ocean Engineering, Korea

Research on Leakage Characteristics of LNG-Powered Ship Gas Pipeline
Jin Qin, Yingchun Xie, Guijie Liu, Dingxin Leng, Xiaojie Tian, Jinchi Zhu, Haoxun Yuan, Jie Liu, Ocean University of China, China

90. MECHANICS V: Collision and Impact 3
Wednesday June 19 10:30 Exec. B
Chair: Yanbo Liu, Harbin Engineering University, China

Investigation on Dynamic Behavior of Gradient Honeycomb Sandwich Plate under Repeated Impacts
Mengying Mu, Kailing Guo, Shao Zhou, Ling Zhu, Wuhan University of Technology; Shaoling Dai, Weihai Huanghai Shipbuilding Co, China

Simplified Structural Assessment of Ship Collision against a Semisubmersible Offshore Wind Floater
Priscilla Salazar L, Gabriel Vandegar, University of Liège, Belgium; Ye Pyae Sone Oo, Hervé Le Sourne, ICAM School of Engineering, France; Philippe Rigo, University of Liège, Belgium

**Numerical Study on Damage of Subsea Pipeline by Hooking of Dragging Anchor**
Jian Zhou, Shiming Yang, Qianshuo Qi, Yanbo Liu, Harbin Engineering University, China

**Research on the Prediction of Mechanical Properties of Micro Curved Shell FCC Lattice Metamaterial Based on Machine Learning**
Xiansheng Zhou, Caiyu Yin, Jingxi Liu, Huazhong University of Science and Technology; Zeyu Jin, Wuhan University of Technology, China

**Research on the Give-way Vessels Determination Based on Field Theory**
Xiaobin Jiang, Yunfeng Zhang, Yihua Liu Shanghai Maritime University, China

**91. GEOTECH IV: Foundation**
Wednesday June 19 10:30 Exec. C
Chair: V. S. Ozgur Kirca, BM Sumer Consultancy & Research, Turkey

**Soil-Pile-Structure Interaction Investigation for a Marine Jetty**
Marios Koronides, Toula Onoufriou, Cyprus University of Technology, Cyprus; Constantine Michailides, International Hellenic University, Greece

**A Study on Bearing Characteristics of Offshore Group-pile Foundation**
Zheyu Yang, Yuan Zhang, Xinglan Bai, Peng Xu, Zhejiang Ocean University, China

**Subterranean Hazard Detection through Infrared Images and Convolutional Neural Network**
Byeong-su Jang, Dae-Hong Min, Hyung-Koo Yoon, Daejeon University, Korea

**Scour Around and Sinking of Subsea Structures Under Combined Waves and Current**
V. S. Ozgur Kirca, Roghayeh Ghasempour, Istanbul Technical University; B. Matlu Sumer, BM Sumer Consultancy & Research, Turkey

**WEDNESDAY 14:00**

**92. HYDRODYNAMICS VIII: Tsunami and Hazard**
Wednesday June 19 14:00 Athena
Chair: Takayuki Hashimoto, Taisei Corporation, Japan

**Experimental Study on Tsunami Wave Forces Considering Density Change of Turbid Water Containing Sediment**
Takayuki Hashimoto, Takahide Honda, Yukinobu Oda, Taisei Corporation, Japan
Tsunami-induced Boulder Motion on a Sandy Slope
Pin-Tzu Su, Ira Didenkulova, Atle Jensen, University of Oslo, Norway

Development of a Probability-Based Tsunami Hazard Analysis Curve for the Waters around Penghu, Taiwan
Yi-Cheng Chang, Arthur T.H. Perng, Sinotech Engineering Consultants, Taiwan China

Extreme Loading on Debris Motion during Tsunami Inundation
Ioan Nistor, University of Ottawa, Canada

Tsunami Risk Assessment and Mapping along the Calabrian Coasts
Giuseppe Barbaro, Giandomenico Forti, Francesca Minniti, Ilaria Pavone, Mediterranea University of Reggio Calabria; Luigi Mollica, Michele Folino Gallo, Calabria Region, Civil Protection Department, Italy

Computational Fluid Dynamics Modelling of Tsunamis Generated by Granular Landslides
Alessandro Romano, Roma Tre University, Italy; Javier L Lara, Gabriel Barajas, Universidade de Cantabria, Spain; Giorgio Bellotti, Federica Cioffi, Roma Tre University, Italy; Iñigo J Losada, Universidade de Cantabria, Spain

Towards Offshore Wind Farm Design through Comprehensive Meteo-Oceanographic Analysis in Extreme Weather Conditions
Xuan Liu, Xiuqing Xing, Chang Wei Kang, Xiaoqin Zhang, Venugopalan S. G. Raghavan, Vinh Tan Nguyen, Institute of High Performance Computing; Chin Lee Lim, Seatrium Limited, Singapore

Prediction of Local Scouring of Offshore Wind Turbine Foundations Based on the Amplification Principle of Local Seabed Shear Stress
Dong Zeng, Wuyang Bi, Yi Yu, Yun Yan, Weiqiu Chen, Guangdong Yudean Zhanjiang Wind Power Co; Yong Yao, Guangdong Energy Group Science and Technology Research Institute Co; Cheng Zhang, South China University of Technology; Tianyu Wu, Dalian University of Technology, China

Dynamic Characteristics Research for Offshore Wind Turbine Multi-bucket Jacket Foundation during Lowering Process
Jianyu Ren, Puyang Zhang, Shengwei Zhang, Conghuan Le, Hongyan Ding, Tianjin University, China

Analysis of Energy Dissipation in Varying Monopile Follower Sizes for Offshore Jacket Foundation
Tingyuan Wang, Tianjin University; Xuexiang Hu, Fujian Provincial Investigation, Design and Research Institute of Water Conservancy and Hydropower; Puyang Zhang, Tianjin University; Yi Gan, Zhengxing He, Binbin Chen, Fujian Provincial Investigation, Design and Research Institute of Water Conservancy and Hydropower, China
Influence of Environmental Load Directions on the Design of Shared Mooring for an Integrated Floating Fish Cage-Wind Turbine System
Yu Ma, Lin Li, Muk Chen Ong, University of Stavanger, Norway; Jingzhe Jin, Shanghai Jiao Tong University, China; Zhiyu Jiang, University of Agder, Norway

94. SPRU X: Pipeline Mechanics 2
Wednesday June 19 14:00 Salon B
Chair: Hassan Karampour, Griffith University, Australia

An Intuitive Graphical Method for Assessing the Expansion Behaviour of Submarine Pipelines and Its Application to Global Buckling and Walking
Ruud Selker, Ping Liu, Worley Offshore Energy, Netherlands

Retrospective Analysis of the Lateral OOS and Buckling Response of Operational Deep-Water Pipelines
Carlos Sicilia, TotalEnergies, Denmark; Ismael Ripoll, Xodus Group, UK;

Full-scale Bending Tests of Offshore Pipelines in the Plastic Domain, and Associated Development of Enhanced Numerical Bending Models
Gioergio Arcangelietti, Mariella Busco, Paolo Catena, Andrea Esposito, Giulio Monacchi, Paolo Monti, SAIPEM S.p.A.; Andrea Bufalini, Francesco Iob, Luigi Russo, RINA Consulting Centro Sviluppo Materiali S.p.A., Italy

Application of Cone Penetration Testing (CPT) in Site Investigation for Wind Farm Development: Predicting Soil Properties Using Advanced Machine Learning Techniques
Xinghai Lei, CNOOC Energy Development Co; Zijian Zhang, Tsinghua University (Shenzhen); ZhiChuan Li, Jingshui Lao, CNOOC Energy Development Co; Ya Li, Cun Hu, Tsinghua University (Shenzhen), China

Holistic Design of Pipelines Installed with Residual Curvature (RC)
Martin Teigen, Kristian Norland, Malik Muhammad Ibrahim, Adam Zborowski, Subsea7, Norway

Local Buckling Analysis and Evaluation Method of Dented Submarine Pipelines under the Combined Loadings
Fuheng Hou, Yanfei Chen, Yu Liu, Rongfeng Zhong, Ruihao Liu, Rui Li, China University of Petroleum (Beijing), China

95. OFFSHORE MECHANICS VIII: Offshore System, General 1
Wednesday June 19 14:00 Nafsika A
Chair: Jinlong Wang, CNOOC Research Institute, China

Effect of Uncertainties on Subsea Gate Box Layout Optimization through an Evolutionary Optimization Algorithm
Leonardo Sales, Milan Stanko, Norwegian University of Science and Technology; Edmary Altamiranda, Aker BP ASA, Norway

Developing Mega Artificial Shelter on Continental Shelf
Wei Lin, Yinghui Tian, Mark Cassidy, University of Melbourne, Australia
Conceptual Design and Principle Prototype Test for Deepwater Medium Workover System
Jinlong Wang, Leixiang Sheng, Xiangqian Yang, CNOOC Research Institute, China

Research on the Design of King Post Style Single Point Mooring System
Zhiyuan Ji, Junjie Lei, Wei Chen, Baohui Dong, Bo Liu, Offshore Oil Engineering Co, China

Design and Testing of a Multi-channel In-situ Sampling System for Marine Microorganisms
Ying Wang, Jin Guo, Xinghui Tan, Zhenwu Yu, Yuan Lin, Jiawang Chen, Zhejiang University, China

Efficient Resource Allocation for Offshore Intelligent Navigational Aids Using Deep Reinforcement Learning
Ruolan Zhang, Chenhui Zhao, Mingyang Pan, Dalian Maritime University, China

Experimental Research on Dynamic Load Characteristics for Mating Processes of Floatover Operations
Xukai Fang, Xiaoxian Guo, Yu Chen, Rongze Wang, Wenyue Lu, Xin Li, Xinliang Tian, Shanghai Jiao Tong University, China

96. Keynote 3: HPM: Cryogenic
Wednesday June 19 14:00 Nafsika B
Chair: HyunWoo Jin, ExonMobil Tech & Eng, USA

Japan’s Cryogenic Materials R&D for Liquefied Hydrogen Storage (Oral Presentation Only)
Tomoya Kawabata, University of Tokyo, Japan

97. AST X: Ship Maneuvering 3
Wednesday June 19 14:00 Nefeli B
Chair: Yonghwan Kim, Seoul National University, Korea

Identification Modeling of Ship Maneuvering Motion Based on LSTM Deep Neural Network
Yan Jiang, Lei Yu, Intelligent Science and Technology Academy of CASIC; Xuegang Wang, CCCC Fourth Harbor Engineering Institute Co; Zaojian Zou, Shanghai Jiao Tong University, China

Platform Supply Vessel Turning Simulations in Regular and Irregular Waves
Sebastian Bielicki, Maritime Advanced Research Centre, Poland

Study on Ship Manoeuvrability in Adverse Weather Conditions: Feasibility of IMO Guideline
Heesuk Yang, Yonghwan Kim, Seoul National University, Korea

Coupled Impulse Response Function-CFD Based Method for Seakeeping Analysis Considering Slamming Load
Abhishek Acharya, SLB-OneSubsea (SubEno India Pvt. Ltd); Fahad Peeral Paloth, Ranadev Datta, IIT Kharagpur, India
98. UNDERWATER IV: Design
Wednesday  June 19  14:00  Nefeli A
Chair: Masayoshi Ozawa, Kobe City College of Tech, Japan

Framework Design and Realization of a Work-class ROV Operation Training Simulation System
Ruinan Guo, Yingfei Zan, Harbin Engineering University; Lihui Li, Offshore Oil Engineering Co; Bingbing Qi, CNOOC Shenzhen Offshore Engineering Solutions; Lifeng Tian, Offshore Oil Engineering Co, China

Development of a Small ASV System to Survey Seaweed Beds
Kouki Yoshimura, Makoto Morito, Tokyo University of Marine Science and Technology; Takami Mori, Kenichiro Sato, Tomohiko Sugiyama, Koki Uda, Marine Works Japan Ltd.; Junichiro Tahara, Tokyo University of Marine Science and Technology, Japan

Improving Soft Gripper Design Through Regression of Simulated Results
Eric Rupert, Stephen Licht, University of Rhode Island, USA

Compact Multi-point Contact UVG for Adsorption of Bio-attached Surfaces
Masayoshi Ozawa, Ryohei Ohnishi, Toshihiko Shimizu, Kobe City College of Technology, Japan

Design of Sampling System for Underwater Sediment and Stratified Water Samples
Dongrui Ruan, Haijun Wang, Letian Gan, Tiefeng Li, Zhejiang University, China

99. AST XIX: Cavitation
Wednesday  June 19  14:00  Exec. A
Chair: Hua Liu, Shanghai Jiao Tong Univ, China

Cavitation Analyses of Trochoidal Propellers
Ville Viitanen, VTT Technical Research Centre of Finland; Mika Nuutinen, ABB Marine and Ports; Antonio Sánchez-Caja, Jussi Martio, Ilkka Perälä, VTT Technical Research Centre of Finland, Finland

Proposal for the Control Method of Rotational Speed to Reduce the Cavitation of a Marine Propeller
Yeojin Hyun, Kwang-Jun Paik, Soon-Hyun Lee, Inha University, Korea

The Air Entrainment Effect of Pump Blades Operation under Different Water Depths
Chen-Shan Kung, Ya-cing You, Pei-Yu Lee, Siu-Yu Pan, ATE Energy International, Taiwan China

Investigation of Main Cavity Formation and Fragmentation in Plunging Breaking Waves: Influence of Wave Steepness and Surface Tension
Wenbin Zhang, Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong University, China

Experimental Study on Bubble Pulsation Characteristics Close to the Fixed Surface with Multiple Air Bubbles Attached
Shizeng Wu, Jiaxia Wang, Kun Liu, Mingzuo Jiang, Jiangsu University of Science and Technology, China

**Numerical Study on the Effect of Relative Thickness on Hydrofoil Cavitation**
Yang-Fan Xu, Qi Chen, Xiao-Wei Ying, Hang Lin, Hao Liu, Song Nie, 715 Research Institute of China State Shipbuilding Corporation, China

Research on the PHV Cavitation and Fluctuating Pressure Performance of Heavy Loaded Duct Azimuth Propulsor
Jianqiang Wang, Menzi Yang, Weiping Kong, Kailiang Wang, Hui Lin, Marine Design & Research Institute of China, China

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**100. MECHANICS VI: Additive Manufacturing**
Wednesday June 19 14:00 Exec. B
Chair: Ahmed M Ibrahim, US Naval Academy, USA

**Incorporating Additive Manufacturing Methods into Structural Model Testing**
Ahmed M Ibrahim, Brian C. Earp, Jonathan Slager, William E Beaver, United States Naval Academy, USA

**The Investigation of the Hysteretic Behavior of a Three-Dimensional Viscoelastic Structure with Negative Poisson’s Ratio for Vibration Isolation of Semi-Submersible Offshore Platform**
Chuanyin Kang, Yuan Zhang, Peng Xu, Zhejiang Ocean University, China

**Application of Industrial 3X-Ray CT(Computed Tomography) to Improve Reliability of Additive Manufacturing Technology**
[Proceedings only]
Yeong-Su Ha, Jun-Beom Kwon, Won-Jon Yang, Korea Institute of Materials Science; Jung-Kwan Seo, Pusan National University, Korea

**Comprehensive Hydroelastic Analysis of a Large Container Ship Based on the Beam-connected-discrete-module Method**
Shiyuan Zhang, Shanghai Jiao Tong University; Jijiang Jiang, COSCO Shipping Heavy Industry; Shixiao Fu, Shanghai Jiao Tong University; Shaobo Wu, COSCO Shipping Heavy Industry; Yusong Ye, Tianjin University, China

**Frequency-domain Simulation of Second-order Difference-frequency Wave Forces on Flexible Floating Structures in Bichromatic Waves**
Shuai Li, Shi Deng, Xiaolong Yang, Liang Yang, Offshore Oil Engineering; Shixiao Fu, Shanghai Jiao Tong University, China

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**101. GEOTECH V: Soil Properties**
Wednesday June 19 14:00 Exec. C
Chair: Atsushi Yashima, Gifu University, Japan

**Evaluation of Chemical Grouting by Dynamic Probing and Electrical Logging**
Yoshinobu Murata, Gifu University; Yasutoshi Ohno, Taiyou Kisokougyou Co; Atsushi Yashima, Gifu University; Kenji Shimosaka, TODA Corporation, Japan
Evaluation of Jet Grouting by Dynamic Probing and Electrical Logging
Yasutoshi Ohno, Taiyou Kisokougyou Co; Yoshinobu Murata, Gifu University; Kenji Shimosaka, TODA Corporation; Atsushi Yashima, Kazuhide Sawada. Gifu University, Japan

Bayesian Updating of Soil Parameters in Ground Settlement of Reclaimed Land
Siau Chen Chian, Chun Fai Leung, National University of Singapore, Singapore; Zhichao Shen, South China University of Technology, China

Numerical Study of Seabed Response Around a Monopile Foundation Over A Submarine Slope Under Combined Waves and Current
Bing Zhang, Shandong Provincial Communications Planning & Design Institute Group Co; Ke Sun, Risheng Wang, Shandong Jiaotong University, China

Penetration Resistance of Buried Pipeline in Rock Berm overlaying Soft Clay Seabed
Koushik Halder, Alasdair Maconochie, Justin Kennedy, TechnipFMC, UK

Landslide-Induced Effect on Subsea Infrastructure Under Different Trigger Mechanisms [Oral presentation]
Pavel A. Trapper, Miriam Gindis, Ben-Gurion University of the Negev; Avshalom Ganz, Ariel University, Israel

Experimental Studies of the Cyclic Lateral Laying Effect on the Initial Embedment Depth of the Exposed Offshore Pipelines on Marine Soils
Zhigang Liu, Hairong Xiong, Offshore Oil Engineering Co; Cun Hu, Tsinghua University (Shenzhen), China

WEDNESDAY 16:20

102. HYDRODYNAMICS IX: Metocean
Wednesday June 19 16:20 Athena
Chair: Haejin Kim, Korea Inst of Ocean Science & Tech, Korea

Extreme Waves in the Southern Baltic
Witold Cieślikiewicz, Institute of Hydro-Engineering, Polish Academy of Science, Poland; Ove T Gudnestad, University of Stavanger, Norway

A Revisit to the Formation of Wing Waves in the Evolution of Three-Dimensional Extremely Large Wave Groups
Jianhong Zhang, Wenyue Lu, Xin Li, Xiaoxian Guo, Shanghai Jiao Tong University, China

Effects of Nonlinearity on the Crest Shape of Extreme Irregular Sea Waves: Effects of Steepness, Water Depth and Directionality
George Spiliotopoulos, Vanessa Katsardi, University of Thessaly, Greece

Optimizing Typhoon Intensity Prediction Models: Pilot Study adopting Sea Spray-mediated Flux
Haejin Kim, Kyeong Ok Kim, Hanna Kim, Korea Institute of Ocean Science & Technology, Korea
Change Trend and Impact Analysis of Super Typhoons in Oil and Gas Areas of China under Climate Change
Qi Zhang, Tao Liu, Qin Hu, Haiyue Tan, CNOOC Research Institute, China

Field Observation and Numerical Simulation of Extreme Met-Ocean Conditions: A Case Study of Typhoon Events in South China Sea
Chen Gu, Caixyu Wang, Shanghai Investigation Design and Research Institute; Hao Wang, Meng Jiao Du, China Three Gorges Corporation; Bihong Zhu, Shanghai Investigation, Design, and Research Institute, China

103. RENEWABLE ENERGY XI: FOWT 5
Wednesday June 19 16:20 Salon A
Chair: Mark Fuglem, C-CORE, Canada

Challenges for Development of Offshore Wind Energy South of Newfoundland
Mark Fuglem, C-CORE; Ahmed Derradjia-aouat, National Research Council of Canada; Paul Stuckey, Jonathon Bruce, Freeman Ralph, C-CORE, Canada

Calibration of Numerical Model for a Semi-Submersible Type FOWT with Various Sea States
JinWuk Hong, Moonkyu Park, Joongsoo Moon, HD Hyundai Heavy Industries, Korea

The Influence of Steady/Turbulent Wind and Irregular Waves on the Motions and Fatigue Performance of an Improved Floating Offshore Wind Turbine
Chaoshuai Han, Kun Li, Lixin Xu, Xiu Li, Xiaosun Xu, Jiangsu University of Science and Technology, China

Blade Fatigue Damage Analysis of Floating Offshore Wind Turbine Caused by Extreme Wind Conditions
Shu Dai, Shanghai Investigation, Design & Research Institute; Tao Shi, East China University of Science and Technology; Hao Wang, Dalian Maritime University; Shanran Tang, Guangzhou Maritime University; Yue Song, Yinan Liang, Shanghai Investigation, Design & Research Institute; Jianfeng Wen, East China University of Science and Technology, China

Installation Model Test of a New Concept Hybrid Spar with 15MW Wind Turbine
Jin Wang, Yi Dai, Shanghai Jiao Tong University; Liang Li, Ocean University of China; Yan Gao, Harbin Engineering University; Yongsheng Zhao, Tao Peng, Shanghai Jiao Tong University, China

104. SPRU XI: Pipeline Mechanics 3
Wednesday June 19 16:20 Salon B
Chair: Frank Lim, 2H Offshore, UK

A Polymeric Material Model in Finite Element Analysis Used for Subsea Pipeline Design
Chen Shen, Minh Le, Eric Giry, Sebastian Blassiau, Diego Pavone, Saipem SA, France

Comparison of Liner Stability Criteria for Structure Integrity Assessment of Mechanically Lined Pipes during Installation and Subsea Operation
Tomasz Tkaczyk, Daniil Vasilikis, Bartosz Dywan, Apostolos Nasikas, TechnipFMC, UK

On Propagation Capacity of Hybrid Steel-CFRP (HSC) Subsea Pipelines under External Pressure
Mahmoud Alrsai, Al-Hussein Bin Talal University, Jordan; Hassan Karampour, Griffith University, Australia; Ala’ Alsalehan, Al-Hussein Bin Talal University, Jordan

The Effect of Coatings on Pipeline Collapse Resistance
Romain Vivet, TechnipFMC, France; Aurelien Pepin, Michael Whigham, TechnipFMC, UK; Marie F instad Opgard, Havar Ilstad, Erik Levold, Equinor, Norway

Structural Behavior of Corroded Subsea Pipelines Repaired with Composite Materials
Xu Jia, Lusheng Jia, CNOOC Research Institute; You Zong, Fuheng Hou, Zhiluo Gao, Zuomin Zhang, China University of Petroleum (Beijing), China

105. OFFSHORE MECHANICS IX: Offshore System, General 2
Wednesday June 19 16:20 Nafsika A
Chair: Leonardo Sales, NTNU, Norway

Application of Environmental Contour Method to Design Sea-State Estimation of Floating Structures Encountering Typhoon around Japan [Oral presentation]
Yuya Higuchi, Wataru Fujimoto, Fuminori Yanagimoto, Kinya Ishibashi, ClassNK, Japan

Response Based Analysis of CALM Buoy Structure [Oral presentation]
Aijun Wang, Jaekyun Kim, Chris Thorntom, Lloyd’s Register, UK

A Comprehensive Quantitative Evaluation Model of Offshore Mobile Drilling Platform Based on Analytic Hierarchy Process and Entropy Weight Method
Bin Chen, CNOOC; Shuhai Liu, China University of Petroleum (Beijing); De Yan, CNOOC; Jiakang Wang, Jin Yang, Zhan Yang, Qianling Xue, China University of Petroleum (Beijing), China

Research on the Semi-floating Operation Performance of the Self-elevating Gravel Laying and Leveling Platform
Chang Gao, Tianming Zhang, China Classification Society, China

Prediction of Wave-Induced Motion Response for High Sea State Moonpool Salvage Catamaran
Yunlong Wang, Xin Zhang, Zhiwen Chen, Yue Jia, Dalian University of Technology, China
Wave-Field Reconstruction from Moored Floating Structure Using Deep Stereo [Proceedings only]
Omar Jebari, SeongHyeon Hong, Travis Hunsucker, Florida Institute of Technology, USA; Do Kyun Kim, Seoul National University, Korea; Chungkuk Jin, Florida Institute of Technology, USA

106. HPM I: Adv Materials & Structures 1
Wednesday June 19 16:20 Nafsika B
Chair: Yoon-Uk Heo, Pohang Univ of Sci and Tech, Korea
Co-chair: Taishi Fujishiro, Nippon Steel Corp, Japan

On the Sensitivity of Stress Intensity Factors to Modelling Choices for Steel K Joints
Ammar Al-Hagri, Jacob Paamand, Philipp Ulrich Haselbach, Henrik Stang, Athanasios Kolios, Evangelos Katsanos, Technical University of Denmark, Denmark

Stress Concentration Factors (SCFs) for Multi-planar Tubular KK-joints of Jacket Substructures in Offshore Wind Turbines (OWTs)
Hamid Ahmadi, University of Southern Queensland; Hassan Karampour, Griffith University, Australia; Adel Alizadeh Atalo, University of Tabriz, Iran

Performance of ML and NN Methods for SCF Prediction
Althaf Mohammed, Saurabh K. Khandelwal, S. R. Dasari, Yogesh M. Desai, Indian Institute of Technology Bombay, India

A Review on the Advanced High Performance GMAW Variants under the Aim of the Dynaflex Technology
Régis Henrique Gonçalves e Silva; Mateus Barancelli Schwedersky; Cleber Marques; Cláudio Marques Schaeffer; Daniel Galeazzi, Giulia Ciacci Zanella, Federal University of Santa Catarina, Brazil

Optimized Design of Surface Anti-corrosion of Stainless Steel Tray Outside the Floating Production Storage and Offloading
Wei Huang, Shuguang Ma, Weiwen Kong, Hongtao Yuan, Shujing Li, Qingming Tian, Shanghai Waigaoqiao Shipbuilding, China

107. AST XI: Optimization 1
Wednesday June 19 16:20 Nefeli B
Chair: Inwon Lee, Pusan National University, Korea

Research on Optimization Design of Unmanned Surface Vehicle with Lattice Structure
Junxia Zhu, Yuan Wang, Bo Xu, Jiameng Wu, Marine Design & Research Institute of China; Wenwang Wu, Shanghai Jiao Tong University, China

Mid-ship Section Optimization Using Domain Knowledge-based Multilevel Grouping and Cooperative Bayesian Optimization
Puyu Jiang, Jun Liu, Yuansheng Cheng, Huazhong University of Science and Technology, China

Ship Hull Form Optimization Using Point Cloud Sampling and Mesh Deformation
Huaiyuan Qian, Renchuan Zhu, Shanghai Jiao Tong University, China

Application of Improved Freeform Deformation Techniques in Ship Hull Surface Deformation
Junmin Li, Chaohuan Yue, Hanwen Zhang, Wuhan University of Technology, China

Hull Form Optimization of KCS Based on Adaptive Sampling Strategy
Yabo Wei, Jianhua Wang, Decheng Wan, Shanghai Jiao Tong University, China

Optimization of Drag Coefficient of Cruise Ship Based on Three Factors-Levels Orthogonal Design
Yi-ming Huang, Jia-ning Li, Yong Guo, Shanghai Waigaoqiao Shipbuilding Co.; Jin-peng Jing, Wuhan University of Technology; Gao-shuai Wang, Zhou-yuan Xu, Shanghai Waigaoqiao Shipbuilding Co, China

Optimization of Jialing River Ship Main Dimensions Based on Multiple Navigation and Hydropower Hubs [Proceedings only]
Zhen Zhang, Wuhan University of Technology; Zuxian Tan, Yang You, Kehua Ai, Wei Zeng, Sichuan Maritime Affairs Maritime Management Center; Hao Wang, Shunhuai Chen, Bao Zhang, Wuhan University of Technology, China

108. UNDERWATER V: AUV Wednesday June 19 16:20 Nefeli A
Chair: Satoru Yamaguchi, Kyushu Univ, Japan

Maneuverability Assessment of an AUV Based on Non-Inertial Frame CFD Simulation Results and AI-Recognized System
Siyu Chan, Hiroyoshi Suzuki, Osaka University, Japan

Numerical Study of Ocean Current Effect on the Motion of Underwater Glider
Tiechao Bai, Yongyan Ma, Jiawei Yu, Zhiguo Zhang, Huazhong University of Science and Technology, China

A Better X Rudder AUV Depth and Heading Control Method
Linyuan Chen, Zhiqiang Yang, Huazhong University of Science and Technology; Bin He, Wuhan Second Ship Design and Research Institute; Tingxiao Xiong, Guohua Xu, Huazhong University of Science and Technology, China

The Study about the Motion Control in Vertical Plane of AUV Based on the Fuzzy PID and Fuzzy Immune PID
Zhiqiang Yang, Huazhong University of Science and Technology; Bin He, Xiong Shen, Wuhan Second Ship Design and Research Institute; Guohua Xu, Huazhong University of Science and Technology, China

Numerical Study on Rapid Diving Motion of a Multi-state Underwater Vehicle
Ce Lv, China Ship Development and Design Center; Meng Meng, Chaobang Yao, Guohua Dong, Dakui Feng, Huazhong University of Science and Technology, China
Design of the Fault Tolerance Control Method for X-rudder Underwater Vehicle
Haochen Hong, Huazhong University of Science and Technology; Kan Xu, Wuhan Second Ship Design and Research Institute; Tinxiao Xiong, Guohua Xu, Huazhong University of Science and Technology, China

109. AST XX: Nuclear and Photovoltaic Platform
Wednesday June 19 16:20 Exec. A
Chair: Howard H Chung, formerly Argonne Natl Lab, USA

Mingxuan Shi, Xuchong Zhao, Zhongdi Duan, Hongxiang Xue, Yuchao Yuan, Jun Liu, Wenyong Tang, Shanghai Jiao Tong University, China

Conceptual Design and Performance Evaluation of Connection and Layout solutions for a Novel Pontoon-truss Offshore Floating Photovoltaics Concept
Wenping Luo, Xiantao Zhang, Xinliang Tian, Zhengshun Cheng, Binrong Wen, Xin Li, Yong Luo, Shanghai Jiao Tong University, China

Chengming Qin, Zhe Chen, Yanping He, Min Zen, Shanghai Jiao Tong University, China

Study on Thermoelectric Power Generation and Circulation Performance of Polar Ice-Based Floating Buoys
Lvna Qin, Jianjun Wang, Huazhong University of Science and Technology, China

THURSDAY 08:00

110. HYDRODYNAMICS X: Instruments, Measurement
Thursday June 20 08:00 Athena
Chair: Moqin He, National Research Council Canada, Canada

Application of Stereo Vision for Measuring Ship Motions in Towing Tank Test
Chung-Hung Lin, Yi-Chen Lin, National Cheng Kung University, Taiwan China

Noncontact Measurement of Wave Field Using Thermal Stereoscopic Imaging
Deyu Li, Longfei Xiao, Handi Wei, Meng Shan, Yinghe Yang, Shanghai Jiao Tong University, China

Implementing Dimensional Analysis for machine Learning Engineering Application
Moqin He, Ayhan Akinturk, Dong Cheol Seo, Lawrence Mak, Hasanat Zaman, National Research Council Canada, Canada

Towing Tank Stereo-PIV Measurements of the Evolution in Fluid Velocity from Bank to Ship in a Confined Waterway Configuration
Pablo Nieutín-Redon, Damien Calluaud, Malick Ba, Gérard Pineau, University of Poitiers, France

Current Measurement by Use of Synchronous Wave Probes: Method and Examples of Application for Propagating or Partially Standing Waves
Alexandra Cuevas, Vincent Rey, University of Toulon; Fabrice Ardhuin, Université de Bretagne Occidentale; Julien Touboul, Ecole Centrale Marseille, France

Comparison of Three Wave Sensors through a Full-Scale Experimental Campaign
Thomas Kabel, Julie C. Kristoffersen, Niranjan Desai, Christos T. Georgakis, Aarhus University, Denmark

111. RENEWABLE ENERGY XII: FOWT 6
Thursday June 20 08:00 Salon A
Chair: Shu Dai, SIDRI, China

Construction of a Prediction Model Using LSTM for Top Tension of Mooring Line in Floating Offshore Wind Turbine
Mitsushi Watanabe, National Maritime Research Institute, Japan

The Motion Forecasting Study of Floating Offshore Wind Turbine Using Self-attentive Long Short-term Memory Method
Sijia Deng, Dezhi Ning, Yu Zhou, Dalian University of Technology; Lin Lin, China Three Gorges Corporation, China

Scale Resolving CFD Simulations of Aerodynamic Performance of Wind Turbines
Vladimir Krasilnikov, Lucia Sileo, SINTEF Ocean, Norway

Dynamic Response of 10 MW Monopile-Supported OWT under Combined Effects of Wind, Wave and Ship Impact
Zhichuan Li, Bo Qi, Yongfei Zhu, Shuai Pi, CNOOC Energy Technology & Services Ltd; Qiuwen Song, Northwest Engineering Corp; Yiyang Hu, Xin Li, Haisheng Zhao, Dalian University of Technology, China

Numerical Study of Hull Distortion for a Four-Legged Jack-Up Vessel under Diagonal Preloading
XueJun Wang, ZhuangJian Liu, Teck-Bin Arthur Lim, Chang Wei Kang, Institute of High Performance Computing; Huawei Mao, Sze Min Ng, Jason Cher Kiang Chia, Seatrium Pte. Ltd, Singapore

112. AST XXIII: Second MaTCH Symposium (Moved to opening session)
Monday June 17 08:30 Jupiter
Chair: HW Jin, Exxon Mobil Technology & Engineering, USA

Moved to Opening Session

113. OFFSHORE MECHANICS X: Environment, Climate 1
Thursday June 20 08:00 Salon B
Chair: Jin S Chung, ISOPE, USA

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Challenge to SHM of Road Embankment without Traffic Control
Ueno Shinya, Fujioka Kazuyori, Nakashima Kosuke, Central Nippon Expressway Co; Yamazaki Mitsuru, Shimizu Mitsuaki, Central Nippon Highway Engineering Nagoya Co; Yashima Atsushi, Murata Yoshinobu, Sawada Kazuhide, Gifu University; Konishi Chisato, OYO Co, Hayashi Koichi, Kyoto University, Japan

Integrated Simulation Technology of Underground Gas Storage Based on Digital Twin Technologies
Peixian Wang, Sinopec Dalian Research Institute of Petroleum and Petrochemicals; Jun Ma, China Petroleum & Chemical Corp; Zunzhao Li, Xiaolin Wang, Mingyi Li, Xiaosi Wang, Sinopec Dalian Research Institute of Petroleum and Petrochemicals; Jinjie Ouyang, Kongsberg Digital Technology Services (Beijing) Co; Ya Wang, Shizhe Yao, Sinopec Underground Gas Storage Branch Co; Mingrui Liu, Sinopec Dalian Research Institute of Petroleum and Petrochemicals; Wanli Xiong, Sinopec Underground Gas Storage Branch Co; Kai Ding, Sinopec Dalian Research Institute of Petroleum and Petrochemicals; Shihao Ding, Sinopec Underground Gas Storage Branch Co, China

A Real-time Inversion Framework for Carbon Equivalent Emissions in Oil and Gas Extraction based on Vision Transformer
Zehua Song, China University of Petroleum (Beijing), China; Xiaoyang Yu, ByteDance, USA; Yu Song, Jin Yang, Dongsheng Xu, Kejin Chen, Fangfei Huang, Bin Chen, China University of Petroleum (Beijing); Yanwei Song, Haikou Ecological Environment Agency, China

Estimation of Dilution Rate from Scrubber Outlet at Full-Scale Conditions Using Analytical Formula and Diffusion Coefficient through CFD Analysis
Kunihide Ohashi, Chiharu Kawakita, Chiori Takahashi, Akiko Masuda, National Maritime Research Institute; Yusuke Kawai, Japan Ship Technology Research Association, Japan

Designing of IMO Type B LNG Fuel Tank with a New Material of High Manganese (Hi-Mn) Steel
Won Yum, Byoung-ehul Kang, Yong-woo Cho, Teuk-jin Koh, Hanwha Ocean, Korea

A Parametric Study on the Usage of X80 Steel Pipes for the Design of Steel Catenary Riser System in Deepwater Harsh Environments
Lina Zrelli, Adeshina Adegoke, Gilles Bonnet, Vincent Loentgen, Subsea7, France

Using Small Specimens to Determine Actual Material Properties
Sjors van Es, Cécilia Braendstrup, Guy Jamar, Henk Slot, André Glas, TNO-Delft, Netherlands

The Crushing Characteristics of Steel Making Slag According to Compaction Energy
Gyeong-o Kang, Jung-goo Kang, Gwangju University; Young-sang Kim, Chonnam National University; Seong-kyu Chang, Gwangju University, Korea

**115. AST XII: Optimization 2**
**Chair:** Yiming Huang, Shanghai Waigaoqiao Shipbuilding, China

**Hull Form Optimization Utilizing the Pressure Distribution Surrogate Model Based on the Unet**
Jeongbeom Seo, Dayeon Kim, Inwon Lee, Pusan National University, Korea

**Development of a 6.5k DWT Tanker with Energy-efficient Hull Form Designed for Real Operation Conditions**
Yechang Park, Seungmyun Hwangbo, Jin-Won Yu, Yurim Cho, Pusan National University; Ju Ho Lee, Daesun Shipbuilding and Engineering Co; Inwon Lee, Pusan National University, Korea

**Reduced Order Method for Multi-speed Drag Optimization and Flow Field Prediction**
Xinwang Liu, Xiaohang Ji, Xu Sun, Harbin Engineering University; Decheng Wan, Shanghai Jiao Tong University, China

**Hull and Trim Optimization of Semi-Planning Yacht to Reduce Resistance Based on Numerical Simulation and Experimental Verification**
Shuwen Shi, Zhailiu Hao, Lixian Sun, China Ship Scientific Research Center; Xumin Xu, Shanghai Merchant Ship Design & Research Institute, China

**Hull-Form Stochastic Optimization Via High Fidelity CFD Solver and Improved Particle Swarm Optimization [Proceedings only]**
Kun Ban, Bing Chen, XinYu Chen, Long Zheng, Shunhuai Chen, Wuhan University of Technology, China

**Hydrodynamic Shape Optimization by High Fidelity CFD Solver and BP Neural Network [Proceedings only]**
XinYu Chen, Wuhan University of Technology; WeiXiang Yang, Guangxi Zhuang Autonomous Region Port and Navigation Development Center; Kun Ban, Hao Wang, Shunhuai Chen, Wuhan University of Technology, China

**116. UNDERWATER VI: Path Tracking**
**Chair:** Hiroyoshi Suzuki, Osaka Univ, Japan

**Research on Autonomous Underwater Vehicle Global Path Planning Based on Improved Ant Colony Algorithm**
Tingxiao Xiong, Zhiqiang Yang, Huazhong University of Science and Technology; Bin He, Wuhan Second Ship Design and Research Institute; Guohua Xu, Huazhong University of Science and Technology, China

**Path Tracking and Obstacle Avoidance based on Roll Optimization and Predictive Control for Underactuated AUV**
Ziqi Liu, Fang Wang, Jianghan University; Guohua Xu, Huazhong University of Science and Technology, China

Field Theory-Based Collision Hazard Avoidance for Underwater Submarines
Yihua Liu, Zhiyuan Xu, Shanghai Maritime University, China

ROV Sliding Mode Trajectory Tracking Control Based on Neural Network
Zhi Zheng, Zhejiang Ocean University; Yonghe Xie, Marine Design and Research Institute of China; Hua Zhang, Yigang Chen, Xiran Feng, Zhejiang Ocean University, China

A Learning-based Method for Tracking Maritime Obstacles in Real-time
Ha-Yun Kim, Myung-II Roh, Jisang Ha, In-Chang Yeo, Seoul National University; Nam-Sun Son, KRISO, Korea

117. AST XXI: Ship AI
Thursday June 20 08:00 Nefeli A
Chair: Iven Topp, University of Rostock, Germany

An Automated Method for the Review of a Ship's Safety Plan Based on Deep Learning
In-Chang Yeo, Myung-II Roh, Ming-Chul Kong, Seoul National University; Dongki Min, Donggeun Jeong, HD Korea Shipbuilding & Offshore Engineering, Korea

Functional Requirements for Onshore Operation Centers to Support Remotely Operated Ships
Muhammad Adnan, Lokukaluge Prasad Perera, UiT The Arctic University of Norway; Hasan Mahbub Tusher, Salman Nazir, University of South-Eastern Norway, Norway

Seismic Ship Propeller Monitoring
Iven Topp, University of Rostock; Michael Dietze, University of Göttingen; Florian Sprenger, University of Rostock; Anna Canning, Atrium Environmental UG, Germany

A Human Perception View on Holistic Anomaly Detection Systems for Maritime Engine Rooms
Anders Öster, Wärtsilä Finland Oy, Finland

Singular Value Decomposition-based Multiple Model Approach towards Developing Digital Twin Applications in Ship Performance Prediction
Mahmood Taghavi, Lokukaluge Prasad Perera, UiT The Arctic University of Norway, Norway

Short-term Forecast of Ship Pitch Based on LSTM
Zhichao Hong, Yijie Ding, Lixin Xu, Yuqi Si, Yu Yang, Jiangsu University of Science and Technology, China

Study on Debonding Prediction of CFRP Repairing Steel Plates Based on Lamb Wave and Improved Elman Neural Network
118. MECHANICS VII: Materials, Structures
Thursday June 20 08:00 Exec. A
Chair: André Baeten, Augsburg Univ of Applied Sci, Germany

Analytical Validation of an Alternative Analysis Method for IMO Type C Tank Substructure
Ji Hoon Oh, HD Hyundai Heavy Industries, Korea

Study of Vibration Response of Double-layer Orthogonal Reinforced Metamaterial Plates
Jingyu Zhang, Huachang Cui, Wenkai Dong, Zhangkai Huang, Huazhong University of Science and Technology; Hanbei Guo, The Second Ship-Designing Institute of Wuhan; Ting Wang, Meixia Chen, Huazhong University of Science and Technology, China

Research on Vibration Characteristics of Lattice meta materials Sandwiched Panel Structure
Kai Li, Yue Zhang, Caiyu Yin, Huazhong University of Science and Technology, China

A Fast Prediction Method for Input Mechanical Impedance of Pipeline Systems
Huan Ma, Meixia Chen, Kan Xie, Lei Xiong, Ting Wang, Jingyu Zhang, Huazhong University of Science and Technology, China

Enhancing Structural Safety of Secondary Barriers in LNG (Liquefied Natural Gas) Ships through Optimization of Adhesive Application
Jaehyeok Ahn, Dongwoo Kim, Yongtai Kim, Hoonkyu Oh, HD Hyundai Heavy Industries, Korea

THURSDAY 10:30

119. HYDRODYNAMICS XII: CFD 1
Thursday June 20 10:30 Athena
Chair: Chong Ma, National Maritime Research Institute, Japan

Numerical Simulation of the Flooding Process of a Compartment with Baffles by MPS Method
Jialin Wu, Shanghai Academy of Spaceflight Technology; Congyi Huang, Decheng Wan, Shanghai Jiao Tong University, China

An Investigation of Fully Nonlinear Numerical Wave Tank (2D) by Harmonic Polynomial Cell Method Incorporating Volume of Fluid Method
Chengyu Wu, Renchuan Zhu, Chaofan Li, Shanghai Jiao Tong University, China

Ocean Wave Focusing Effect by Submerged Horizontal Plate Using Particle Method
Design of DampingPool® Floating Wind Turbine for Deep Water Conditions
Lucie Guignier, Jean-Noël Dory, Yohan Percher, Riccardo Mariani, BW Ideol, France

The Fast Time-Domain Fatigue Check Method for Floating Offshore Wind Turbine
Jingkai Wang, Xiaoguo Qiao, Xiaolong Yang, Shi Deng, Haifeng Hu, Offshore Oil Engineering, China

FORCYS Conceptual Design of a Semi-submersible Floating Platform for Offshore Wind Turbines [Oral presentation]
Constantine Michailides, International Hellenic University; Eva Loukogeorgaki, Aristotle University of Thessaloniki, Greece

The Wave Energy Capture Characteristics of the Wind-Wave Hybrid System Under the Combined Action of Wind and Waves
Hui Zhang, CNOOC Research Institute; Maojie Wang, Jianggang Sun, Xingxian Bao, China University of Petroleum (East China), China

Research on Soft Robotic Fish Design, Modeling and Control Method
Xing Chen, Binrong Wen, Xinliang Tian, Peng Wang, Shanghai Jiao Tong University, China

A Swimming-Performance Optimization Method for Achieving Low Cost of Transport of Soft Robotic Fish
Yunfei Wang, Weiying Sun, Wei Tang, Zhenping Yu, Shunxiang Cao, Jintuan Qu, Tsinghua University, China

Tensile Fatigue Life Normalization Analysis of Stranded Copper Power Conductors of Flexible Power Cables
Kaien Jiang, Huadong Engineering Corporation; Peng Cheng, Zhejiang University, China

Offshore Wind Power Fluctuation Mitigation Method Based on Hybrid Energy Storage State of Charge Feedback
Yuwei Chen, Jiahua Ni, Hongke Li, Qing Chen, Powerchina Huadong Engineering Corporation, China

Bionic Lateral Line Dynamic Pressure Sensor Based on Triboelectric Nanogenerator
Jianhua Liu, Peng Xu, Linan Guo, Bo Liu, Hao Jin, Dalian Maritime University; Juntian Qu, Tsinghua University; Minyi Xu, Dalian Maritime University, China
Numerical Study on Effect of a Typical Backshore Tree Windbreak Layout on Its Vicinity Flow
Jilong Chen, Cuiping Kuang, Hongyi Li, Wei Xing, Liyuan Chen, Tongji University, China

The Spatiotemporal Distribution of the Extreme Rainfall and the Urban Influence in the Shanghai City, China
Nuo Lei, Tongji University; Chao Han, Shanghai Chengtou Xinggang Investment & Construction Group Co; Zhengzheng Zhou, Shuguang Liu, Qi Zhaung, Tongji University, China

Production and Tracking Methods of Surrogate Particles for Experimental Testing of Paint Flake Emissions Originating from Offshore Structures
Niklas Czerner, Christian Windt, Nils Goseberg, TU Braunschweig, Germany

Thermal Stress Analysis of the LNG Corrugated Cryogenic Hose during Gas Pre-cooling Process
Miaoer Liu, Fangqiu Li, Hao Cheng, Endao Li. CNOOC Gas & Power Group Co; Jun Yan, Hailong Lu, Yufeng Bu, Tingting Tang, Zhaokuan Lu, Dalian University of Technology, China

Low Temperature Fracture Behaviour of Nickel Alloy Steel 1.5662
Nariman Afzali, Natalie Stranghöner, University of Duisburg-Essen; Peter Langenberg, IWT-Solutions AG, Germany

Propagation of Interacting Cracks in Offshore Wind Welded Structures through Numerical Analysis
Jose Mishael, University of Liege, Belgium; Pablo G Morato, Delft University of Technology, Netherlands; Philippe Rigo, University of Liege, Belgium

Ship Manoeuvring Simulations Using a Hydrodynamic Hull Force Representation Including a Low-speed Range by Machine Learning
Toru Nakanishi, Takuya Ohmori, National Maritime Research Institute, Japan

A Comparison of Design of Reward Function in Ship Trajectory Tracking with Reinforcement Learning Framework
Rin Suyama, Osaka University, Japan
Numerical Simulation of Water-Air-Bubble Mixed Flows around JBC Ship
Tianyi Mao, Wentao Wang, Decheng Wan, Shanghai Jiao Tong University, China

Port Tugs Configuration of Ultra Large Container Ships
Yihua Liu, Jiuyang Mu, Shanghai Maritime University, China

Moving Particle Semi-Implicit Method for Water Flooding in a 3D Damaged Cabin
Yifan Li, Jifei Wang, Decheng Wan, Shanghai Jiao Tong University, China

125. UNDERWATER VII: Vehicles in Internal Waves
Thursday June 20 10:30 Nefeli B
Chair: Decheng Wan, Shanghai Jiao Tong Univ, China

Wall-Modeled Large Eddy Simulation for a Highly Decelerated Axisymmetric Turbulent Boundary Layer
Kangjian He, Shanghai Jiao Tong University; Fuchang Zhou, Wuhan Second Ship Design and Research Institute; Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong University, China

Wake Characteristics of a Submerged Underwater Vehicle in Two-layer Fluids
Gang Gao, Shanghai Jiao Tong University; Qingjie Meng, Wuhan Second Ship Design and Research Institute; Liushuai Cao, Decheng Wan, Shanghai Jiao Tong University, China

Simulation Analysis of Submarine Sinking Caused by Oceanic Internal Waves
Kefeng Mao, National University of Defense Technology; Xiangyu Zhang, Shanghai Artificial Intelligence Laboratory; Yangjun Wang, Xi Chen, Hui Du, Penghao Wang, National University of Defense Technology, China

Simulation of Hydrodynamic Performance for Small Ducted ROV Thrusters
Yigang Chen, Zhejiang Ocean University; Yonghe Xie, Marine Design and Research Institute of China; Hua Zhang, Zhi Zheng, Xiran Feng, Zhejiang Ocean University, China

Dynamic Response Analysis of Floating Body Salvage System under Wave Action
Gang Sun, Shengtao Chen, Kang Zhang, Jiaoyi Hou, Dalian Maritime University, China

Numerical Study on Scale Effect of Full-scale Submarine Sailing Near Free Surface in Stratified Fluid
Huajia Cui, Yuan Kong, Xianzhou Wang, Huazhong University of Science and Technology; Ye Yuan, China Ship Development and Design Center, China

Experimental and Simulation Study on Hydrodynamic Performance of Submarine in Oblique Navigating State

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Impact of Munition Contamination on the Offshore Production of Hydrogen at German Coasts
André Baeten, Technical University of Applied Sciences Augsburg; Samar Ensenbach, GEOMAR Helmholtz Centre for Ocean Research; Somayeh Baeten, Technical University of Applied Sciences Augsburg, Germany

Guidelines for Determining the Extent of Toxic Areas for Ships Using Ammonia as a Fuel
Hyunjoon Nam, HD Korea Shipbuilding & Offshore Engineering; Do Kyun Kim, Seoul National University; Sunghee Kim, Dongkyu Shin, HD Korea Shipbuilding & Offshore Engineering, Korea

Electricity Transport vs. Hydrogen Production from Future Offshore Wind Farms
Torbjørn Egeland-Eriksen, Antonie Oosterkamp, NORCE Norwegian Research Centre AS, Norway

Research on a Marine Current-powered Desalination and Hydrogen Production System
Hongwei Liu, He Ren, Yajing Gu, Yonggang Lin, Mengya Ma, Tian Zou, Zhejiang University, China

Numerical Simulation on the Dynamic Response of Ti80 Alloy Plate Subjected to the Underwater Explosion
Zixiao Hu, Chang Ye, Pan Zhang, Yanling Zhang, Yuansheng Cheng, Huazhong University of Science and Technology; Xiaoyang Lu, Peng Jiang, Luoyang Ship Material Research Institute, China

Mechanical Behaviors of Triply Periodic Minimal Surface Lattices under Static and Dynamic Compression Loading
Daihui Mo, Huazhong University of Science and Technology; Jianyong Chen, China Ship Development and Design Center; Mingcheng Shi, Jun Liu, Yuansheng Cheng, Pan Zhang, Huazhong University of Science and Technology, China

Study on the Coupling Loss Factor of Two Plates Coupled at Any Angle Based on Wave Method
Yudie Zhu, Meixia Chen, Ting Wang, Chaozhen Yang, Jingyu Zhang, Huazhong University of Science and Technology, China

Research on the Optimal Rib Stiffness Distribution of Titanium Alloy Stiffened Cylindrical Shell under Different Design Inputs
Shiqiang Li, Huazhong University of Science and Technology; Shengkun Zhang, Gongrong Li, China Ship Development and Design Center; Yuansheng Cheng, Jun Liu, Huazhong University of Science and Technology, China

THURSDAY 14:00

128. HYDRODYNAMICS XIII: CFD 2
Thursday June 20 14:00 Athena
Chair: Takahito Iida, Osaka University, Japan

A Study on a Relationship between Particle Repositioning Method and Unphysical Discontinuous Pressure Fields on the MPS Simulation
Sosuke Iwashita, Takahito Iida, Osaka University, Japan

Study on Nonlinear Numerical Wave Tank Based on Boundary Generation Method
Wuyang Liu, Chaobang Yao, Jiawei Yu, Dakui Feng, Zhiguo Zhang, Huazhong University of Science and Technology, China

Numerical Simulation of Deformable Landslides by MPS-DEM Coupling Method
Liujie Zhu, Qin Jiang, Jie Hao, Hohai University; Zhiyong Yang, Power China Huadong Engineering Cooperation, China

Algorithm for Solving the Poisson Equation in Meshfree Method with Local Regular-distributed Background Particles
Zhe Sun, Li-yuan Dou, Si-yuan Tan, Zhi Qiu, Dalian University of Technology, China

129. RENEWABLE ENERGY XIV: FOWT 8
Thursday June 20 14:00 Salon A
Chair: Armando Alexandre, DNV, Portugal

A Hybrid Method for Topography-Impacted Hydrodynamic Analysis of Marine Floating Photovoltaics
Qiujue Jiang, Junfeng Du, Deqing Zhang, Shujie Zhao, Anteng Chang, Ocean University of China, China

Hydrodynamic Analysis of the Monopile-Supported Offshore Wind Turbine Integrated with the UHMWPE Cage under Wave-Current Loading
Qiang Shi, Dalian Shipbuilding Industry Co; Yiyang Hu, Haisheng Zhao, Dalian University of Technology; Congcong Jiang, Chengye Zou, Jiye Nian, Dalian Shipbuilding Industry Co; Xin Li, Dalian University of Technology, China

Stochastic Prediction of the Extreme Responses of a Floating Offshore Wind Turbine Using Response-Conditioned Waves
Athanasios Dermatis, Vincent Leroy, Guillaume Ducrozet, Benjamin Bouscasse, Sylvain Delacroix, École Centrale de Nantes, France; Henrik Bredmose, Harry Bingham, Technical University of Denmark, Denmark

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A Surrogate Optimization Modeling Method for Floating Wind Turbine Mooring Line Design
Yiming Zhou, Huaneng Clean Energy Research Institute; Chaojun Yan, Wei Shi, Xu Han, Dalian University of Technology, China; Zhiyu Jiang, University of Agder, Norway; Constantine Michailides, International Hellenic University, Greece

Load Analysis on the Floating Wind System UMaine Volturn US-S Using a Novel Coupling between Two Simulation Tools Bladed and OrcaFlex
Armando Alexandre, DNV, Portugal; Ali Bakhshandeh, Steven Parkinson, Hassan Moharram, DNV, UK

A Study on Dynamic Analysis of Floating Offshore Wind Turbine by Using a Novel Frequency Domain Model
Minjun Lee, Yu Zhang, China University of Petroleum (Beijing); Menglan Duan, Miaozi Zheng, Tsinghua University, China; Seung Jae Lee, Korea Maritime and Ocean University, Korea

Investigation of Yawed Offshore Wind Turbine Wakes for a Floating Multi-Turbine Platform with a New Wake Model
Zhichang Liang, Haixiao Liu, Wei Zhang, Tianjin University, China

130. HPM IV: Fatigue & Fracture 2
Thursday June 20 14:00 Salon B
Chair: HyunWoo Jin, ExxonMobil Tech & Eng, USA
Co-chair: Lina Zrelli, Subsea7, France

Development of High Manganese Steel and Welding Consumable for Pipeline in Sour Region [Oral presentation]
Sangchul Lee, Dongho Lee, Soongi Lee, Jonggyo Choi, POSCO, Korea

Experimental Investigations of the Mechanical-technological Properties and Fatigue Strength of Stainless-steel Bolting Assemblies
Ralf Glienke, Melanie Hagemann, Robin Hanebeck, Daniela Schwerdt, University of Applied Science Technology, Business and Design; Christian Denkert, University of Cooperative Education; Fritz Wegener, Maik Dörre, Fraunhofer IGP, Germany

Recent Investigations on the Fatigue Strength of Free Edges in Steel Structures
Ralf Glienke, Markus Schröder, Daniela Schwerdt, University of Applied Sciences Wismar; Wilko Flügge, Florian Kalkowsky, Maik Dörre, raunhofer-IGP; Natalie Straßhöner, Lukas Ehrhardt, University of Duisburg, Germany

131. AST XIV: Drag/Resistance 2
Thursday June 20 14:00 Nafsika A
Chair: Gaute Storhaug, DNV, Norway

Uncertainties in Predicted Quantities Based on Measured Time Series of Dynamic Response
Gaute Storhaug, DNV, Norway; Michael Holtmann, Ulrich Behrens, DNV, Germany; Stan Wang, Centec Technico Lisboa University, Portugal; Daniele Dessi, National Research Council, Tatiana Pais,
Analysis of Rudder Force Characteristics under Different Drift Angels and Propeller Faults
Pengfei Li, Yanlin Zou, Zichao Cai, Xunming Wang, Dakui Feng, Huazhong University of Science and Technology, China

Deep Learning-Based Prediction of Wave Motion Response Prediction of the TSHD
Hongsheng Zhang, Lei Chen, Jingdun Pang, National Engineering Research Center of Dredging Technology and Equipment; Zhiwen Chen, Dalian University of Technology, China

Hydrodynamic Analysis of Trailing Suction Hopper Dredger with Opened Bottom Door
Lei Chen, National Engineering Research Center of Dredging Technology and Equipment; Xin Zhang, Dalian University of Technology; Jingdun Pang, Guojun Hong, National Engineering Research Center of Dredging Technology and Equipment; Zhiwen Chen, Dalian University of Technology, China

132. UNDERWATER VIII: Robotics
Thursday June 20 14:00 Nafsika B
Chair: Satoru Yamaguchi, Kyushu Univ, Japan

A Max-plus Algebra-based Approach for Modelling Shoals of Fish Robots during Underwater Exploration
V Bartolucci, Università di Bologna; D Scaradozzi, Università Politecnica delle Marche; E Zattoni, Università di Bologna, Italy; J J Loiseau, C Martinez, École Centrale Nantes, France; G Conte, Accademia Marchigiana di Scienze, Lettere ed Arti, Italy

Research on Diving and Floating Control Technology of Underwater Parallel Robot
ChaoCheng Hu, HongMing Wu, YuanQing Qin, Huazhong University of Science and Technology; Sheng Meng, Wuhan 2nd Ship Design and Research Institute; Guohua Xu, Huazhong University of Science and Technology, China

Research on Speed Control Technology of Flexible Traction High Inertia Underwater Vehicle Based on Particle Swarm Optimization PID
Hongming Wu, Huazhong University of Science and Technology; Yingkai Xia, Huazhong Agricultural University; Xiong Li, Kunming Shipborne Equipment Research & Test Center; Chaocheng Hu, Guohua Xu, Huazhong University of Science, China

133. MECHANICS IX: Buckling
Thursday June 20 14:00 Nefeli A
Chair: AM Gresnigt, Delft Univ of Tech, The Netherlands

Leveraging Key Lateral Buckling Parameters to Achieve Robust HPHT Flowline System
S Grevet, SAIPEM, France; B Bianco, E Volpi, S Maior, SAIPEM, Brazil; R F Solano, A Romero, PETROBRAS, Brazil; D Pavone, SAIPEM, France

Low Cycle Fatigue CTOD and Crack Propagation Rate Finite Element Analysis of Ship Hull Plates with Horizontal Cracks and Stiffened Plates with Horizontal Cracks under Biaxial Non Proportional Loads
Haoyue Ming, Junlin Deng, Shourong Lai, Ruihan Hou, Shiqiang Zhang, Beibu Gulf University, China

Lateral Buckling Re-Assessment after As-Built Survey of Mero 1 Project Deepwater Flowlines
Olivier Vaisberg, TechnipFMC, France; Rafael F Solano, Petrobras, Brazil; Hélène Duret, Adel Jebali, TechnipFMC, France; Marcio Scultori, TechnipFMC; Vanessa T Ochi, Petrobras, Brazil

Numerical Simulation of the Stress-Strain Field of a Surface Cracked Hull Plate under Low Cycle Fatigue Load Containing Continuous Multiple Overload
Shourong Lai, Junlin Deng, Haoyue Ming, Chuanao Deng, Beibu Gulf University, China

Cable-Carousel Structural Contact Assessment for a 10,000 Te Carousel
Ying Luo, Kevin Huang, South China University of Technology; Shanting Que, Kai Chen, Ningbo Orient Cable Co, China

THURSDAY 16:20

134. HYDRODYNAMICS XIV: Model Test
Thursday June 20 16:20 Athena
Chair: Conghuan Le, Tianjin University, China

Virtual Model Testing Method Considering the Current Effects on the Mooring System
Xu Li, Tie Ren, Bo Tong; China Offshore Engineering & Technology Co; Handi Wei, Longfei Xiao, Shanghai Jiao Tong University, China

Determination of Propeller-Rudder-Hull Interaction Coefficients in Ship Maneuvering Prediction with Various Methods
Radosław Kołodziej, Paweł Hoffmann, Maritime Advanced Research Centre, Poland

Comparative Study on the Motion Characteristics of Different Towing Schemes for Mono-Column Composite Bucket Foundation under Irregular Waves
Xiling Qi, Conghuan Le, Yang Gao, Puyang Zhang, Hongyan Ding, Tianjin University, China

135. RENEWABLE ENERGY XV: FOWT 9
Thursday June 20 16:20 Salon A
Chair: Yayoi Ishii, Shimizu Corporation, Japan
Wake Flow Study for a 10MW Semisubmersible Floating Offshore Wind Turbine with CFD and OpenFAST
Xiuqing Xing, Xiaojin Zhang, Changwei Kang, Xuan Liu, Institute of High Performance Computing; Chin Lee Lim, Seatruim Limited; Vinh Tan Nguyen, Venugopalan S.G. Raghavan, Institute of High Performance Computing, Singapore

Finite Element Analysis of Lateral Soil Reaction of Monopile in Sand Considering Effects of Pile Installation Process
Yayoi Ishii, Kenji Shimada, Shimizu Corporation; Takeshi Ishihara, University of Tokyo, Japan

A Novel Optimisation Process for Static Structural Finite Element Analysis of Offshore Wind Turbine Floating Foundations
Massimo Sirigu, Alberto Ghigo, Giuseppe Giorgi, Giovanni Bracco, Politecnico di Torino, Italy

Gaussian Process Regression for Extending Wave in situ Measurements: An Experimental Campaign
Leonardo Gambarelli, Edoardo Pasta, Giuseppe Giorgi, Politecnico di Torino, Italy; Francesco Ferri, Aalborg University, Denmark

136. HPM V: Corrosion
Thursday June 20 16:20 Salon B
Chair: Harovel Wheat, Univ Texas at Austin, USA
Co-chair: Ivana Jevremovic, SINTEF Industry, Norway

Corrosion Assessment and Quantification of Discoloration in the Weld Root Bead and Heat-Affected Zone of Stainless Steel Pipe Weldments
Beomcheol Kim, Changmin Lee, Jinho Kim, Jaehee Lee, HD Korea Shipbuilding & Offshore Engineering, Korea

Full-Scale Fatigue Test Results of Mooring Chains with Significant Corrosion Loss and Preferential Weld-Line Corrosion
Øystein Gabrielsen, Equinor; Ingrid Skutle Høgsæt, DNV; Hans Bjørne Lie, Equinor, Norway

Cyclic Material Behavior of Aluminum Bronze Alloys under Corrosion for Maritime Application
Christoph Bleicher, Steffen Schönborn, Fraunhofer LBF; Sebastian Böhler, Lutz Kleinsorge, Jörn Klüss, Marcel Nürnberg, Mecklenburger Metallguss GmbH, Germany

Prediction of Galvanic Corrosion in Aluminium-Stainless Steel Bolted Connection in Offshore Environment: Advanced Modelling and Simulation
Ivana Jevremovic, Aaf Saai, Virgile Delhaye, SINTEF Industry, Norway

Experimental Study on Deterioration of Thermoplastic GFRP Bars in Simulated Marine Environments
Yuan Zhang, Dingming Zhang, Harbin Engineering University; Zhiyong Wang, Wenwu Hu, Jiangsu Hengrui Aviation Industry Co; Yanbo Liu, Harbin Engineering University, China

137. AST XV: Propulsion 1
Thursday June 20 16:20 Nafiska A
Chair: Kostas Belibassakis, Nat’l Tech Univ of Athens, Greece

Propeller Hydrodynamic Performance in Water-Air-Bubble-Mixed Flows
Xinyi Li, Wenetao Wang, Decheng Wan, Shanghai Jiao Tong University, China

A Vortex-element Method for the Calculation of Waves and Ship Motions Effects on Propeller Performance
Kostas Belibassakis, National Technical University of Athens, Greece

Optimal Energy Management Strategy for Dual-engine Hybrid Power System Based on Dynamic Programming
Zhuang Wang, Li Chen, Bin Wang, Zhu Fu, Shanghai Jiao Tong University, China

Numerical Simulation Study on Drag Reduction Performance of Rotary Sail with Dimple
Rui Tian, Ji Zeng, Shanghai Maritime University, China

Numerical Study of Full-scale Self-propulsion with Body-force Propeller Model
Qingshan Zhang, Kunpeng Chen, Xing Chang, Weimin Chen, State Key Laboratory of Maritime Technology and Safety, China

Research on Improved Algorithm of Ship Shafting Alignment Considering Oil Film Characteristics
Maiteng Zhu, Fu Chen, Yunbo Hu, Luqiong Huang, Dejuan Chen, Marine Design & Research Institute of China, China

138. AST XXIV: CAD/Design
Thursday June 20 14:00 Nefeli B
Chair: Przemyslaw Lutkiewicz, DNV AS, Norway

Graph-Based Method for Symbol Recognition in 2D CAD Drawings of Ship Outfitting Systems
Dongguen Jeong, Dongki Min, Kisun Kim, Hyungtaek Kim, HD Korea Shipbuilding & Offshore Engineering, Korea

Hot Bolting – Flange Type, Sealing Element and Loads Influence
Przemyslaw Lutkiewicz, DNV AS, Norway

Study on Fracture Simulation of Stiffened Plates in Ship Hull Structure Based on Bond-based Peridynamics Method
Yiyang Liu, Jingxi Liu, Huazhong University of Science and Technology, China

Study on the Characteristics of Incremental Forming Process for Doubly Curved Hull Plate
Young-Ho Do, Youn-Jun Kim, Bong-Gook Kang, Dong-Ju Lee, HD Korea Shipbuilding & Offshore Engineering, Korea

Flange Bolt Tightening – Tightening Method, Flange Type and Seal Element Type Influence on the Bolts Scatter
Przemyslaw Lutkiewicz, DNV AS, Norway
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