

## TECHNICAL PROGRAM

### The Twenty-seventh (2017) International Ocean and Polar Engineering Conference San Francisco, June 25–30, 2017

The number at end of the session title indicates the tentative number of the proceedings volume. Only the changes on titles or authors the ISOPE-2017 Technical Program Committee (TPC) received in writing before June 17, 2017 are reflected in this program. Final corrections will be updated in the Conference Proceedings of *peer-reviewed* papers and the Final Program. Conference proceedings (ISBN 978-1-880653-97-5; ISSN 1098-6189) will be available as a set of 4 volumes (4,950 pp.) from ISOPE during and after the Conference. Proceedings papers are **indexed** by Engineering Index and Compendex, Thomson ISTP, Google Scholars, Fluidex, Scopus, and more.

#### SUNDAY, June 25

#### SUNDAY, June 25 Conference Reception

17:00

Atrium

#### MONDAY 08:30

#### 1. Opening General Session: OCEAN, ARCTIC AND ENERGY REVIEW—2017

Monday June 26 08:30 Grand Peninsula

**Chair:** John J Niedzwecki, Texas A & M University, USA  
**Co-Chair:** Wataru Koterayama, Kyushu University, Japan

#### Conference Opening Address

Hyun Woo Jin, ISOPE President, ExxonMobil Research & Engineering, USA

#### Innovation, Science and Engineering - Enabling Offshore and Arctic Production [Oral presentation]

Roald Lokken, ExxonMobil Production Co, USA

#### New England Aqua Ventus - Floating Offshore Wind Demonstration Project [Oral presentation]

Habib J Dagher, Univ of Maine, USA

#### MONDAY 10:30

#### 2. HYDRODYNAMICS I: MetOcean 1 (V. 3)

Monday June 26 10:30 Grand A

**Chair:** Qingwei. Ma, The City University, London, UK  
**Co-Chair:** Naoyuki Inukai, Nagaoka University of Technology, Japan

#### Metocean Extreme Estimations: The Sensitivity of Offshore Design Measures to Statistics' Uncertainties

Rami Zughayer, Ove Gudmestad, Univ of Stavanger, Norway;  
Francesco De Leo, Giovanni Besio, Univ degli studi di Genova, Italy

#### Arctic Wave Observation by Drifting Type Wave Buoys in 2016

Takuji Waseda, Adrean Webb, Univ of Tokyo; Kazutoshi Sato, Jun Inoue, National Inst of Polar Research; Alison Kohout, Japan; Alison Kohout, National Inst of Water and Atmospheric Research, New Zealand; Bill Penrose, Scott Penrose, P.A.S. Consultants, Australia

**Sea-level Records Analysis with Improved Empirical Mode Decomposition (EMD) and Artificial Neural Networks (ANN)**  
Han Soo Lee, Hiroshima Univ; Sooyoul Kim, Tottori Univ, Japan

**Analysis of Extreme Waves with Tropical Cyclone Wave Hindcast Data**  
Zhuxiao Shao, Bingchen Liang, Xinying Pan, Huijun Gao, Ocean Univ of China, China

**Research and Realization of Telemetry and Telecontrol Systems of Intelligent Buoy**  
Caiyun Xu, Wuhan Univ of Tech, China, Runze Gan, Univ of Birmingham, UK; Chunhui Zhou, Yuangzhou Zheng, Lei Zhang, Wuhan Univ of Tech, China

**Hydrodynamic Conditions for Typhoon Induced Fluid Mud in Open Muddy Channels [Proceedings only]**  
Qixiu Pang, Tianjin Research Inst of Water Transport Eng; Haixia Xin, CCCC Tianjin Port & Waterway Prospection & Design Research inst; Ruibo Zhang, Chunpeng Wen, Tianjin Research Inst of Water Transport Eng, China

**Numerical Study on Wind Wave in Limited Wind Zone [Proceedings only]**  
Yifeng Zhang, Tianjin Research Inst for Water Transport Engineering; Chen-feng Zhang, Shijiazhuang Univ, China

**3. LNG SLOSHING I:  
Numerical & Experimental Methods 1 (V. 3)**

**Monday June 26 10:30 Grand B**

**Chair:** Yusong Cao, C-Z Marine Technology, USA

**A Time Domain Model to Evaluate the Liquid Cargo Motion Influence on the Ship Motion**  
Daniel Prata Vieira, Edgard Borges Malta, Carlos Hakio Fucatu, Technomar Engenharia Oceanica; Kazuo Nishimoto, Univ of Sao Paulo, Brazil

**Numerical Study of Sloshing in a Swaying Tank with a Submerged Horizontal Perforated Plate**  
Heng Jin, Yong Liu, Hua-jun Li, Ocean Univ of China, China

**MPS Simulation of Sloshing Flows in a Tuned Liquid Damper**  
Xiao Wen, Xiang Chen, Decheng Wan, Shanghai Jiao Tong Univ, China

**Numerical Modelling of Nonlinear Sloshing in Tuned Liquid Damper (TLD)**  
Saravanan Gurusamy, Deepak Kumar, IIT Madras, India

**Numerical Prediction of Wave Impact on a Cylinder Body Mounted in a Sloshing Tank**  
Il-Ryong Park, Je-In Kim, Dong-Eui Univ; Sa-Young Hong, Bo-Woo Nam, Korea Research Inst of Ships & Ocean Engineering, Korea

**Effects of the Arrangement of Vertical Baffles on Liquid Sloshing by MPS Method**  
Xiang Chen, Youlin Zhang, Decheng Wan, Shanghai Jiao Tong Univ, China

**4. RENEWABLE ENERGY I:  
Wave Energy Converter 1 (V. 1)**

**Monday June 26 10:30 Grand C**

**Chair:** Shuichi Nagata, Saga University, Japan ,

**Intact and Damaged Survivability of an Offshore Floating-moored OWC Device**

Ahmed Elhanafi, Gregor MacFarlane, Alan Gleming, Zhi Leong, AMC, Univ of Tasmania, Australia

**Numerical Investigation of the Hydrodynamic Performance of the Dual-chamber Oscillating Water Columns**

Rongquan Wang, Dezhi Ning, Chongwei Zhang, Dalian Univ of Tech, China

**Numerical Analysis on Drift Force Acting on a Floating OWC-Type Wave Energy Converter "Backward Bent Duct Buoy" by Vortex Method**

Shuichi Nagata, Yasutaka Imai, Tengen Murakami, Saga Univ; Yutaka Okamoto, Hitachi Zosen, Japan

**A Parametric Study on Oscillating Water Column Wave Energy Converter Applicable to Breakwater**

Sewan Park, Bo Woo Nam, Kyong-Hwan Kim, Keyyong Hong, Korea Research Inst of Ships & Ocean Eng, Korea

**An Experimental Study of Hydrodynamics of an Improved OWC Converter**

Chun-Han Ko, Ching-Piao Tsai, Chia-Yu Chuang, Ying-Chi Cheng, National Chung Hsing Univ, Taiwan, China

**KEYNOTE**

**Monday June 26 10:30 RegencyAB**

**Introduction:** Piotr Moncarz, Exponent/Stanford Univ, USA

**Evolving Materials Challenges and Opportunities for Upstream Developments [Oral presentation]**

Eric J Wright, ExxonMobil Production Co; Cecilie A Haarseth, ExxonMobil Upstream Research Co, USA

**5. ASSET INTEGRITY I:  
Assessments & Analysis (V. 4)**

**Monday June 26 10:30 RegencyAB**

**Chair:** Eric J Wright, ExxonMobil Production Co., USA

**Aging and Fatigue - Combined Testing of Welded Joints under Offshore Conditions**

Mareike Collmann, Maik Wefer, Fraunhofer IWES, Germany

**Fracture Mechanics-based Approach for Quantifying Corrosion Damage of Offshore Structures**

Mohammad Zaidi. Ariffin, Zhongmin. Xiao, Nanyang Technological Univ, Singapore; Zhongmin Xiao, Hanyang Technological Univ, Singapore; R Ajit Sheno, Univ of Southampton, UK

**Probabilistic Engineering Critical Assessment of Circumferential Girth Weld Flaws in Sour Service**

Amir Bahrami, ExxonMobil Production; David Baker, ExxonMobil Upstream Research, USA; Xiaofei Cui, Fokion Oikonomidis, Guiyi Wu, TWI, UK

**Optimized Materials for High Integrity Well Completions**

Eric J Wright, Brian David Wilfahrt, ExxonMobil Production Co, USA

**6. SBD I: Strain Capacity and Material Properties (V. 4)**  
**Monday June 26 10:30 RegencyC**

**Chair:** Michele Panico, ExxonMobil Upstream Research Co., USA

**A Comparison of Strain Based Design ECA Models**  
Robin Gordon, Microalloying International; Neil Gordon, Corpro;  
Gregory Swank, Frank Richards, Alaska Gas Development, USA

**Material Tensile Properties for Strain-Based Design of Clad Pipelines**  
William Mohr, Paul Zelenak, EWI, USA

**Strain Capacity in Compression or Bending of High-Strain Line Pipes**  
Takekazu Arakawa, Nobuhisa Suzuki, JFE Steel, Japan

**Industrial Application of SENT and Segment Testing on Deepwater Buckle Arrestor Assembly Installed by S-Lay**  
Andrea Fonzo, Riccardo Porta, Centro Sviluppo Materiali, Italy;  
Ruud Selker, Ping Liu, INTECSEA; Erich Jurdik, Jay Chaudhuri, South Stream Transport, Netherlands

**Strain Capacity Assessment of Laser Surface Remelted Girth Weld Joint of X70 Pipeline [Proceedings only]**  
Hongyuan Chen, CNPC Tubular Goods Research Inst; Jing Niu, Xian Jiaotong Univ; Qiang Chi, Peng Wang, Weiwei Li, CNPC Tubular Goods Research Inst, China

**7. VORTEX-INDUCED VIBRATIONS I (V. 3)**  
**Monday June 26 10:30 Harbour**

**Chair:** S. Etienne, Ecole Polytechnique de Montreal, Canada  
**Co-Chair:** Jiasong Wang, Shanghai Jiao Tong Univ, China

**Vortex Induced Vibration of Riser with Low Span to Diameter Ratio Buoyancy Modules**  
Dixia Fan, Michael S Triantafyllou, Massachusetts Inst of Technology, USA

**Vortex Shedding Behaviour of a Horizontal Circular Cylinder near the Free Surface with Different Submerged Depths**  
Qian Li, Q W Ma, S Yan, City Univ London, UK

**CFD Simulation of Flows around Finite Stubby Circular Cylinder with Free End**  
Jiawei He, Weiwen Zhao, Decheng Wan, Shang Jiao Tong Univ, China

**Investigation of Pipe-Soil Interaction on the Fatigue Life Extension of Subsea Pipeline Free Spans**  
Yusha Han, Ed Clukey, Naveen Ravirala, Paul Jukes, The Jukes Group, USA

**Large-eddy Simulation of Turbulence Characteristics of Oscillatory Flow Over 3-D Vortex Ripples**  
Iason A Chalmoukis, Athanassios A Dimas, Univ of Patras, Greece

**VIM Induced Fatigue Damages on Steel Catenary Risers of a Semi-Submersible FPS in South China Sea**  
Tie Ren, Tiebing Shan, Zhiping Shen, Pu Wang, Marine Design & Research Inst of China; Shixiao Fu, Shanghai Jiao Tong Univ, China

**8. OCEAN TECHNOLOGY I:  
LNG, Bunkering, FLNG 1 (V. 1)**

**Monday June 26 10:30 Bayside**

**Chair:** Hong Gun Sung, Korea Research Inst of Ships & Ocean Engineering, Korea

**Frequency Domain Analysis on Hydrodynamic Characteristics of Four Vessels Located in Close Proximity**

Yun Ho Kim, Seok K Cho, Boo Woo Nam, Hong G Sung, Korea Research Inst of Ships & Ocean Engineering, Korea

**Development and Testing of FLBT Multiple Docking Aid System**

Seung-Gi Lee, Jin-Lyul Park, Juin Information System, Korea

**Optimization Analysis of Heavy Hydrocarbon Recovery Process for FLNG Unit Applicable for South China Sea Target Gas Field**

Xichong Yu, Bin Xie, CNOOC Research Inst; Yuxing Li, China Univ of Petroleum-Qingdao; Yaling Wu, China Huanqiu Contracting & Eng; Qing Wang, Yan Li, CNOOC Research Inst; Jianlu Zhu, China Univ of Petroleum-Qingdao; Bing Chen, CNOOC Research Inst, China

**Development of Reliability-Centered Maintenance System for Equipment of FLNG**

Seung-Yeol Yoo, Su-Bong Lee, Soon-Sup Lee, Gyeongsang National Univ, Korea

**9. MECHANICS & COLLISION I (V. 4)**

**Monday June 26 10:30 Sand. AB**

**Chair:** Myung-Il Roh, Seoul National University, Korea

**Assessment of the Double-hull Side Structure Response in Severe Ship Collisions**

Min Zhang, Huazhong Univ of Science & Tech; Qibin Sun, China Ship Development and Design Center; Jingxi Liu, Huazhong Univ of Science & Tech, China

**Numerical Simulation of Barge Collision with High-speed Railway Bridge Piers**

Chaoyi Xia, Beijing Jiaotong Univ; Qin Ma, CCCC Highway Consultants; Fudong Song, He Xia, Beijing Jiaotong Univ, China

**Study on Path Planning of Ship Collision Avoidance in Restricted Water Based on AFS Algorithm**

Wei Deng, Langxiong Gan, Chunhui Zhou, Yuanzhou Zheng, Mingjun Liu, Lei Zhang, Wuhan Univ of Tech, China

**Non-linear Similarity Design Method on Ultimate Strength Experiment of Hull Girder**

Tian Yuan, Xiang-shao Kong, Wei-guo Wu, Wuhan Univ of Tech, China

**Statistical Investigation of the Influential Parameters for Probability Analysis of Ship-bridge Collision Based on AIS Data**

Jin Pan, Yong Wang, Shiwen Huang, Wuhan Univ of Tech; Mingcai Xu, Huazhong Univ of Science & Tech, China

**10. FRONTIER ENERGY RESOURCES I:**

**Ocean Mining Working Group**

**Monday June 26 10:30 Sand. CD**

**Chair:** Jin S Chung, ISOPE, USA

Chinese Academy of Sciences, Inst of Deepsea Science & Engineering, China

Central South University, China

Interoceanmetal Joint Organization (IOM), Poland

Delft University of Technology, The Netherlands

National Institute of Ocean Technology, India

ISOPE, USA

**11. ARCTIC I:  
Structures in Ice Modeling (V. 1)**

**Monday June 26 10:30 Sand. E**

**Chair:** Shaheem Islam, National Research Council Canada, Canada.

**Model Tests Study of the Ice Loads on Multi-piled Oil Piers in Bohai Sea**

Yan Huang, Wei Li, Tianjin Univ, China

**On the Effect of Managed Ice Field Parameters on Global Surge Force of a DP Vessel**

Mohammed Islam, Tanvir Sayeed, Jungyong Wang, Jim Millan, National Research Council, Canada

**Analysis of the Effect of Structural Compliance during Medium-Scale Laboratory Tests on Ice Crushing Dynamics**

Pranav R. Birajdar, Rocky S. Taylor<sup>1</sup>, Ridwan B. Hossain, Memorial Univ of Newfoundland, Canada

**Investigation of the Positioning Performances for DP Vessels with Thruster Failure Modes by a Novel Synthesized Criterion**

Shengwen Xu, Xuefeng Wang, Lei Wang, Xin Li, Lijun Yang, Bo Li, Shanghai Jiao Tong Univ, China

**MONDAY 13:15**

**PLENARY**

**Monday June 26 13:15 Regency AB**

**Introduction:** Wan C Kan, ExxonMobil Production Co., USA

**Meeting the Challenges of Upcoming Subsea Field Developments: From Carbon Steel Line Pipe to New Materials and Pipe Concepts**

R Bruschi, SAIPEM, Italy

**12. HYDRODYNAMICS II:**

**MetOcean 2 (V. 3)**

**Monday June 26 14:00 Grand A**

**Chair:** Sa Young Hong, KRISO, Korea

**Co-Chair:** Soo Youl Kim, Tottori University, Japan

**Characteristics of Residual Water Level Variation along China Coast and Its Relation to Sea Level Change**

Hui Wang, Ke Xiu Liu, Wen Jing Fan, Jian Long Feng, Guo Song Wang, Jian Li Zhang, National Marine Data & Info. Service, China

**Directional Grouping of Rogue Waves Off the West Coast of Ireland**

Brandon Strong, Teledyne RD Instruments, USA; Frederic Dias, Jason Flanagan, University College Dublin, Ireland; Eugene Terray, Woods Hole Oceanographic Inst, USA

**Air-Sea Interaction on Wave in the Northern South China Sea During an Intense Cold Air Outbreak**

Lifang Jiang, State Oceanic Administration; Yi Yin, South China Sea Inst of Oceanology; Chunxia Liu, Guangzhou Inst of Tropical & Marine Meteorology, China

**Assessment of Tropical Cyclones in ECMWF Reanalysis Data over the Northwest Pacific Ocean**

Jiangxia Li, Shunqi Pan, Yongping Chen, Yi Pan, Hohai Univ, China

**Berth Operability and Port Downtime Due to MetOcean in Eastern Thailand**

Wissanu Hattha, Tetsuya Hiraishi, Kyoto Univ, Japan

**Analysis Flow Mechanism of Cambodian South Coastal Region**

Naoyuki Inukai, Nagaoka Univ of Tech, Japan; Neam Kopy,  
Chamnab EM, CES Co, Cambodia

**Wave Hindcasting and Extreme Value Analysis for North-western Coast of Sri Lanka [Proceedings only]**  
D P C Laknath, H P G M Caldera, D P L Ranasinghe, Lanka Hydraulic Inst, Sri Lanka

**13. LNG SLOSHING II:  
Numerical & Experimental Methods 2 (V. 3)**

**Monday June 26 14:00 Grand B**

**Chair:** Decheng Wan, Shanghai Jiao Tong University, China

**Application of the Lie-group Scheme in Euclidean Space Solving Nonlinear Sloshing Behaviors**  
Shin-Ping Soon, Chao-Feng Shih, Yung-Wei Chen, Yu-Chen Liu,  
National Taiwan Ocean Univ, Taiwan, China

**Experiment of Natural Gas Liquefaction Process with Double Mixed Refrigerant under Sloshing Conditions**  
Jianlu Zhu, Yuxing Li, Wuchang Wang, Xuayu Chang, Hui Han,  
Congzhong Sun, Longfei Dong, Jie Chen, Weiping Zeng, China Univ of Petroleum-Qingdao, China

**Investigation of the Motion Accuracy Influence on Sloshing Model Test Results**  
J Neugebauer, S Liu, R Potthoff, O el Moctar, Univ of Duisburg-Essen, Germany

**A Study on Sloshing Behavior for Moss Type LNG Tank based on SPH Numerical Simulation and Large-Scale Model Experiment**  
Chong Ma, Masayoshi Oka, Takahiro Ando, National Maritime Research Inst; Naoya Matsubara, Kawasaki Heavy Industries, Japan

**Experimental Study of Slosh-Induced Loads on LNG-Fuel Tank of Container Ship**  
Jieung Kim, Sang-Yeob Kim Yonghwan Kim, Seoul National Univ;  
Kwang-Min Lee, Young-Jae Sung, Hyundai Heavy Industries, Korea

**14. RENEWABLE ENERGY II:  
Wave Energy Converter 2 (V. 1)**

**Monday June 26 14:00 Grand C**  
**Chair:** Keyyong Hong, KRISO, Korea

**Utilization of Model Predictive Control to Balance Power Absorption Against Load Accumulation**  
Nikhar J Abbas, Nathan Tom, National Renewable Energy Lab, USA

**Development of the Second-Generation Oscillating Surge Wave Energy Converter with Variable Geometry**  
Michael Kelly, South Dakota School of Mines & Tech; Tom Nathan,  
Yi-Hsiang Yu, Robert Thresher, Nikhar Abbas, National Renewable Energy Lab, USA

**Model Testing of Oscillating-body Wave Energy Converters with Nonlinear Power-Take-Off Systems in Regular Waves**  
Yang Li, Longfei Xiao, Tongtong Wang, Boxian Deng, Shanghai Jiao Tong Univ, China

**Wave Energy Conversion Utilizing Vertical Motion of Floats put in the Water Chambers Array Aligned in the Direction of Wave Propagation**  
Kesayoshi Hadano, Nagase Yoshiyuki, Wanyuan Li, Yamaguchi Univ, Japan

**15. ASSET INTEGRITY II:  
Inspection & Monitoring (V. 4)**

**Monday June 26 14:00 RegencyAB**

**Chair:** Ali Reza, Exponent, USA

**Research on Detecting and Locating Tubing Leakage of Offshore Gas Wells Based on Acoustic Method**

Di Liu, Jianchun Fan, Zhenwei Liang, Ningyi Lv, China Univ of Petroleum-Beijing, China

**Diagnostic Testing of Gas Wells with Sustained Casing Pressure by Application of He Tracer**

Ximing Zhang, Jianchun Fan, China Univ of Petroleum – Beijing; Shujie Liu, Min Wen, CNOOC Research Inst; Ningyi Lv, Zhengwei Liang, China Univ of Petroleum – Beijing, China

**Assigning API 570 Pipe Classifications Based on the Composition and Temperature of Complex Hydrocarbon Streams**

Brian A Ott, Ali Reza, Peter S Veloo, Exponent, USA

**Combined Advanced Inspection & Analysis Method for Flexible Riser Remnant Life Assessment**

Kirk Francis, Stuart Mitchell, Nader Matari, Flexlife, USA; Bede Ani, Flexlife, UK

**16. SBD II:  
Strain Based Design and Assessment 1 (V. 4)**

**Monday June 26 14:00 RegencyC**

**Chair:** Andrea Fonzo, Centro Sviluppo Materiali, Italy

**Collapse Pressures of Cold Formed Pipes with Rounded Stress vs. Strain Curves**

Yukinobu Nagata, Nippon Steel & Sumitomo Metal; Eiji Tsuru, Nippon Steel & Sumikin Technology, Japan

**Coupled Effect of Y/T Ratio and Internal Pressure on the Ductile Fracture of Buckled Pipes**

Nima Mohajer Rahbari, J J Roger Cheng, Samer Adeeb, Univ of Alberta, Canada

**Strain-Based Pipeline Repair via Type B Split Sleeve**

Justin M Crapps, Xin Yue, Ronald A Berlin, ExxonMobil Upstream Research, USA; Heider A Suarez, Petr A Pribytkov, Exxon Neftegas, Russia; Brent A Vyvial, Stress Engineering Services; Jared S Proegler, CRC Evans Pipeline International, USA

**Compression and Tension Demands to Ensure Pipeline Integrity Against Ground Motion or Longitudinal Slope Movement**

Nobuhisa Suzuki, Takekazu Arakawa, JEF Steel, Japan

**Effects of Dent on Compression Capacity of Line Pipe and Seismic Integrity of Pipeline**

Atsushi Suganuma, Masataka Hayashiguchi, Toho Gas; Tetsuji Kitano, Nagoya Univ; Nobuhisa Suzuki, Takekazu Arakawa, JFE Steel; Hiroyuki Horikawa, JFE Engineering, Japan

**17. VORTEX-INDUCED VIBRATIONS II (V. 3)**

**Monday June 26 14:00 Harbour**

**Chair:** Athanassios A Dimas, Univ of Patras, Greece

**Interaction between Two Vibrating Cylinders Immersed in Fluid**

Zhonglu Lin, Dongfang Liang, Shanghai Jiao Tong Univ, China; Ming Zhao, Western Sydney Univ, Australia

**Drag Coefficient Enhancement for Dual Cylinders in Oscillatory Flow**



Dixia Fan, Massachusetts Inst of Technology, USA; Xiaotong Zhang, Shanghai Jiao Tong Univ, China; Michael S Triantafyllou, Massachusetts Inst of Technology, USA

**Experimental Investigation on the Vortex-Induced Vibrations in Yawed Flexible Cylinders**

Daniel Prata Vieira, Aline Massabni Momenti, Maria Eduarda F. Chame, Univ of Sao Paulo; Andr'e Luis Condino Fajarra, Federal Univ of Santa Catarina, Brazil

**Modal Vibrations of Side-by-side and Tandem Vertical Riser Pipes Experiencing a Stepped Current**

Di Deng, Bowen Fu, Decheng Wan, Shanghai Jiao Tong Univ, China

**Numerical Simulation of the Vortex-induced Motion of a Deep Draft Semi-Submersible Platform**

Zhenghao Liu, Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong Univ, China

**18. OCEAN TECHNOLOGY II:  
LNG, Bunkering, FLNG 2 (V. 1)**

**Monday June 26 14:00 Bayside**

**Chair:** A. Nezamian, Aurecon Group, Australia

**The Dynamic Performance Analysis of Double Mixed Refrigerant Liquefaction Process for Floating Liquid Natural Gas (FLNG)**

Qing Wang, Xichong Yu, Kaiwen Xiao, Yan Li, Bing Cheng, CNOOC Research Inst, China

**Field and Numerical Investigations for Constructing a Cooling Water Outlet at LNG-fired Thermal Power Station**

Nobuyuki Iwamae, Kazuhiro Iida, Takako Fukuyama, Satoshi Inagaki, Kajima Corp; Daiki Hatakeda, Hokkaido Electric Power, Japan

**Design and Evaluation of LNG-Hydrogen Hybrid Propulsion System for LNG Carrier**

Jinyeong Jeong, Suwon Seo, Daejun Chang, Korea Advanced Inst of Science & Tech, Korea

**19. MECHANICS & COLLISION II (V. 4)**

**Monday June 26 14:00 Sand. AB**

**Chair:** Constantine Michailides, Liverpool John Moores Univ, UK

**Saturated Impulse of Pulse Loaded Square Plates Made of Steels with Various Yield Stresses**

Xu He, Ling Zhu, Wuhan Univ of Tech; F L Chen, Inst of Applied Physics & Computational Mathematics; Xiaobin Li, Wuhan Univ of Tech; Jianhua Liu, Marine Design & Research Inst of China, China

**Improvement of Fixed Offshore Platforms' Boat Landing Performance Using Practicable Design Criteria**

A Hamadelnil, Z A Razak, Petronas Carigali; E Matsoom, Sarawak Shell Berhad; V J Kurian, Universiti Teknologi Petronas, Malaysia

**Assessment and Modification of Empirical Formulae for Ship-bridge Impact**

Jin Pan, Shiwen Huang, Wuhan Univ of Tech; Mingcai Xu, Huazhong Univ of Science & Tech, China

**Storm Survival Inplace Analysis of Jack-ups**

Weiliang Dong, Jianjun Wang, Dongshi Wang, Linsong Song, China Oilfield Services, China

**Anti-sway Control of the Crane on an Offshore Supply Vessel Based on the Hardware-in-the-Loop Simulation**

Luman Zhao, Myung-Il Roh, Seung-Ho Ham, Seoul National Univ, Korea

**Experimental Analysis on the Response of Y Shape Stiffened Panels under Lateral Impact Load**

Mingcai Xu, Bowen Zhang, Huazhong Univ of Science & Tech; Jun Wang, China Railway Science & Industry Rail Equipment; Wen Tong Song, Wuhan Lituo Bridge Protection Tech; Jin Pan, Wuhan Univ of Tech, China

**Numerical Simulation of the Dynamic Response of a Beam Structure Impacted by Nonlinear Freak Wave**

Hao Qin, Hongxiang Xue, Wenyong Tang, Jun Liu, Shanghai Jiao Tong Univ; Zhe Hu, Jimei Univ, China

**20. FRONTIER ENERGY RESOURCES II:  
Gas Hydrates & Deep-Ocean Minerals I (V. 1)**

**Monday June 26 14:00 Sand. CD**

**Chair:** Yasuhide Sakamoto, National Inst of AIST, Japan

**Numerical Analysis for Methane Hydrate Production Well Integrity based on Experimental Estimation for Friction Strength at Contact Surface of Production Well and Sediment**

Masayo Kakumoto, Yasuhide Sakamoto, Shohei Noda, Jun Katagiri, National Inst of AIST, Japan

**The Monitoring Technology of Environmental Effects of Gas Hydrate Production Process**

Minghao Chun, Xiaodi Yang, Xiaoqiao Luo, Zhenwen Liu, Ningxin Zhang, CNPC, China

**A Case Study of Hydraulic Collecting a Single Spherical Particle**

Guocheng Zhao, Longfei Xiao, Haining Lu, Zhiyi Chen, Shanghai Jiao Tong Univ, China

**Numerical Study of the Motion of a Freely Falling Sphere in Fluid**

Lei Liu, Haining Lu, Jianmin Yang, Tao Peng, Xinliang Tian, Shanghai Jiao Tong Univ, China

**21. ARCTIC II:  
Arctic Structures I (V. 1)**

**Monday June 26 14:00 Sand. E**

**Chair:** A.T. Bekker, Far Eastern Federal University, Russia

**Co-Chair:** Won Ho Lee, DNV-GL USA, USA

**Dynamic Responses of Aluminum Foam Sandwich Plates in the Repeated Impact at Low Temperature**

Ling Zhu, Kailing Guo, Yinggang Li, T X Yu, Qingwen Zhou, Wuhan Univ of Tech, China

**Model Test Study on the Ice Pile-up Process in the Conductor Array of a Jacket Platform**

Xiaoying Du, CNOOC Resesarch Inst; Yan Huang, Jianqiao Sun, Tianjin Univ, China

**An Offshore Platform for Exploration Drilling in Shallow Water Area of the Kara Sea [Proceedings only]**

Vladislav N Baryshev, Olga A Sabodash, Nikita Ya Tsimbelman, Alexander T Bekker, Far Eastern Federal Univ, Russia

**MONDAY 16:20**

**22. HYDRODYNAMICS III:  
Fluid-Structure Interactions (V. 3)**

**Monday June 26 16:20 Grand A**

**Chair:** Sungho Lee, Glostten Inc, USA

**Numerical Study of Oscillatory Dual Cylinders in Tandem Arrangement**

Xiaotong Zhang, Shanghai Jiao Tong Univ, China; Dixia Fan, Massachusetts Inst of Technology, USA; Decheng Wan, Shanghai Jiao Tong Univ, China

**Uncertainties in Wave Loads on Slender Pile Structures Due to Uncertainties in Modelling Waves and Associated Kinematics**

Sverre Kristian Haver, Kåre Edvardsen, Gunnar Lian, Univ of Stavanger, Norway

**Development of a 3-D Numerical Model for Simulating Interaction of Water Waves and Offshore Structures**

Yu-Cheng Chang, Ching-Jer Huang, Chun-Yuan Lin, National Cheng Kung Univ, Taiwan, China

**Numerical Investigation on Wave Elevation around a Biofouled Cage Array**

Chun-Wei Bi, Yun-Peng Zhao, Guo-Hai Dong, Tiao-Jian Xu, Hui-Min Hou, Dalian Univ of Tech, China

**Suction Force and Multiple Frequencies Subjected to Oscillating Cylinder on Water Surface**

Zhaobing Jiang, PLA Univ of Science & Tech, China; Mingyi Tan, Univ of Southampton, UK; Shan Ma, Harbin Engineering Univ, China

**Numerical Simulation of the Vortex Structure around the Net Cage in Current [Proceedings only]**

Ming-Fu Tang, Tiao-Jian Xua, Guo-Hai Dong, Yun-Peng Zhao, Dalian Univ of Tech, China

**23. LNG SLOSHING III:  
Fluid-Structure Interactions (V. 3)**

**Monday June 26 16:20 Grand B**

**Chair:** Yonghwan Kim, Seoul National University, Korea

**Sloshing Flows in an Elastic Tank with High Filling Liquid by MPS-FEM Coupled Method**

Youlin Zhang, Xiang Chen, Decheng Wan, Shanghai Jiao Tong Univ, China

**Fluid Structure Interaction Analysis of Composite Structures Exposed to Sloshing**

André Baeten, Augsburg Univ of Applied Sciences, Germany

**Numerical Studies on Sloshing Loads Using Sloshing Coupled Ship Motion Algorithm**

Jai Ram Saripilli, Indian Register of Shipping; Debabrata Sen, IIT Kharagpur, India

**Anti-Slosh Performance of Inflatable Components in Relation to Shape Retention and Load Transfer**

Erik Jeroen Eenkhoorn, Univ of Twente, Netherlands

**A Study on Effect of Liquid Motion in a Fully-filled 3D Tank on Load on the Tank**

Yusong Cao, Fuwei Zhang, C-Z Marine Technology, USA

**24. RENEWABLE ENERGY III:  
Wave Energy Converter 3 (V. 1)**

**Monday June 26 16:20 Grand C**

**Chair:** Seok-Won Hong, KRISO, Korea

**Design and Performance Analysis on 5kW Prototype Device of Heaving Float Wave Energy Conversion with Liquid Metal MHD Generator [Oral presentation]**

Yanjiao Liu, Baolin Liu, Aiwu Peng, Inst of Electrical Engineering, CAS, China

**Effect of Working Medium Property on Performance of Heaving Float Wave Energy Converter with Liquid Metal MHD Generator**

Yanjiao Liu, Baolin Liu, Aiwu Peng, Inst of Electrical Engineering, CAS, China

**Dynamic Behaviors of Wave Energy Converters Connected to Large Semi-submersible**

Kyong-Hwan Kim, Sewan Park, Keyyong Hong, Korea Research Inst of Ships & Ocean Eng; Hyebin Lee, Yoon Hyeok Bae, Jeju National Univ, Korea

**Hydrodynamic Performances of Wave Pass Two Buoys-Type Wave Energy Converter**

D C Lo, National Kaohsiung Marine Univ; T-W Hsu, National Taiwan Ocean Univ; C-D Yang, National Kaohsiung Marine Univ, Taiwan, China

**Investigation on Possible Layouts of a Catamaran Floating Breakwater behind a Wave Energy Converter**

Chiara Favaretto, Luca Martinelli, Piero Ruol, Giampaolo Cortellazzo, Univ of Padova, Italy

**25. ASSET INTEGRITY III:**

**Corrosion 1 (V. 4)**

**Monday June 26 16:20 RegencyAB**

**Chair:** Cecilie Haarseth, Exxonmobil Upstream Research Co., USA

**Use of Corrosion-Mitigating Thixotropic Gel for Riser Abandonment Inside Pull-Tube**

Kirk Francis, Stuart Mitchell, Nader Matari, Flexlife, USA

**AC Corrosion of Electrically Heated Pipelines**

Kristian Thinn Solheim, Martin Hoeyer-Hansen, Jens Kristian Lervik, SINTEF Energy Research, Norway

**A Study on CO<sub>2</sub> Removal Process Technology with Solvent Method on Offshore Platform**

Hualei Yi, Haishan Zhu, Shaokai Chen, Xiaohong Zhou, Zejun Yang, Qian Zhang, CNOOC Research Inst, China

**Probabilistic Seismic Hazard Analysis for the Estimation of Strain Demand Distribution due to Liquefaction induced Lateral Spreading**

Smitha D Koduru, C-FER Technologies, Canada

**Reinforcement and Concrete Interface Corrosion Damage Detection Using Piezoelectric Ceramics**

Shi Yan, Putian Zhao, Yong Dai, Weiling Liu, Shenyang Jianzhu Univ, China

**26. SBD III:**

**Strain Based Design and Assessment 2 (V. 4)**

**Monday June 26 16:20 RegencyC**

**Chair:** M Panico, ExxonMobil Upstream Research, USA

**Benchmark Examples of Tensile Strain Capacity Prediction and Strain-Based Engineering Critical Assessment Calculations**

Doug P. Fairchild, ExxonMobil Production Co.; Michele Panico, Justin M. Crapps, Wentao Cheng, ExxonMobil Upstream Research; Mike F. Cook, ExxonMobil Production Co., USA

**A Case Study of Design and Integrity Management Framework for Strain-Based Pipelines**

Michele Panico, ExxonMobil Upstream Research; Mario L. Macia2, Doug P. Fairchild2, ExxonMobil Production; Wentao Cheng, ExxonMobil Upstream Research, USA

**Thermal-Hydraulics Modeling for Buried Gas Pipeline Strain-Based Design**

Thomas Jurca, Stanley Yee, TransCanadaPipeLines; Ronald J. Coutts, Matrix Solutions; J.F. (Derick) Nixon, Nixon Geotech Limited; Richard B. Simms, Matrix Solutions; Stanley Yee, TransCanadaPipeLines, Canada

### 27. VORTEX-INDUCED VIBRATIONS III (V. 3)

**Monday June 26 16:20 Harbour**

**Chair:** Shiqiang Yan, City, University London, UK

#### **Spanwise Force Correlation of Rotating Square Cylinders in Three-dimensional Cross-flow**

J.-B. Frigo, C. Béguin, A. Hay, S. Etienne, D. Pelletier, Ecole Polytechnique de Montreal, Canada

#### **Parametric Study of VIV Fatigue Analysis for SCR**

Sung-Je Lee, Jeong-Dae Lee, Seock-Hee Jun, Kwang-Kyu Yoo, Young-Seok Joo, Sung-Kon Han, Sung-Gun Park, Daewoo Shipbuilding & Marine Eng, Korea

#### **Coupled Simulation of CFD and Nonlinear Cable Dynamics for Vortex-Induced Vibration of a Very Long Cable System**

Euntaek Lee, Hyung Taek Ahn, Univ of Ulsan, Korea

#### **Three Dimensional Numerical Simulation of Vortex Induced Vibration for an 800-m-Long Drilling Riser**

Jiasong Wang, Ke Lin, Shanghai Jiao Tong Univ; Jianliang Zhou, Liangbin Xu, Leixiang Sheng, CNOOC Research Center, China

#### **Three-Dimensional Dynamics of Vortex-Induced Vibration on a Fluid-Conveying Pipe in the Subcritical Regime**

Jinlong Duan, Ke Chen, Yunxiang You, Wei Li, Renfeng Wang, Shanghai Jiao Tong Univ, China

#### **Vortex-Induced Vibrations of a Flexible Cylinder Experiencing an Oscillatory Flow**

Bowen Fu, Decheng Wan, Shanghai Jiao Tong Univ, China; Zhiqiang Hu, Newcastle Univ, UK

### 28. OCEAN TECHNOLOGY III: LNG, Bunkering, FLNG 3 (V. 1)

**Monday June 26 16:20 Bayside**

**Chair:** Xiaochuan Yu, University of New Orleans, USA

#### **Numerical Study on the Hydrodynamic Effect of the SBT on the Motion Response of the Low Motion FPSO**

Hyung Do Song, Hong Gun Sung, Suk-Kyu Cho, Byoung Wan Kim, Jang Pyo Hong, Sung Chul Hwang, Korea Research Inst of Ships & Ocean Engineering, Korea; Alaa Mansour, Chunfa Wu, INTECSEA, USA

#### **Numerical Investigation on Dynamic Responses of HMPE Mooring System with Damaged Lines**

Yushun Lian, Hohai Univ; Haixiao Liu, Tianjin Univ; Jinhai Zheng, Hohai Univ, China

#### **Effect of Wind and Current Loads to FDP SO Mooring Fatigue**

Xudong Liu, Huilong Ren, Lei Yu, Yanlong Sun, Xiaoxiong Sun, Harbin Engineering Univ, China

#### **Critical Issues for the Design and Classification of Offshore Offloading Buoys**

M. Dumont, D. Rochette, G. De Hauteclocque, Bureau Veritas, France

#### **A Comparative Study on Built-up Section and Rolled Section in FPSO Topside**

Sang Woong Han, Beom-Seon Jang, Seoul National Univ; Sang Hoon Shim, Sung Woo Im, POSCO, Korea

**Global Performance Analysis of Concrete FPSO with Tangerine Transverse Cross Section**  
HeonYong Kang, Texas A&M Univ, USA; Jae-Young Cho, Jong-Heon Park, GS E&C, Korea

**29. MECHANICS & HYDRO-ELASTICITY (V. 4)**  
**Monday June 26 16:20 Sand. AB**

**Chair:** Pieter van Beek, TNO, Netherlands  
**Co-Chair:** V Sriram, IIT Madras, India

**Nonlinear Wave Loads' Prediction Based on Three-Dimensional Hydroelasticity Theory in Irregular Waves**  
Kaihong Zhang, Huilong Ren, Hui Li, Harbin Engineering Univ; Xiaowang Tong, China Classification Society, China

**Evaluating the Vibration Performance of a Subsea Pump Module by Numerical Modelling and Full-Scale Testing**  
Pieter van Beek, Hajo Pereboom, Harmen Slot, TNO, Netherlands

**Effective Thermo-Elastic Properties of FGMs for Micromechanical Behavior**  
Seok-In Bae, Ji-Hwan Kim, , Seoul National Univ, Korea

**An Experimental Investigation of Material Failure Criterion of High-strength Hull Steel**  
Lei Yang, Shanghai Jiao Tong Univ; Zhengliang Peng, China Ship Development & Design Center; Zhonghua Cai, Shanghai Jiao Tong Univ; Zhe Li, Deyu Wang, Shanghai Jiao Tong Univ, China

**Improved Hybrid Numerical Model for Fluid-Elastic Structure Interaction using FEM and MLPG\_R**  
G Manoj Kumar, V Sriram, IIT Madras, India

**Development of Utility Tool for Small Craft Processing Recorded Class B AIS Data**  
Misako Urakami, Hisaya Motogi, Tomohiro Sunada, Oshima College; Takayuki Watanabe, Nobukazu Wakabayashi, Kobe Univ, Japan

**30. FRONTIER ENERGY RESOURCES III:  
EOR, Gas Hydrates & Deep-Ocean Minerals 2 (V. 1)**  
**Monday June 26 16:20 Sand. CD**

**Chair:** Tomasz Abramowski, Interoceanmetal Joint Org., Poland  
**Co-Chair:** Li Li, Central South University, China

**Study on Dynamic Simulation for Produced Liquid Treatment Process in Offshore Heavy Oil Thermal Recovery [Oral presentation]**  
Xiaying Du, Jihai Liu, Chunyu Liu, CNOOC China, China

**Experimental Feasibility Study of a Novel Organic-Inorganic Hybrid Material for Offshore Oil Well Cementation**  
Jiawei Du, Yuhuan Bu, Huajie Liu, Zhonghou Shen, China Univ of Petroleum-Qingdao, China

**Structural Aggregation of Feasibility Factors for the Assessment of the Polymetallic Nodules Deep Sea Mining Value Chain**  
Tomasz Abramowski, Peter Balaz, Interoceanmetal Joint Organization, Poland

**The Design of Sampling Machine for Mineral Resources**  
Ning Yang, Chao Xie, Yuxiang Chen, Ming Chen, Jinrong Zheng, Ming Zhang, Inst of Deepsea Science & Engineering, CAS; Li Li, Central South Univ, China

**A Research Procedure to Obtain a Green Transport Plan for Deep Sea Mining Systems**  
Wenbin Ma, Dingena Schott, Gabriël Lodewijks, Delft Univ of Tech, Netherlands

**Non-intrusive Measurement of Offshore Sand Production Using Vibration Sensor Method and its Laboratory Evaluation**

Jialin Zhang, Gang Liu, Jiacheng Du, Kai Wang, China Univ of Petroleum (Huadong), China

**Engineering-Geological Study of Hydrothermal Polymetallic Sulphides Ore Fields [Proceedings only]**

Anatoly V. Kondratenko, Igor V. Egorov, FSBI «VNIIOkeangeologia»; Victor N. Ivanov, Polar Marine Geosurvey Expedition; Dmitry L. Kell, FSBI «VNIIOkeangeologia», Russia

**31. ARCTIC III:**

**Arctic Structures 2 (V. 1)**

**Monday June 26 16:20 Sand. E**

**Chair:** Rocky S Taylor, Memorial Univ. of Newfoundland, Canada  
**Co-Chair:** Ling Zhu, Wuhan University of Technology, China

**Numerical Simulation of Offshore Wind Turbine Dynamics in Drifting Level Ice**

H.K. Jang, M.H. Kim, Texas A&M Univ, USA

**Field Tests for Studying Ice Actions in Bohai Sea**

Yanlin Wang, Shanshan Sun, Dalian Univ of Tech; Ke Ke, Lei Wang, SINOPEC; Dayong Zhang, Xiyu Zhao, Dalian Univ of Tech, China

**Conceptual Design for Testing Ice Abrasion on Offshore Concrete Surfaces**

Amanda M Ryan, Stephen Bruneau, Bruce Colbourne, Memorial Univ of Newfoundland, Canada

**Silicone Based Icephobic Coating Assessment under Offshore Winter Conditions**

Jean-Denis Brassard, Caroline Laforte, Univ du Quebec a Chicoutimi, Canada

**TUESDAY 08:00**

**32. HYDRODYNAMICS IV:**

**Floating Bodies 1 (V. 3)**

**Tuesday June 27 08:00 Grand A**

**Chair:** Yoool Kim, Inha University, Korea,  
**Co-Chair:** A P Shashikala, National Inst. of Tech.- Calicut, India

**CFD Modeling on Gap Flows of Two Ships with Side-by-Side Configuration in Waves [Oral presentation]**

Yuan Zhuang, Decheng Wan, Shanghai Jiao Tong Univ, China

**Effect of Wave Interaction among Multiple Floating Bodies on Hydrodynamic Forces**

Zhengke Wang, Guanghua He, Zhigang Zhang, Chi Qi, Harbin Inst of Tech, China

**Computation of Wave Drift Forces and Motions for DTC Ship in Oblique Waves**

Cong Liu, Jianhua Wang, Decheng Wan, Shanghai Jiao Tong Univ; Xinguo Yu, China Ship Development and Design Center, China

**Rational Determination of Design Wave Using Combined Design Load Parameters (DLP) on Semi-Submersible with Twin Pontoon Type**

Won-Hyuk Choi, Dong-Kyoon Kim, Yong-Sun Baik, Seung-Han Moon, Daewoo Shipbuilding & Marine Engineering, Korea

**Hydrodynamic Study of Wave Evolution Characteristics around Semi-submersible Platform in Shallow Water with Submerged Terrain near Island**

Ke Xia, Yong Ai, Decheng Wan, Shanghai Jiao Tong Univ, China

**Numerical Study of the Dynamic Characteristics of an Air-Gun Bubble Generated above the Solid Boundary [Proceedings only]**  
S. Zhang; S P. Wang; A M. Zhang, Harbin Engineering Univ, China

**33. LNG SLOSHING IV:  
Impact Assessment (V. 3)**

**Tuesday June 27 08:00 Grand B**

**Chair:** André Baeten, Augsburg Univ of Applied Sciences, Germany  
**Co-Chair:** Kyong Hwan Kim, KRISO, Korea

**Sloshing Load Assessments for Mid-scale Single Row Floating LNG Solution**

Chang Seop Kwon, Hyun Joe Kim, Jong Jin Park, Yong Ho Choi, Min Sung Chun, Dong Hoon Yoo, Dong Hyun Choi, Dong Yeon Lee, Booki Kim, Samsung Heavy Industries, Korea

**Comparison of Impact Pressure on 2D and 3D Tanks under Harmonic Excitation**

Sang-Yeob Kim, Yonghwan Kim, Seoul National Univ, Korea

**Analysis of Sloshing Impact Pressures Using Different Extreme Statistical Theories**

Ekin Ceyda Cetin, Sangyeob Kim, Yonghwan Kim, Seoul National Univ, Korea

**Anti-Slosh Inflatable Component Case Study**

Erik Jeroen Eenkhoorn, Univ of Twente, Netherlands

**34. RENEWABLE ENERGY IV:  
Wave Energy Converter 4 (V. 1)**

**Tuesday June 27 08:00 Grand C**

**Chair:** Decheng Wan, Shanghai Jiao Tong University, China

**Model Scale Submerged Hydraulic Power Take-Off with Adjustable Damping for Wave Energy Conversion**

Nigel C Kojimoto, Marcus Lehmann, Bryan Murray, CalWave Power Technologies; Thomas Boerner, M Reza Alam, Univ of California-Berkeley, USA

**Application of Coupled Numerical Simulation to Design Wave Energy Converters**

Aengus John Connolly, Wood Group; Paul Brewster, Pure Marine Gen, Ireland

**Simulation of Volume of Overtopping and Water Feeding of Wave Overtopping Type Wave Power Generation**

Tomoya Inami, Hiromichi Tanaka, Tetsuo Sakurada, Tokai Univ, Japan

**Design Study of a Multipoint Mooring System of the Floating Wave Energy Converter in Deep Water with a Sloping Bottom**

Shuo Huang, Songwei Cheng, Yage You, Bijun Wu, Guangzhou Inst of Energy Conversion, CAS; Xu Bai, Jiangsu Univ of Science and Tech, China

**35. SUBSEA, PIPELINES, RISERS I:  
Flexible and Umbilical 1 (V. 2)**

**Tuesday June 27 08:00 RegencyAB**

**Chair:** WC Kan, ExxonMobil Production Company, USA

**A Procedure for Assessment of Umbilical Fatigue Damage Due to VIV [Oral presentation]**

Yusong Cao, Fuwei Zhang, C-Z Marine Technology, USA

**A Novel Bending Stiffness Rig for Identification of Subsea Cables' and Umbilicals' Sensitivity to Temperature under Sinusoidal Curvature Oscillations**



Lars Jordal, Roger Slora, Nexans Norway AS; Erwin Vermeer, Combiteq AS; Magnus Komperød, Nexans Norway AS, Norway

**Calculation of Roller Distance and Bending Diameter during Spooling and Handling of Umbilicals with Thin Wall Steel Tubes**  
Bjørn Konradsen, Bjørn Slora, Frank Woll, Remy Basler, Eivind Håvik, Nexans Norway AS, Norway

**Compatibility between Semi-Conductive LLDPE and Hydrocarbon Oil**  
Elise Olsen, Nexans Norway AS; Kjell Olafsen, SINTEF Materials and Chemistry, Norway

### 36. HPM I:

#### Advanced Steels I (V. 4)

**Tuesday June 27 08:00 RegencyC**

**Chair:** HyunWoo Jin, ExxonMobil Research & Engineering, USA

**Atomic-scale Analysis of Grain Boundary Segregation Causing Macro-scale Delamination Observed in High-strength Low-carbon Steel Sheets [Oral presentation]**  
Jong-Chan Han, Ju-eun Kim, Jae-Bok Seol, POSTECH; Seok-Jong Seo, POSCO; Chang-Gyung Park, POSTECH, Korea

**Interphase Precipitation of Core/Shell Nanoparticles Efficient for Strengthening in High Strength-Low Alloy Steels [Oral presentation]**  
S-H Na, J-B Seol, J-E Kim, POSTECH, Korea; B Gault, D Raabe, Max-Planck Inst für Eisenforschung, Germany; C-G Park, POSTECH, Korea

**Origin of Dynamic Strain Aging and Negative Strain-Rate Sensitivity in High-Mn TRIP Steels: Faster is Stronger [Oral presentation]**  
Jae-Bok Seol, J-G Kim, H-S Kim, C-G Park, POSTECH, Korea

**Development of YP460 N/mm<sup>2</sup> Class Heavy Thick Plate with Excellent Brittle Crack Arrestability and Weldability for Large Container Carriers**  
Kazukuni Hase, Katsuyuki Ichimiya, Keiji Ueda, Tsunehisa Handa, Taiki Eto, Masahiro Aoki, JFE Steel, Japan

**Research and Development of Crack Arrest Steel for Ultra Large Container Ships**  
Shan Gao, Xiaohui Lu, Caiyi Zhang, Baosteel Research Inst; Zhongzhu Liu, Aimin Guo, CITIC Metal, China

### 37. VORTEX-INDUCED VIBRATIONS IV (V. 3)

**Tuesday June 27 08:00 Harbour**

**Chair:** Jin S Chung, ISOPE, USA

**Passive Vibration Control of Pipe-in-Pipe (PIP) Systems Subjected to Vortex Induced Vibration (VIV)**  
Hamid Matin Nikoo, Kaiming Bi, Hong Hao, Curtin Univ of Tech, Australia

**Experimental Study of Vibrations for a Hydrofoil**  
Renfeng Wang, Ke Chen, Yunxiang You, Tianqun Hu, Xinshu Zhang, Shanghai Jiao Tong Univ, China

**The Study on the Arrangement of VIV Suppression Device on Top Tension Riser in Soliton Current**  
Xiaoliang Qi, Gang Xu, Chongyao Zhou, DMAR Offshore Engineering, China; Kevin Huang, DMAR Engineering, USA; Yongtian Kang, DMAR Offshore Engineering, China

**An Effective Time-domain Approach for Prediction of Vortex-induced Vibrations in a 2D Plane**  
Wei Lin, Cheng, Su, South China Univ of Tech, China

**Consideration of HVIV and VIV Response of SLWRs**

Craig Dillon-Gibbons, Andrew Kilner, AMOG Consulting, USA;  
Hayden Marcollo, AMOG Consulting, Australia

**38. OCEAN TECHNOLOGY IV:**

**LNG Storage (V. 1)**

**Tuesday June 27 08:00 Bayside**

**Chair:** Piotr Moncarz, Exponent, USA

**Co-Chair:** Hong Gun Sung, KRISO, Korea

**Design Comparisons of Large-scale LNG Storage Outer Tank**

Kangwon Lee, Junhui Kim, Seul-kee Lee, KOGAS Research Inst, Korea

**Enhancing the Post-Ultimate Behavior of Reinforced Concrete Offshore Structures**

Tea Visnjic, Peter Feenstra, Piotr Moncarz, Exponent Failure Analysis Associates, USA

**A Transition of Philosophies of Fracture Safety in Liquefied Natural Gas Storage Tanks**

Tomoya Kawabata, Univ of Tokyo; Hitoshi Hirose, GH Engineering Consultants, Japan

**Integrity Management Challenges and Life Extension of Cryogenic above Ground Storage Tanks**

Abe Nezamian, Aurecon, Australia

**A Prismatic Pressure Vessel with Lattice Structure and Applications in LNG Field**

Hwalong You, Junkeon Ahn, Choonghee Jo, Pål G Bergan, Daejun Chang, Korea Advanced Inst of Science & Tech, Korea

**Development of Lightweight Composite Outer Tank System for Modular Onshore LNG Tank**

Dongkyu Shin, Sang Beom Shin, Yoon Yi Hwang, Dae-Soon Kim, Hyundai Heavy Industries, Korea

**Development of Fast Construction Method of LNG Storage Tank Wall Using Permanent Precast Concrete Form**

Junhwi Kim, Seul-kee Lee, Kangwon Lee, KOGAS Research Inst; Sunghyun Oh, Jangheon Engineering & Construction; Hyeoncheol Jo, Yunmook Lim, Yonsei Univ, Korea

**39. MECHANICS & RELIABILITY I (V. 4)**

**Tuesday June 27 08:00 Sand. AB**

**Chair:** Bor-Feng Peng, Oil Field Development Eng, USA

**Statistical Analysis of Ship Accidents between the Three Gorges and Gezhouba Dam**

Yue Lei, Shunhuai Chen, Wuhan Univ of Tech, China

**Study on Evacuation Decision Model of Yachts at Fire Emergency**

Jianyu Wang, Yanmin Xu, Wuhan Univ of Tech; Jihong Zeng, Wuhan Univ of Techn-Skaugen Training & Consulting Co; Ke Wen, Hubei Wuchang Experimental High School; Fan Yang, Mingjun Liu, Wuhan Univ of Tech, China

**High-resolution Hydrocode for Simulating Gas Cloud Explosion in Confined Space of the Platform**

Wei-zheng Xu, Xiang-shao Kong, Cheng Zheng, Wei-guo Wu, Wuhan Univ of Tech, China

**Distribution of Temperature Field and Analysis of the Influence of Thermal Stress on the Structure of Chemical Tankers**

Pengfei Li, Huilong Ren, Hexing Song, Chuanrui Dong, Harbin Engineering Univ, China

**Quantitative Analysis of Hydrocarbon Leaks in Offshore Installations**

Hui-bin Yan, Wen-yong Tang, Hong-xiang Xue, Shanghai Jiao Tong Univ, China

**Optimized Fire Protection for Offshore Topside Structure with 3-Sides PFP Application**

Migyeong Kim, Gyeongsung Kim, Minhan Oh, Hyundai Heavy Industries, Korea

**40. ASSET INTEGRITY IV:  
Corrosion 2 (V. 4)**

**Tuesday June 27 08:00 Sand. CD**

**Chair:** Antonio Alvaro, SINTEF Materials and Chemistry, Norway

**Enhanced Weld Quality of Corrosion Resistance HF-ERW Pipes by Laminar Plasma Shielding Technique**

Fuminori Watanabe, Hideki Hamatani, Noboru Hasegawa, Takuya Asano, Keigo Kato, Akira Imanishi, Mitsutoshi Tanimoto, Kotaro Watanabe, Nippon Steel & Sumitomo Metal, Japan

**Numerical Estimation of the Stop Holes-Induced Fatigue Crack Growth Retardation in Offshore Structures Taking into Account the Corrosion Effect**

Ove Mikkelsen, Kristen Rege, Tor Hemmingsen, Dimitrios G Pavlou, Univ of Stavanger, Norway

**Effect of Accumulated Plastic Strain Induced during Reel-Lay Installation on Fracture and Fatigue Behavior of Welded Subsea Pipelines in a Hydrogen Charged Acidizing Environment**

Yohann Miglis, TechnipFMC; Ramgopal Thodla, DNV GL; Sam Mishael, Jonathan Bowman, Chevron; Andrea Sajiz, TechnipFMC; Colum Holtam, DNV GL, USA

**Real Offshore Exposure Tests of a Mineral Corrosion Protection System**

Christoph Tomann, Tobias Schack, Ludger Lohaus, Leibniz Univ Hannover, Germany

**Improving Pipeline Asset Integrity via Pull-Through Pipeline Rehabilitation: A Case Study on Mobile Bay's Experience**

Neerav Verma, ExxonMobil Upstream Research; Alexander Watts, ExxonMobil US Production; Timothy Anderson, ExxonMobil Upstream Research, USA

**Features Description of Shell Surface Microstructure for Marine Antifouling Study**

Xiuqin Bai, Xiong Wang, Chengqing Yuan, Wuhan Univ of Tech, China

**Study on Antimicrobial Surface Design Using Biological Modification Attempting for Marine Antifouling**

Chengqing Yuan, Pan Cao, Xiuqin Bai, Wuhan Univ of Tech, China

**41. ARCTIC IV:  
Ice Mechanics (V. 1)**

**Tuesday June 27 08:00 Sand. E**

**Chair:** Mohamed Sayed, National Research Council, Canada

**Numerical Simulation of Failure Progress of Ice Using Smoothed Particle Hydrodynamics**

Ningbo Zhang, Xing Zheng, Harbin Engineering Univ, China; Qingwei Ma, City University London, UK; Hongbin Hao, Harbin Engineering Univ, China

**The Effect of Snow on Ice Plate Deflections Generated by Moving Body under an Ice Plate**

Alexandra V Pogorelova, Sholom-Aleichem Priamursky State Univ; Victor M Kozin, Inst of Machine & Metallurgy; Vitaliy L Zemlyak, Sholom-Aleichem Priamursky State Univ, Russia

**Studies of Specific Energy Fracture of Ice Using Method Test Samples on Uniaxial Compression**

Alexander T Bekker, Vladimir G Tsuprik, Egor E Pomnikov, Far Eastern Federal Univ, Russia

**Methods of Assessment of Ice-Breaking Capacity of Flexural-Gravity Waves Generated by Moving Loads**

Victor M Kozin, Inst of Machining & Metallurgy; Vitaliy Zemlyak, Sholom-Aleichem Priamursky State Univ; Evgeniy M. Gramuzov, 3Nizhny Novgorod State Technical University named after R.E. Alekseev; Alexander A. Shumeyko, Elena G Rogozhnikova, Anna A Matiushina, Amur State Univ of Humanities & Pedagogy, Russia

**The Research on Deformed State of Hummocked Ice Caused by Motion of a Submarine Vessel**

Vitaliy Leonidovich Zemlyak, Sholom-Aleichem Priamursky State Univ; Victor Mikhailovich Kozin, Inst of Machining & Metallurgy; Nikita Olegovich Baurin, Konstantin Igorevich Ipatov, Sholom-Aleichem Priamursky State Univ, Russia

**TUESDAY 10:30**

**42. HYDRODYNAMICS V:  
Floating Bodies 2 (V. 3)**

**Tuesday June 27 10:30 Grand A**

**Chair:** Decheng Wan, Shanghai Jiao Tong University, China

**Co-Chair:** Tingqiu Li, Wuhan University of Technology, China

**Numerical Computations on Nonlinear Wave Forces and Run-ups on a TLP in High Waves**

B W Nam, Y J Ha, S Y Hong, Korea Research Inst of Ships & Ocean Engineering, Korea

**Numerical Green Water Assessment for an FPSO with Consideration of Nonlinear Effects from Bilge Keel, Spread Mooring and Asymmetric Risers**

Shuo Wang, Xin Wang, Wai Lok Woo, Newcastle Univ, UK

**Mooring Line Top-Tension Prediction Using NARX**

Murat Yetkin, Min-Soo Kim, Yooil Kim, Inha Univ, Korea

**Response of Moored Ship in the Waves Generated by Passing Ship**

Lilan Zhou, Ji Yang, Chang Hong, Jiangtao Qin, Wuhan Univ of Tech, China

**Time Domain Analysis of Side By Side Vessels' Motion Responses during Offshore Installation and Underway Replenishment**

Xi Chen, Ren-chuan Zhu, Shanghai Jiao Tong Univ, China

**Research on Hydrodynamic Calculation Method of Deepwater CALM Buoy**

Zhuang Kang, Cheng Zhang, Wenchi Ni, Xiang Xu, Harbin Engineering Univ, China

**Optimization of Separation Distance between Two Floating Bodies**

Shashikala A.P, Shankar K Varma, National Inst of Tech Calicut, India

**Numerical and Experimental Motion Investigations of a Light Weight Semi-Submersible in Irregular Sea**

Yanbin Bai, COTEC Offshore Engineering Services, USA; Haining Lv, Shanghai Jiao Tong Univ, China; Jim Wang, John Cheng, Yong Luo, COTEC Offshore Engineering Services, USA

### 43. SLOSHING V:

Panel (V. 3)

Tuesday June 27 10:30 Grand B

**Chair:** Yusong Cao, C-Z Marine Technology, USA

**Co-Chair:** Sa Young Hong, KRISO, Korea

#### *Panelists*

#### **ITTC Procedure for Sloshing Model Tests [Oral presentation]**

Yonghwan Kim, Sang-Yeob Kim, Seoul National Univ, Korea

#### **Sloshing Phenomena in Fluid-Structure Interactions [Oral presentation]**

A Baeten, Augsburg Univ of Applied Sciences, Germany

#### **Sloshing in Liquid Hydrogen Vehicles [Oral presentation]**

Haider Iqbal, TI Automotive, Germany

### 44. RENEWABLE ENERGY V:

Ocean Energy & Resources (V. 1)

Tuesday June 27 10:30 Grand C

**Chair:** Sverre K Haver, University of Stavanger, Norway

#### **Ocean Testing of a Symbiotic Device to Harvest Uranium from Seawater through the Use of Shell Enclosures**

Maha N Haji, Massachusetts Inst of Technology; Jessica Drysdale, Ken Buesseler, Woods Hole Oceanographic Institution; Alexander H Slocum, Massachusetts Inst of Technology, USA

#### **Influence of Met-Ocean Condition Forecasting Uncertainties on Weather Window Predictions for Offshore Operations**

Tomas Gintautas, John Dalsgaard Sørensen, Aalborg Univ, Denmark

#### **Strong El Niño Yields Modest Wave Power**

Robert L Waid, Marine Development Associates, USA

#### **The Future Northeast Atlantic Wave Energy Potential under Climate Change**

Jelena Janjic, University College Dublin; Sarah Gallagher, Met Eireann; Frederic Dias, University College Dublin, Ireland

#### **Hydrodynamic Interaction Effects and Performance of an Offshore Wave Farm**

Vasiliki Lamprou, Areti Lioliou, Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

#### **Assessment of WRF Prediction of Velocity Profile and Turbulence Intensity by Comparison to Field Measurement**

Rohan Kumar, Timothy Stallard, Peter K. Stansby, Univ of Manchester, UK

### 45. SUBSEA, PIPELINES, RISERS II:

Flexible and Umbilical 2 (V. 2)

Tuesday June 27 10:30 RegencyAB

**Chair:** Paul Jukes, The Jukes Group, Houston, TX, USA

**Co-Chair:** Craig Dillon-Gibbons, AMOG Consulting, USA

#### **Cross-sectional Design and Case Study for an 8-Inch Metallic Strips Flexible Pipe**

Peihua Han, Ting Liu, Shuai Yuan, Yong Bai, Zhejiang Univ, China

#### **Research on Thermal and Pressure Cycle Influence of Flexible Pipes**

Yuanchao Yin, Qingzhen Lu, Lidong Wang, Jia Zhang, Qianjin Yue, Dalian Univ of Tech, China

#### **Advanced Composite Structures for Subsea Pipeline Design Development**

Naveen Ravirala, Paul Jukes, The Jukes Group, USA

**On Critical Design Parameters of Offshore Unbonded Flexible Risers Associated with the Bending Hysteresis Behavior**

Yu Cao, Shanghai Ocean Univ, China; Xiaochuan Yu, Univ of New Orleans, USA; Ziyang Liuc, Inst of Ship Design & Research; Gong Xiang, Univ of New Orleans, USA; Weidong Ruan, Zhejiang Univ, China

**Effect of Pitting Corrosion on Fatigue Life of Flexible Armor Wires**

Venkat R. Krishnan, Fernando V. Stump, ExxonMobil Upstream Research; Krassimir Doynov, Wan C. Kan, ExxonMobil Production; Carl Popelar, Southwest Research Inst, USA

**A Simulation-Based Approach to Irregular Wave Wire Stress Computations in Flexible Risers**

Arya Majed, Luca Chinello, INTECSEA, USA; Nathan Cooke, INTECSEA, Canada; Xianglei Ni, INTECSEA, USA

**46. HPM II:**

**Adv Advanced Steels 2 (V. 4)**

**Tuesday**

**June 27**

**10:30**

**Regency C**

**Chair:** William Mohr, EWI, USA

**Co-Chair:** Tsunehisa Handa, JFE Steel Corporation, Japan

**Development of High Mn Steel Products for Energy Industries [Oral presentation]**

Yumi Ha, Sungkyu Kim, Yongjin Kim, Unhae Lee, In-shik Suh, and Joo Choi, POSCO, Korea

**Experimental Proof of Brittle Crack Arrestability by Large Scale Structural Model Test Simulating Ultra Large Container Ship**

Tsunehisa Handa, Satoshi Igi, Hisakazu Tajika, Tetsuya Tagawa, Kazukuni Hase, JFE Steel; Tsutomu Fukui, Nippon Kaiji Kyokai; Shuji Aihara, Univ of Tokyo, Japan

**A Numerical Study for the Yield Strength Prediction of UOE Pipes Considering Flattening Process**

Jiwoon Yi, Seoul National Univ; Soo-Chang Kang, POSCO; Jinkyoo F. Choo, Konkuk Univ; Hyun-Moo Koh, Seoul National Univ, Korea

**Material Design of Hot-rolled Steel Coils for Heavy Wall X70 Spiral Linepipes**

Junji Shimamura, Shunsuke Toyoda, Satoshi Tsutsumi, JFE Steel, Japan

**47. COASTAL I:**

**Nearshore Hydrodynamics (V. 3)**

**Tuesday**

**June 27**

**10:30**

**Harbour**

**Chair:** P. Ruol, University of Padova, Italy

**Co-Chair:** Harshinie Karunaratna, Swansea University, UK

**An Efficiency Test on Generation of Transformed Multi-directional Waves in Experimental Basin**

Katsuya Hiyaruma, Yasuhiro Aida, Akinorir Nakamura, Port and Airport Research Inst, Japan

**Computational Modelling of Hydrodynamics of a Proposed Tidal Stream Energy Extraction Site**

Harshinie Karunaratna, Swansea Univ; Antonia Chatzirodou, Environment Agency; Dominic E. Reeve, Swansea Univ, UK

**The Numerical Investigation of Flow Field of Eastern Coast in Taiwan**

Chih-Chung Wen, Hungkuang Univ; Yong-Jun Lin, National Taiwan Univ; Hui-Ming Fang, Sung-Shan Hsiao, National Taiwan Ocean Univ; Li-Hung Tsai, Ministry of Transportation and Communications; Tsung-Lin Lee, China Univ of Science & Tech; Shu-Huei Jhang, National Taiwan Ocean Univ, Taiwan, China

**48. OCEAN TECHNOLOGY V:  
TLP/ SPAR/VLFS/FPSO 1 (V. 1)**

**Tuesday June 27 10:30 Bayside**

**Chair:** Yongjun Chen, DMAR, USA

**Wind Tunnel Experiment and Numerical Analysis for Current Load Acting on Semi-submersible Platform**

Sung-Chul Hwang, Suk-Kyu Cho, Hyun-Woo Jung, Hong-Gun Sung, Marco P. Espinoza-Hara, Korea Research Inst of Ships & Ocean Eng, Korea; Alberto O Vazquez-Hernandez, Instituto Mexicano del Petroleo, Mexico

**TLP In-Place Condition Model Tests for the South China Sea Application**

Yuanlang Cai, Xiaolong Yang, Junji Li, Anke Song, Lixin Xu, China Offshore Oil Engineering; Haining Lv, Shanghai Jiao Tong Univ, China

**Probability of Slamming Due to Set-Down of Tension Leg Platform**

Xiudi Ren, Longbin Tao, Harbin Engineering Univ, China

**Motion Responses and Mooring Line Forces at the Pier for Tension Leg Platform**

Gang Chen, Linlin Yan, Hongtao Yuan, Chunhui Li, Yong Yang, Yan Yin, Shanghai Waigaoqiao Shipbuilding, China

**Heaving Plate Effect on the Hydrodynamic Performance of Semi-submersible FOWT**

Chunling Zou, Kangping Liao, Harbin Engineering Univ, China; Qingwei Ma, City Univ London; Xiaohu Guo, Science and Technology Facilities Council, UK;

**An Initial Concept Design of Low-Cost Offshore Accommodation Platform [Oral presentation]**

Chao Lu, Yajun Li, Wenxu Zhang, China Ship Development & Design Center, China

**49. MECHANICS & RELIABILITY II (V. 4)**

**Tuesday June 27 10:30 Sand. AB**

**Chair:** Grace S Wang, Chaoyang Univ of Tech, Taiwan, China

**In the Wake of the Floods Directive: Set-up of Methodologies and Guidelines for Local Administrations to Carry out Hazard and Risk Analysis at Local Scale [Oral presentation]**

Marco Bajo, Debora Bellafore, ISMAR-CNR; Alessandra Boy, ADIS; Maurizio Brocchini, Università Politecnica delle Marche; Antonello Bruschi, Maria Luisa Cassese, Filippo D'Ascola, Pio Di Manna, Francesco Lalli, Iolanda Lisi, ISPRA; Marco Melis, Alessandra Pillai, ADIS; Matteo Postacchini, Università Politecnica delle Marche; Eutizio Vittori, ISPRA, Italy

**Fatigue Reliability Analysis for Mooring Chain of Fish Cages Considering Corrosion Effect**

Hui-Min Hou, Guo-Hai Dong, Tiao-Jian Xu, Yun-Peng Zhao, Chun-Wei Bi, Dalian Univ of Tech, China

**Fatigue Strength Assessment on a Floating Process and Supply Basement Based on Equivalent Design Waves**

Jingxia Yue, Yulong Guo, Lihua Peng, Wuhan Univ of Tech; Wei Dong, China Ship Development & Design Center; Zheng He, Wuhan Univ; Zhentao Zhu, Shanghai Bestway Marine Engineering Research and Design Company, China

**Fragility Analysis of a Pier-Supported Wharf**

Grace S Wang, Chaoyang Univ of Tech; Fu-Kuo Huang, Tamkang Univ; Jia-Ming You, Chaoyang Univ of Tech, Taiwan, China

**Reliability-based Flaw Assessment of a Mooring Chain Using FORM and SORM**

Choong-Hyun Lee, Yooil Kim, Inha Univ, Korea

**50. GEOTECH I:**

**Suction Pile (V. 2)**

**Tuesday June 27 10:30 Sand. CD**

**Chair:** C F Leung, National University of Singapore, Singapore

**Effect of Lateral Soil Movement on Piles: An Analysis Prospective**

C F Leung, National Univ of Singapore, Singapore; Yi Xie, Fugro AG, Australia

**Pullout Resistance of Skirt Suction Anchor in Sandy Soils**

Yuki Kasuya, Masato Ito, Hidero Hayashi, Obayashi Corp; Naoki Masui, Masui Design Solutions, Japan

**Case Study on the Process of Problem Solving in Suction Bucket Foundation Construction**

Hyoun Kang, Osoon Kwon, Myunghak Oh, Insung Jang, Korea Inst of Ocean Science & Tech; Daejin Kwag, Advanced Construction Technology Engineering & Construction; Hyeongu Son, Korea Inst of Ocean Science & Tech, Korea

**Undrained Capacity of Suction Piles Subjected to Moment**

**Loading**  
Saeed Abyaneh, Justin Kennedy, Alasdair Maconochie, John Oliphant, TechnipFMC, UK

**Suction Buckets Behaviour under Tensile Loads: A Numerical Study with FEM**

Paola Dutto, Matthias Baeßler, Peter Geißler, Bundesanstalt für Materialforschung und -Prüfung (BAM), Germany

**Evaluation of Bearing Capacity of Hybrid Bucket Foundation Using Numerical Analysis and Field Test**

Kyu-Yeol Lee, Young-Suk Lee, Jun-Ung Youn, Dong-Joon Kim, Jae-Hyung Choi, Hyundai Engineering and Construction, Korea

**51. ARCTIC V:**

**Ice Monitoring (V. 1)**

**Tuesday June 27 10:30 Sand. E**

**Chair:** Ed Ross, ASL Environmental Sciences, Canada

**Ice Drift Tracking Using Photogrammetric Methods on Radar Data**

Curtis Holub, Dmitri Matskevitch, Victor Garas Yanni, Svetlana Shafrova, Ted Kokkinis, ExxonMobil Upstream Research, USA

**Spatial Variability of Sea Ice Velocity in the Continental Margin of the Canadian Beaufort Sea from a Dense Array of Moored Upward Looking Sonar Instruments**

Ed Ross, David B Fissel, Keath Borg, ASL Environmental Sciences, Canada

**Why a Warming Chukchi Sea Comes Together with a Cooling Bering Sea in Recent Years?**

Qun Zhou, Lixin Wei, National Marine Environmental Forecasting Center, China

**TUESDAY 13:15**

**2017 Prof. Jin S. Chung Award Lecture**

**Tuesday June 27 13:15 Grand A**

**Introduction:** Jin S Chung, ISOPE, USA

**Resonances in Coastal Structures [Oral presentation/To be published in IJOPE]**



Chiang C Mei, Massachusetts Inst of Technology, USA

**52. HYDRODYNAMICS VI:  
Slamming/Whipping/Impact 1 (V. 3)**

**Tuesday June 27 14:00 Grand A**

**Chair:** F Dias, University College Dublin, Ireland

**Numerical Investigation on Effects of Compressibility on Water Entry Problems**

Maria Bihnam, Maiwand Said, Shiqiang Yan, Qingwei Ma, City University London, UK

**Study of the 18000 TEU Container Vessel's Fatigue Strength under Influences of Springing Phenomenon**

Penghao Shan, Jiameng Wu, Shijian Cai, Marine Design and Research Inst of China; China

**Wave Loading on Flexible Offshore Structure**

Arman Ghezelbashan, Cedric D'Mello, City University London, UK

**Fully Nonlinear Simulation of Ringing of a Two Dimensional Barge in Focused Waves**

Binzhen Zhou, Harbin Engineering Univ; Jiang-Hui Qi, Wuhan Second Ship Design and Research Inst; Peng Jin, Liang Zhang, Harbin Engineering Univ, China

**Vertical Water Entry of a Cone under the Condition of Free Fall Motion**

Jian Hu, Qian-Qi Han, Shi-Li Sun, Harbin Engineering Univ, China

**53. HYDRODYNAMICS VII:  
Wave Mechanics 1 (V. 3)**

**Tuesday June 27 14:00 Grand B**

**Chair:** Ray-Yeng Yang, National Cheng Kung Univ, Taiwan, China

**Co-Chair:** Ching-Piao Tsai, National Chung Hsing Univ, Taiwan, China

**Numerical Simulation of Freak Waves in Random Wave Field**

Lei Wang, Jinxuan Li, Shuxue Liu, Dalian Univ of Tech, China

**A Pseudo-Spectral Method for Extreme Storm Waves**

Nicole Beisiegel, Frederic Dias, University College Dublin, Ireland

**Numerical and Experimental Investigation of Extreme Events in JONSWAP Seas [Oral presentation]**

Guillaume Ducrozet, Ecole Centrale de Nante, France; Alessandro Toffoli, Univ of Melbourne, Australia; Amin Chabchoub, Aalto Univ, Finland;

**Focused Waves on Depth-Varying Currents: The Role of Vorticity**

Magnus Beyer, Chris Swan, Marios Christou, Imperial College London, UK

**Water Wave Problems in a Sloping Seabed Environment**

Aichun Feng, Allan Ross Magee, National Univ of Singapore, Singapore

**Numerical Investigation of Shear Stress under Plunging Breaker on a Sloping Beach**

Lian Tang, Onyx W H Wai, Hong Kong Polytechnic Univ, China

**54. RENEWABLE ENERGY VI:  
Tidal & Current Energy (V. 1)**

**Tuesday June 27 14:00 Grand C**

**Chair:** Wojciech Popko, Fraunhofer IWES, Germany

**Co-Chair:** Fabian F Wendt, National Renewable Energy Lab, USA

**Operational Loads on a Tidal Turbine Due to Environmental Conditions**

Hannah R Mullings, Tim J Stallard, Univ of Manchester; Gregory S Payne, Univ of Edinburgh, UK

**Numerical Study on Power Balancing of Front and Rear Hydrofoils in Dual Configuration of a Flapping-Type Tidal Energy Harvester**

Patar Ebenezer Sitorus, Boreum Won, Jin Hwan Ko, Korea Inst of Ocean Science & Tech, Korea

**Experimental Investigation of Wake Properties of a Horizontal Axis Tidal Stream Turbine**

Jiekang Gu, Jisheng Zhang, Yunxiu Cao, Hohai Univ; Tiantian Zhang, China Three Gorges Corp, China

**Development of a Pitch Controller via Multiple-step Experiments of Scale Models of a Horizontal Axis Tidal Current Turbine**

Jihoon Kim, Hyeju Park, Jin Hwan Ko, Bo Reum Won, Patar Ebenezer Sitorus, Jin-Soon Park, Kwang-Soo Lee, Korea Inst of Ocean Science & Tech; Taesam Kang, Hoon Cheol Park, Konkuk Univ, Korea

**Power Generation by Counter-Rotating Type Tidal Stream Power Unit**

Ryunosuke Kawashima, EIM Electric; Toshiaki Kanemoto, Saga Univ; Isao Samura, Kazuo Kuwano, Kyowa Engineering Consultants, Japan

**Performance of Tandem Propellers Counter-Rotating Obliquely to Tidal Stream**

Nak-Joong Lee, Kyushu Inst of Tech; Toshiaki Kanemoto, Saga Univ; Kazuo Kuwano, Isao Samura, Kyuwa Engineering Consultants, Japan

**55. SUBSEA, PIPELINES, RISERS III:  
Riser Design 1 (V. 2)**

**Tuesday June 27 14:00 RegencyAB**

**Chair:** A. Majed, IntecSea Inc., USA

**Three-dimensional Soil-SCR Interaction Coupled with Global SCR Analysis**

Junhwan Choi, Beom-Seon Jang, Jeong Du Kim, Seoul National Univ, Korea; Youngho Kim, Muhammad Shazzad Hossain, Univ of Western Australia, Australia

**Weak Point and Operation Analysis of Deepwater Drilling Riser System in Typhoon Condition**

Xiuquan Liu, Guoming Chen, Yuanjiang Chang, Jingjie Fu, Jingqi Ji, China Univ of Petroleum-Qingdao, China

**Dynamics of 3D Beams with Geometric Nonlinearity in Fluids**

Anastasia Tsolaridou, Demos C Angelides, Aristotle Univ of Thessaloniki, Greece

**An Alternative Methodology for Static 3D Nonlinear Hanging Mooring Lines Analysis**

Florian Surmont, Damien Coache, Thomas Gazzola, Cédric Brun, Sébastien Martin, Bureau Veritas, France

**56. HPM III: Advance in Welding 1 (V. 4)**  
**Tuesday June 27 14:00 Regency C**

**Chair:** HyunWoo Jin, ExxonMobil Research & Engineering, USA

**Thermal Analysis of Girth Welded Joints of Dissimilar Metals in Clad Pipes; Experimental and Numerical Analysis**  
Bridget Kogo, Bin Wang, Luiz Wrobel, Mahmoud Chizari, Brunel Univ London, UK

**Usability of Laser-TIG Hybrid Welding Processes**  
Martin Appiah Kesse, Emmanuel Afrane Gyasi, Paul Kah, Lappeenranta Univ of Technology, Finland

**Welding Technology Development for an Erosion Resistant Slurry Pipeline Steel [Oral presentation]**  
Xin Yue, Andrew J. Wasson, Timothy D. Anderson, ExxonMobil Upstream Research; Ning Ma, ExxonMobil Research & Engineering; Doug P. Fairchild, ExxonMobil Upstream Research; HyunWoo Jin, ExxonMobil Research & Engineering, USA

**Arc Behavior in Four Electrodes Submerged-Arc Welding**  
Shohei Kozuki, Naoya Hayakawa, Rinsei Ikeda, JFE Steel, Japan

**Penetration and Quality Control with Artificial Neural Network Welding System**  
Sakari Penttilä, Paul Kah, Juho Ratava, Markku Pirinen, Lappeenranta Univ of Technology, Finland

**Cross-weld Tensile Strength of Aluminum Alloys EN AW 5083 and 6082**  
Bård Nyhus, Stephane Dumoulin, Håkon Nordhagen, SINTEF Materials and Chemistry; Ole Terje Midling, Marine Aluminium AS; Ole Runar Myhr, Hydro Aluminium; Trond Furu, Norsk Hydro; Steinar Lundberg, Hydal Aluminium Profiler AS, Norway

**57. COASTAL I**  
**Tuesday June 27 14:20 Harbour**

**Introduction:** John Niedzwecki, Texas A&M University, USA

**KEYNOTE**

**Morison Equation in Practice and Its Validity**  
Jin S Chung, ISOPE, USA

**58. OCEAN TECHNOLOGY VI:  
TLP/ SPAR/VLFS/FPSO 2 (V. 1)**  
**Tuesday June 27 14:00 Bayside**

**Chair:** Partha Sharma, DNVGL, USA

**Motion Response of a Tension-Leg-Moored VLFS in Shallow Water**  
Yiting Wang, Xuefeng Wang, Shengwen Xu, Aibing Ding, Jun Li, Shanghai Jiao Tong Univ, China

**Semi-Submersible Airgap Calculation Using Frequency Domain and Time Domain Methods**  
Zhigang (Kevin) Tian, Branka Radanovic, Otto DaSilva, Exmar Offshore, USA

**Wind and Waves Induced Dynamic Effects of a Semi-submersible Platform**  
Jin Ma, Dai Zhou, Zhaolong Han, Shanghai Jiao Tong Univ, China

**Hydrodynamic Performance of the Semi-Submersible Platform with Multiple Small Columns**  
Xiancang Song, Shuqing Wang, Ocean Univ of China; Yu Zhang, Qingdao Vocational & Tech College of Hotel Management, China

**Frequency Domain Analysis of a Novel Multiple-Column Semi-Submersible Platform Concept**

Song Gao, Yufeng Kou, Tao Peng, Shanghai Jiao Tong Univ; Chao Lu, China Ship Development and Design Center; Jianglong Sun, Huazhong Univ of Science & Tech; Wenxu Zhang, China Ship Development and Design Center, China

**59. MECHANICS & RELIABILITY III (V. 4)**

**Tuesday June 27 14:00 Sand. AB**

**Chair:** Beom-Seon Jang, Seoul National University, Korea

**Co-Chair:** Yun Ho Kim, Korea Research Inst of Ships & Ocean Engineering, Korea

**3D Navigation Support System for Ship Evacuation in a Natural Disaster**

Xinjia Gao, Kobe Univ; Hidenari Makino, Osaka Univ, Japan

**A Study of Key Influencing Factors in Ultimate Strength Analysis for Container Ships**

Jinju Cui, Deyu Wang, Ning Ma, Shanghai Jiao Tong Univ, China

**Research on the Risk Identification of Ro-Ro Passenger Ship's Navigation Based on the Brittle Link Theory**

Mengyu Wang, Wuhan Univ of Tech Guoping Guo; Hubei Inland Shipping Technology Key Lab, China

**Risk Assessment for 400,000-DWT Carrier Entry into Dongjiakou Port**

Hongdi Zhao, Jingxian Liu, Yi Liu, Cunbao Tang, Wuhan Univ of Tech, China

**Analysis of Influencing Factors of Water Traffic Accidents Severity Based on LIBSVM**

Feixiang Wang, Yadong Yang, Chengyong Liu, Hao Wang, Wuhan Univ of Tech; Xiaojun Weng, Chongming Maritime Safety Administration, China

**60. GEOTECH II:**

**Anchor and Pipelines (V. 2)**

**Tuesday June 27 14:00 Sand. CD**

**Chair:** Xiaoyan Long, Fugro Marine GeoService, USA

**Co-Chair:** Yun Wook Choo, Kongju National University, Korea

**Effective Stress Analysis of a Dynamically Installed Anchor Penetrating into Rate-Dependent Soil**

Kuntan Chang, Univ of Western Australia, Australia; Dong Wang, Ocean Univ of China, China; Muhammad Shazzad Hossain, Univ of Western Australia, Australia

**Study of Kinematic Behavior and Holding Capacity of Hall Anchors during Pulling in Sand**

Yuxiao Ren, Shuwang Yan, Liqiang Sun, Shu Lin, Yandi Wang, Tianjin Univ; Zhenming Lei, China Offshore Oil Engineering, China

**Effect of the Keying Angle on the Pullout Capacity of Suction Embedded Plate Anchor (SEPLA) in Clay**

Zahra Aghazadeh Ardebili, AECOM; M A Gabr, M S Rahman, North Carolina State Univ, USA

**Effect of Near-Surface Crustal Layers on the Vertical Penetration Response of Subsea Pipelines**

Bithin Ghoral, Santiram Chatterjee, IIT Bombay, India

**Toward Less Conservative Flotation Criteria for Lightweight Cables and Pipelines**

Tommaso Bizzotto, Michael John Brown, Univ of Dundee; Toby Powell, Subsea7; Andrew John Brennan, Univ of Dundee; Howard Chandler, Univ of Aberdeen, UK

**The Study of Horizontal Bearing Capacity of Gravity Anchor on Calcareous Soil with Centrifugal Model Tests [Proceedings only]**  
Huailiang Li, Shantian Huang, Xiaofei Wang, Offshore Oil Engineering; Sa Li, Jiansong Yin, Tianjin Univ, China

**Axial-Vertical Interaction Behavior of Buried Pipelines in Dense Sand [Proceedings only]**  
Sheikh Sharif Ahmed, Univ of Asia Pacific; Sheikh Shahriar Ahmed, Bangladesh Univ of Engineering & Technology, Bangladesh

**61. ARCTIC VI:  
Safety in Arctic Operations (V. 1)**

**Tuesday June 27 14:00 Sand. E**

**Chair:** Ted Kokkinis, ExxonMobil Upstream Research Co., USA  
**Co-Chair:** Teemu J Heinonen, Aker Arctic Technology, Finland

**Providing Performance Stability to Interdependent Arctic Critical Infrastructures [Oral presentation]**  
Svetlana Y Kutsenko, Vladimir Pavlenko, Svyatoslav A Timashev, Federal Research Center for Integrated Arctic Research, RAS, Russia

**Several Effective Methods for Improving Working Efficiency of a Ship Weather Routing System**  
Tong Cui, Benjamin Howett, Mingyu Kim, Osman Turan, Univ of Strathclyde, UK

**Fire Safety Aspects for Underwater Tunnels in Cold Climate [Proceedings only]**  
S. F. Jensen, University Hospital of Northern Norway; Y. Z. Ayele, A. Barabadi, UiT The Arctic Univ of Norway, Norway

**TUESDAY 16:20**

**62. HYDRODYNAMICS VIII:  
Slamming/Whipping/Impact 2 (V. 3)**

**Tuesday June 27 16:20 Grand A**

**Chair:** Benlong Wang, Shanghai Jiao Tong Univ, China

**FSI Analysis of Solitary Wave Interacting with Horizontal Flexible Plate by MPS-FEM Method**  
Chengping Rao, Youlin Zhang, Decheng Wan, Shanghai Jiao Tong Univ, China

**The Dynamic Response of the Large Containership's Bow Structure under Slamming Pressures**  
Bin Yang, Deyu Wang, Shanghai Jiao Tong Univ, China

**A Method to Measure Wave Impact Force and Its Validation**  
Yinghao Guo, Longfei Xiao, Yufeng Kou, Guocheng Zhao, Shanghai Jiao Tong Univ, China

**Numerical Simulation of Water Ditching of an Airplane by a Two-Phase Solver**  
Bin Wu, China Special Vehicle Research Inst; Min Yu, Tingqiu Li, Zhou Jiahang, Wuhan Univ of Tech, China

**Numerical Simulation of Water Entry of Twin Wedges Using a CIP-based Method**  
Zijun Hu, Xizeng Zhao, Du Cheng, Dake Zhang, Zhejiang Univ, China

**Numerical Simulation of Free Surface Impact on a Vertical Cylinder Using UMTHINC**  
Mohamed M Kamra, Changhong Hu, Kyushu Univ, Japan

**63. HYDRODYNAMICS IX:  
Wave Mechanics 2 (V. 3)**

**Tuesday June 27 16:20 Grand B**

**Chair:** Sa Young Hong, KRISO, Korea

**A Flux-Limiter Weighted High-Resolution Conservation Algorithm**

Fang Li, Tingqiu Li, Qiu Jin, Wuhan Univ of Tech, China; William Geraint Price, Pandeli Temarel, Dominic A Hudson, Univ of Southampton, UK

**Assessment of the Capability of the Nonlinear Schrodinger Equation and the High-order Spectral Method to Simulate Propagation of Random Waves**

Weida Xia, Yuxiang Ma, Guohai Dong, Xiaozhou Ma, Dalian Univ of Tech, China

**Numerical Simulation of Solitary-Wave Scattering and Damping in Fragmented Sea Ice**

Philippe Guyenne, Univ of Delaware, USA; Emilian I Parau, Univ of East Anglia, UK

**Experimental Study on the Evolution of the Peregrine-type Surface Gravity Waves in Finite Water Depth**

Yuxiang Ma, Yongbo Song, Bo Liao, Xiaozhou Ma, Guohai Dong, Dalian Univ of Tech, China

**Computation of Axisymmetric Gravity Currents**

Yosuke Sawano, Hiroya Tsugawa, Nobuhiro Baba, Osaka Prefecture Univ, Japan

**Numerical Investigation of Crest-Height Statistics in Deep Water**

Demetris Hadjigeorgiou, Chris Swan, Marios Christou, Imperial College London, UK

**Numerical Simulation of Wave Motion over Fringing Reefs Using a Shock-Capturing Boussinesq Model**

Kezhao Fang, Dongbin He, Dalian Univ of Tech; Zhongbo Liu, Dalian Maritime Univ; Jiawen Sun, National Marine Environmental Monitoring Center, China

**64. RENEWABLE ENERGY VII:  
Offshore Wind Structures 1 (V. 1)**

**Tuesday June 27 16:20 Grand C**

**Chair:** Jason Jonkman, National Renewable Energy Lab., USA

**Identification of Critical Design Load Cases for a Jacket Supported Offshore Wind Turbine**

Shaofeng Wang, Torben Juul Larsen, Technial Univ of Denmark, Denmark

**Reconsidering Fatigue Limit State Load Sets for Jacket Substructures Utilizing Probability Distributions of Environmental States**

Jan Häfele, Clemens Hübler, Cristian Guillermo Gebhardt, Raimund Rolfes, Leibniz Univ Hannover, Germany

**Influence of Structural Redundancy on Fatigue Life of Offshore Wind Turbine Jacket Structures**

Milan Kovarbašić, Fabian Vorpahl, Senvion GmbH; Peter Schaumann, Leibniz University Hannover, Germany

**Fatigue Analysis of Jacket-Type Support Structure for Offshore Wind Turbine under Local Environmental Conditions in Taiwan**

Ting-Yu Fan, Chin-Cheng Huang, Tung-Liang Chu, Inst of Nuclear Energy Research, Taiwan, China

**Numerical Fatigue Analysis of Tubular Joints of Support Structures for Offshore Wind Turbines [Oral presentation]**

Gongalo T Ferraz, Ana Glisic, Perer Schaumann, Leibniz Univ Hannover, Germany

**Sensitivity Study on a 3D Numerical Model for Estimating Breaking Wave Forces on a Jacket Structure**

Jithin Jose, Univ of Stavanger, Norway; Sung-Jin Choi, DNV GL, Denmark; Ove Tobias Gudmestad, Univ of Stavanger, Norway

**On the Dynamic Response of Offshore Fixed-bottom Wind Turbines in Rough Sea [Oral presentation]**

Agota Mockute, Alessandro Giusti, Enzo Marino, Claudio Borri, Univ of Florence, Italy

**Design of a New Composite Wind Turbine Foundation Combining the Jacket and Monopile Foundations**

Xuyue Wang, Hongyan Ding, Puyang Zhang, Conghuan Le, Wenge Tong, Tianjin Univ, China

**65. SUBSEA, PIPELINES, RISERS IV:**

**Riser Design 2 (V. 2)**

**Tuesday June 27 16:20 RegencyAB**

**Chair:** Howard H. Wang, ExxonMobil Production Co., USA

**Co-Chair:** Xiaying Du, CNOOC, China

**An FEA Based Methodology for Assessing the Residual Strength of Degraded Mooring Chains**

Justin M Crapps, Haiping He, David A Baker, ExxonMobil Upstream Research, USA

**Probabilistic Operability Analysis of Drilling Riser by Metamodel Methodology**

Hezhen Yang, Chan Ghee Koh, Ying Min Low, Xiaodong Zhang, National Univ of Singapore; Anis Hussain, Peter Francis Bernad Adaikalaraj, Keppel Offshore & Marine Tech Center, Singapore

**Direct Numerical Simulation of the Flow Past a Stationary Catenary Riser at Low Reynolds Number**

Hongbo Zhu, Yan Bao, Dai. Zhou, Rui Wang, Shanghai Jiao Tong Univ, China

**Static and Dynamic Mechanism of an SCR Clamp System in Deep Water Installation**

David Y Du, Victor A Acevedo, Ramdane Hamadi, Sanjay Parikh, Subsea 7, USA

**The Pig Gravity on Its Frictional Force in Oil and Gas Pipeline**

Xiaoxiao Zhu, Wei Wang, Shimin Zhang, China Univ of Petroleum-Beijing; Chuan Wang, Southwest Petroleum Univ, China

**66. HPM IV:**

**Advances in Welding 2 (V. 4)**

**Tuesday June 27 16:20 RegencyC**

**Chair:** Doug Fairchild, ExxonMobil Upstream Research, USA

**Approaches for Underwater Welding Control to Achieve Quality Welds**

Paul Kah, Pavel Layus, Lappeenranta Univ of Technology, Finland; Sergey Parshin, Peter the Great St. Petersburg Polytechnic Univ, Russia; Joshua Omajene, Lappeenranta Univ of Technology, Finland

**Effect of Consumable Filler Wire Composition to Mismatches of High-Mn Steels Welded Joints**

Benoit Ndiwe, Belinga Mvola, Paul Kah, FranÇois Njock Bayock, Lappeenranta Univ of Technology, Finland

**New Nano-Coated Welding Wire for Ultra-High-Strength Steel (S960QC) and MAG Robotized Welding in Arctic Offshore Construction**

Xiao Chen Yang, Esa Hiltunen, Paul Kah, Lappeenranta Univ of Technology, Finland

**Submerged Arc Welding Process Productivity in Welding Thick High Strength Steel Plates Used for Arctic Applications**

Pavel Layus, Paul Kah, Martin Kesse, Emmanuel Gyasi, Lappeenranta Univ of Technology, Finland

**Effectiveness and Development of an Optimum Helium Blend for Welding High-Performance Steels**

Kalevi Korjala, Belinga Mvola, Paul Kah, Lappeenranta Univ of Technology, Finland

**Microstructure and Hardness of Welded Layer with Crystallographic Orientation of Solidification Structure in Multipass Weld Using High Mn-Ni Flux Cored Wire [Oral presentation]**

Il-Wook Han, Bong-Guen Lee, POSCO; Jung-Bok Eom, Chung-Yun Kang, Pusan National Univ, Korea

**Development of a New Optical Monitoring System for Producing Advanced HF-ERW Pipes Using Plasma Shielding Technique**

Noboru Hasegawa, Yoshifumi Karube, Hideki Hamatani, Fuminori Watanabe, Michitoshi Tanimoto, Nippon Steel & Sumitomo Metal, Japan

**67. COASTAL II:**

**Coastal Wave Mechanics 1 (V. 3)**

**Tuesday June 27 16:20 Harbour**

**Chair:** Steven J Lind, University of Manchester, UK,  
**Co-Chair:** Luca Martinelli, University of Padova, Italy

**Parallel Three-Dimensional Non-Hydrostatic Model for Predicting Water Wave Motions**

Congfang Ai, Sheng Jin, Dalian Univ of Tech, China

**A Flexible 2D Nonlinear Approach for Nonlinear Wave Propagation, Breaking and Run up**

Andrea G. Filippini, Maria Kazolea, Mario Ricchiuto, INRIA Bordeaux Sud-Ouest, France

**Improvement in Estimation Stability and Accuracy of Wave Directional Spectrum by a Bayesian Method for Swell Observation**

Takashi Fujiki, Port and Airport Research Inst; Noriaki Hashimoto, Kyushu Univ; Koji Kawaguchi, Port and Airport Research Inst, Japan

**Experimental Study of the Wave Attenuation Characteristics over Muddy Bed and Fluid Mud [Proceedings only]**

Mingxiao Xie, Zhiwen Yang, Xin Li, Mengguo Li, Tianjin Research Inst of Water Transport Engineering, China

**Experimental Study on Waves Propagation and Deformation over Steep Reef in Larger Scale Wave Flume [Proceedings only]**

Songgui Chen, Hanbao Chen, Huaqin Zhang, Tianjin Research Inst of Water Transport Eng; Jinhai Zheng, Hohai Univ, China

**68. OCEAN TECHNOLOGY VII:**

**TLP/ SPAR/VLFS/FPSO 3 (V. 1)**

**Tuesday June 27 16:20 Bayside**

**Chair:** Xiaochuan Yu, University of New Orleans, USA

**Study on the FEM Analysis of Mooring Line for Floating Multibody System**

Do-Il Jeong, Seong-Hyun Shin, Namkug Ku, Dong-Eui Univ, Korea

**Clam Buoy and Fluid Transfer System Study**

Xiaoliang Qi, Yongjun Chen, Quan Yuan, Gang Xu, Kevin Huang, DMAR, China

**Coupled versus Decoupled Analysis for Floating Body and Mooring Lines**



Byoung Wan Kim, Hong Gun Sung, Sa Young Hong, Korea Research  
Inst of Ships & Ocean Engineering, Korea

**69. ADVANCED SHIP TECH I:  
Ship Design & Production 1 (V. 4)**

**Tuesday June 27 16:20 Sand. AB**

**Chair:** Suak Ho Van, KRISO, Korea

**A Layout Design Framework Considering Relationships between  
Internal Space and External Shape of Naval Vessels at the  
Conceptual Design**

Su Heon Ju, Yong-Kuk Jeong, Seunghyeok Son, Young Gi Min,  
Jong-Gye Shin, Seoul National Univ; JongChul Kim, Agency for  
Defence Development; Jong Hun Woo, Korea Maritime & Ocean  
Univ; Philippe Lee, Xinnos Corp, Korea

**Design of an Integrated Production Planning System Framework  
Based on Simulation Using a Production Information Model**

Huiqiang Shen, SeungHoon Nam, SuHeon Ju, SaeNal Sung, Jong  
Gye Shin, Seoul National Univ; Jong-Ho Nam, Korea Maritime &  
Ocean Univ, Korea

**A Study on Minimum Weight Design of Corrugated Bulkheads  
for Chemical Tankers**

Sang-Hoon Shin, Kyungwoon Univ; Chang-Woo Oh, Hyundai Heavy  
Industries, Korea

**Numerical Simulation on Bending Forming of Angle Section for  
Shipbuilding**

Yong Hu, Ziyang Fan, Kangkai Hong, Chaoyan Huang, Wuhan Univ  
of Tech, China

**Buckling Optimization of Laminated Truncated Conical Shells  
Subjected to Hydrostatic Pressure**

Hsuan-Teh Hu, Hsien-Chih Chen, National Cheng Kung Univ,  
Taiwan, China

**Numerical Analysis of Composite Sandwich Plate Fastened with  
Single Countersunk Bolt**

Yaoyu Hu, Renjun Yan, Xialiang Chen, Qin Kin, Haiyan Zeng,  
Wuhan Univ of Tech, China

**Free Vibration Analysis of Submerged Finite Elliptic Cylindrical  
Shell with Ring Stiffeners**

Min Fang, Xiang Zhu, Tianyun Li, Chaochao Jin, Huazhong Univ of  
Science & Tech, China

**70. GEOTECH III:  
Soil-Structure-Fluid Interactions (V. 2)**

**Tuesday June 27 16:20 Sand. CD**

**Chair:** Paola Dutto, Bundesanstalt für Materialforschung und -Prüfung  
(BAM), Germany

**Assessment of Seafloor Stability and Foundation Performance  
under Wave Action**

Xiaoyan Long, Ko-Min Tjok, Fugro Marine GeoService, USA

**Dynamic Responses of a Submerged Floating Tunnel in Survival  
Wave and Seismic Excitations**

C.K. Jin, J.Y. Lee, H.S. Kim, and M.H. Kim, Texas A&M Univ, USA

**Analysis of Dynamic Response of a Caisson Type Gravity Quay  
Wall – Seabed Soil System under Waves**

Hasan Giray Baksı, Mehmet Barış Can Ülker, Istanbul Technical Univ,  
Turkey

**Undrained Bearing Capacity of Circular Foundations on Two-  
layered Clay under Combined Loading**

Junyoung Ko, Texas Tech Univ, USA; Joon Kyu Lee, Univ of Seoul,  
Korea; Hoyoung Seo, Texas Tech Univ, USA

**Scour Analysis and Experimental Research of Subsea Foundation  
[Proceedings only]**

Fei Wu, Hongsheng Ci, Xu Jia, CNOOC Research Inst, China

**71. ARCTIC VII:  
Ships in Ice (V. 1)**

**Tuesday June 27 16:20 Sand. E**

**Chair:** V Pavlenko, Russian Academy of Sciences - FCIARctic, Russia  
**Co-Chair:** Teemu Juhani Heinonen, Aker Arctic Technology, Finland

**Numerical Calculation of Propeller Strength in Ice Milling  
Condition**

Liyu Ye, Chao Wang, Xin Chang, Shuai Sun, Harbin Engineering Univ, China

**Transient Torsional Analysis of Polar Class Vessel Shafting Systems  
Using a Lumped Model and Finite Element Analysis**

Giorgio Burella, Lorenzo Moro, Memorial Univ of Newfoundland, Canada

**Alternative Winterization Design Philosophy for Ships Operating  
in Polar Waters**

Tommi Heikkilä, Esa Hakanen, Aker Arctic Technology, Finland

**A Study on Test Methods of Winterization Performance for Ship  
Equipment**

Seong-Rak Cho, Eun-Jin Oh, Kuk-Jin Kang, Korea Research Inst of Ships & Ocean Eng, Korea

**Full-scale Measurements and Observations of Icebreaking Notch  
Towing Operations**

Teemu Juhani Heinonen, Veikko Eljas Immonen, Aker Arctic Technology, Finland

**Discrete Element Simulation of Ship Breaking Through Ice  
Ridges**

Quentin Hisette, Hamburg Ship Model Basin; Aleksei Alekseev, Univ of Rostock; Johannes Seidel, TU Berlin, Germany

**A Design Approach for an Icebreaker Based on Model Tests  
[Proceedings only]**

Konstantin V. Kurchukov, Alexey A. Dobrodeev, Maxim V. Renny, Dmitriy V. Fomichev, Ekaterina A. Morozova, Krylov State Research Center, Russia

**WEDNESDAY 08:00**

**KEYNOTE**

**Wednesday June 28 08:00 Grand A**

**Introduction:** André Baeten, Augsburg University of Applied Sciences, Germany

**Slamming: Recent Progress in the Evaluation of Impact  
Pressures [Oral presentation]**

Frederic Dias, University College Dublin, Ireland; Jean-Michel Ghidaglia, ENS Cachan, France

**72. HYDRODYNAMICS X:  
Slamming/Whipping/Impact 3 (V. 3)**

**Wednesday June 28 08:00 Grand A**

**Chair:** Tsung-Chow Su, Florida Atlantic University, USA

**Aeration Effects on Hydrodynamic Loads of Circular Cylinder's  
High-Speed Water Entry**

Yao Hong, Benlong Wang, Hua Liu, Shanghai Jiao Tong Univ, China

**Nonlinear Analysis of Green Water Impact on Forward-speed Wigley Hull**

Guanghua He, Zihao Zhang, Naiwen Tian, Zhengke Wang, Harbin Inst of Tech, China

**A Method to Predict Slamming Pressure Based on the Relative Motion of Ship and Waves**

Hui Li, Qiang Huang, Kaihong Zhang, Yakang Peng, Huilong Reng, Harbin Engineering Univ, China

**73. HYDRODYNAMICS XI:**

**Wave Mechanics 3 (V. 3)**

**Wednesday June 28 08:00 Grand B**

**Chair:** Amin Chabchoub, Aalto Univ, Finland

**Numerical Investigation of a Novel Wave Absorbing Method by Gap Resonance**

Zhiwei Song, Lin Lu, Dalian Univ of Tech; Rui Gao, Lizhi Tang, Offshore Engineering Inst; Zhongbing Zhou, Chunyang Liu, Dalian Univ of Tech, China

**Stream Function Wave Embedment into Linear Irregular Seas: A New Method Based on the Hilbert Transform**

Fabio Pierella, Roy Stenbro, Luca Oggiano, Jacobus de Vaal and Tor Anders Nygaard, Inst for Energy Technology (IFE); Jorgen Krokstad, Fugro Oceanor, Norway

**Experiments on Spontaneous Modulation Instability in Hydrodynamics**

Amin Chabchoub, Aalto Univ; Goery Genty, Tampere Univ of Tech, Finland; John M. Dudley, Univ de Franche-Comte; Bertrand Kibler, Univ de Bourgogne, France; Takuji Waseda, Univ of Tokyo, Japan

**Investigation on the Gravity Collapse in Density Stratified Fluid**

Gang Wei, Hui Du, Junnan Xu, PLA Univ of Science & Tech, China

**A Depth-integrated Non-Hydrostatic Model for Cross-shore Wave Motion**

Jiawen Sun, Yonghai Yu, Jing Yin, National Marine Environmental Monitoring Center; Dongbin He, Dalian Univ of Tech, China

**74. RENEWABLE ENERGY VIII:**

**Offshore Wind Structures 2 (V. 1)**

**Wednesday June 28 08:00 Grand C**

**Chair:** Michael Muskulus, NTNU, Norway

**Sensitivity Analysis of Offshore Monopiles' Fatigue to Site Conditions Using Monte Carlo Simulation**

Ana Glišić, Gonçalo T. Ferraz, Peter Schaumann, Leibniz Univ Hannover, Germany

**Approach to Include Load Sequence Effects in the Design of an Offshore Wind Turbine Substructure**

R.C. Dragt, D.L. Allaix, J. Maljaars, J.T. Tuitman, TNO; Y. Salman, M.E. Otheguy, Keppel Verolme BV, Netherlands

**Stress Analyses of the Offshore Wind Turbine Structures Subjected to Ocean Waves**

Yu-Yun Lin, Ssu-Yu Peng, National Cheng Kung Univ, Taiwan, China

**Numerical Investigation on Wave Loads of the High-Rise Pile Cap Foundation of Offshore Wind Turbines in East China Sea**

Ling Chen, Jifu Zhou, Xu Wang, Inst of Mechanics, CAS, China

**Modeling Uncertainty in Extrapolated Extreme Loads for Offshore Wind Turbine Support Structures**

Lars Einar S. Stieng, Michael Muskulus, NTNU, Norway

**Fiber Bragg Grating Sensors and Signal Based Detection Method for Failure Detection of an Offshore Wind Turbine Grouted Connection**

Nathalie Müller, Fraunhofer IWES; Peter Kraemer, Bochum Univ of Applied Science, Germany; Dominique Luduc, Franck Schoefs, Nantes Univ, France

**75. SUBSEA, PIPELINES, RISERS V:**

**Riser & Flow Assurance (V. 2)**

**Wednesday June 28 08:00 RegencyAB**

**Chair:** Robert Bruschi, Saipem, Italy

**Influence of Out-of-Plane Bending to the Wear Analysis for Mooring Chain Link**

Dongsheng Qiao, Zhanbin Kang, Jun Yan, Zhe Ma, Yugang Li, Dalian Univ of Tech, China

**High Fidelity Multiphase Simulations on an Efficient Platform**

M. Wasy Akhtar, Univ of Houston/2H Offshore, USA

**Investigation of Condition Parameters in Each Stage of a Three-stage Helico-axial**

**Multiphase Pump via Numerical Simulation**

Yi Shi, Hongwu Zhu, Jinya Zhang, Binbin Yin, Ruiting Xu and Junlin Zhao, China Univ of Petroleum-Beijing, China

**76. HPM V:**

**Arctic Materials 1 (V. 4)**

**Wednesday June 28 08:00 RegencyC**

**Chair:** O. M. Akselsen, SINTEF, Norway

**Co-Chair:** Kibong Kang, Yeonsei University, Korea

**Evaluation of Low Temperature Toughness in Welding of 420 MPa Steel for Arctic Application**

Odd M Akselsen, H I Lange, X Ren, Antonio Alvaro, Bård Nyhus, SINTEF, Norway

**Key Challenges in Materials and Welding for Application of Steel Structures in Arctic**

Odd M Akselsen, X Ren, Antonio Alvaro, Bård Nyhus, SINTEF, Norway

**Study of Adaptive Automated GMAW Process for Full Penetration Fillet Welds in Offshore Steel Structures**

Emmanuel Afrane Gyasi, Paul Kah, Juho Ratava, Martin Appiah Kesse, Esa Hiltunen, Lappeenranta Univ.of Technology, Finland

**On the Relation between Fatigue and Static Ductile to Brittle Transition for Weld Simulated 420 MPa Structural Steel**

Antonio Alvaro, Odd M Akselsen, Xiaobo Ren, Giovanni Perillo, Bård Nyhus, SINTEF Materials and Chemistry, Norway

**Advanced High Toughness X100 Seamless Pipes with a New Specialized Alloying Concept for Arctic Offshore Applications**

Stephan Scherf, Silke Harksen, Ralf Hojda, Peter Lang, Markus Schütz, Andreas Jahn, Vallourec Deutschland GmbH, Germany; Rodolfo Nirello, Vallourec France, France

**A Data Management System for Material Properties and Fracture Assessment at Low Temperature**

Vidar Osen, Alexandre Kane, Odd M Akselsen, SINTEF Materials and Chemistry, Norway

**Duplex Stainless Steels for Low Temperature Applications**

Sarata Cissé, Sandra Le Manchet, Didier Paul, Vincent Villaret, Industeel France, ArcelorMittal Group, France

**Micromechanical Fracture Testing of Arctic Steel CGHAZ Cantilevers**

Brage D Snartland, Aksel L L Kvaal, Christian Thaulow, NTNU, Norway

**HIC Properties of API Grade X70 Line Pipe in Neutral pH Sour Environment**

Takuya Hara, Nippon Steel & Sumitomo Metal, Japan

**77. COASTAL III:**

**Coastal Wave Mechanics 2 (V. 3)**

**Wednesday June 28 08:00 Harbour**

**Chair:** Charles E Greenwood, Univ. of the Highlands and Islands, UK  
**Co-Chair:** Bob Z You, Ludong University, China

**A Method for Approximating Surface Elevation from a Shore Mounted X-Band Radar with a Low Grazing Angle**

Charles E Greenwood, James Morrison, Angus Murray, Arne Vogler, Univ of the Highlands and Islands, UK

**Applied Extended Wind Wave Model for the Effect of Porous Bottoms and Reefs**

Yuan-Jyh Lan, Tai-Wen Hsu, National Taiwan Ocean Univ; Yi-Shiang Lin, National Cheng Kung Univ, Taiwan, China

**Investigation of Wave Breaking Effect on Bragg Reflection by Series Submerged Breakwaters**

Ying-Chi Chen, Ching-Piao Tsai, Wen-Hung Chang, Chun-Han Ko, National Chung Hsing Univ, Taiwan, China

**Bragg Reflection of Water Waves by Multiple Composite Flexible Membranes**

Wei-Wei Ding, Zao-Jian Zou, Shanghai Jiao Tong Univ; Jing-Ping Wu, Wuhan Univ of Tech, China

**78. OCEAN TECHNOLOGY VIII:**

**Structural Health Monitoring 1 (V. 1)**

**Wednesday June 28 08:00 Bayside**

**Chair:** Constantine Michailides, Liverpool John Moores Univ, UK

**Decision Support Models to Integrate Market and Non-Market Value Attributes for Platform Decommissioning: An Effective Approach for Resolving Challenges at the Nexus of Science and Regulatory Policymaking**

Bridget M McCann, Exponent; Max Henrion, Lumina Decision Systems; Brock Bernstein, Consultant; Robert I Haddad, Exponent, USA

**Case Studies on Structural Health Monitoring of Offshore Bottom-fixed Steel Structures**

Herman Vestli, Hirpa G Lemu, Univ of Stavanger; Bjorn T Svendsen, Ole Gabrielsen, DNV GL; Sudath C Siriwardane, Univ of Stavanger, Norway

**Research on the Fatigue Health Monitoring System of the Hull Structure**

Hao-hui Zhang, Guo-qing Feng, Hui-long Ren, You-zhen Wang, Harbin Engineering Univ, China

**79. ADVANCED SHIP TECH II:**

**Ship Design & Production 2 (V. 4)**

**Wednesday June 28 08:00 Sand. AB**

**Chair** Kimihiro Toh, Kyushu University, Japan

**Co-Chair:** Hsuan-Teh Hu, National Cheng Kung Univ, Taiwan, China

**A Method of Dynamic Flooding Analysis in Time Domain for the Compartment Arrangement Design of a Ship**

Ki-Su Kim, Myung-Il Roh, Ju-Sung Kim, Seoul National Univ, Korea

**Development of Design Procedure of Energy Saving Rudders Using Various Numerical Codes**

Masatoshi Hori, Takashi Kadowaki, Munehiko Hinatsu, Yasuyuki Toda, Osaka Univ, Japan

**A Study on the Bionic Design Method for Yacht Shape**

Yapeng Li, Wei Cai, Wuhan Univ of Tech, China

**Fire Incident Training for Offshore Worker Using Virtual Reality**

Min-Woo Koo, Sol Ha, Ju-Hwan Cha, Doo-Yeoun Cho, Mokpo National Univ, Korea

**80. GEOTECH IV:**

**Foundation & Loads 1 (V. 2)**

**Wednesday June 28 08:00 Sand. CD**

**Chair:** Osoon Kwon, Korea Inst of Ocean Science & Technology, Korea

**Assessment of p-y Approaches for Piles in Normally and Over Consolidated Soft Clay**

Martin Achmus, Mauricio Terceros, Klaus Thieken, Leibniz Univ Hannover, Germany

**Design of Large Scaled Tests Investigating the Lateral Load-Bearing Behavior of Monopiles**

Severin Spill, Martin Kohlmeier, Maik Wefer, Fraunhofer IWES; Stefan Maretzki, Jan Dührkop, Ramboll IMS, Germany

**Investigation on Bearing Capacity of Concrete Caisson in Clay**

Shu-wang Yan, Shu Lin, Li-qiang Sun, Yu-xiao Ren, Tianjin Univ, China

**Effect of Ice Load on Offshore Cellular Structures with Infill of Compressible Soil**

Nikita Ya. Tsimbelman, Tatiana I. Chernova, Far Eastern Federal Univ, Russia; Steffen Giese, Corneliu Athanasiu, Multiconsult, Norway

**Response of Fiber Reinforced Polymer Reinforced Soil Nails under Pullout Loads**

Darren Newell, Erwin Oh, Griffith Univ, Australia

**Numerical Modeling for the Response of Bucket Foundation under Long-term Cyclic Loading [Proceedings only]**

Jeong Seon Park, Duhee Park, Hansup Kim, Hanyang Univ; Hwa-Sup Jang, Se-Woong Yoon, Korea Register of Shipping, Korea

**81. ARCTIC VIII:**

**Panel**

**Wednesday June 28 08:00 Sand. E**

**Chair:** Mohamed Sayed, National Research Council Canada Canada

**Co-Chair:** Ted Kokiinis, ExxonMobil Upstream Research, USA

**WEDNESDAY 10:30**

**82. HYDRODYNAMICS XII:**

**NWT (V. 3)**

**Wednesday June 28 10:30 Grand A**

**Chair:** Hamn-Ching Chen, Texas A&M University, USA

**On Differences of Rogue Waves Modeled by Three Approaches in Numerical Wave Tank**

Jianghua Wang, Q.W. Ma, S. Yan, City University London, UK

**Development of an Efficient Two-phase 3D Numerical Wave Flume**

Charalambos Frantzis, Dimokratis G E Grigoriadis, Univ of Cyprus, Cyprus

**Numerical Wave Flume Based on Second Order Wavemaker Theory**

Haochen Zhang, Shuxue Liu, Jinxuan Li, Xiaohuan Tian, Dalian Univ of Tech, China

**Application of ALE to Nonlinear Wave Diffraction by a Non-wall-sided Structure**

Jie Zhang, Masashi Kashiwagi, Osaka Univ, Japan

**Numerical Investigation of Irregular Breaking Waves for Extreme Wave Spectra Using CFD**

Ankit Aggarwal, Mayilvahanan Alagan Chella, Hans Bihs, NTNU; Csaba Pakzodi, Petter Andreas Berthelsen, SINTEF, Norway

**Numerical Study of Wave Interaction with the Vertical Cylinder Using 3D Viscous Numerical Wave Tank**

Aditya G kodkani, Sriram V, IIT Madras, India

**83. HYDRODYNAMICS XIII :  
DP & Seakeeping Control 1 (V. 3)**

**Wednesday June 28 10:30 Grand B**

**Chair:** Ulrik D. Nielsen, Technical Univ of Denmark, Denmark

**Backstepping-based Adaptive Control for Dynamic Positioning Using Orthogonal Neural Network**

Linfeng Lu, Haixiang Xu, Wenzhao Yu, Hui Feng, Wuhan Univ of Tech, China

**Research on Nonlinear Model Predictive Control for Dynamic Positioning Vessel**

Qing Wen, Haixiang Xu, Wenzhao Yu, Hui Feng, Wuhan Univ of Tech, China

**Weather Stand-by Assessment in Offshore Operations Using Motion Limit Criteria**

Michele Drago, Andrea Del Guzzo, Luigino Vitali, Robert Bruschi, Saipem, Italy

**Development of Simple Dynamic Positioning System - Algorithm and User Interface**

Nobukazu Wakabayashi, Takayuki Watanabe, Kobe Univ; Misako Urakami, Oshima College; Daisuke Terada, National Research Inst of Fisheries Engineering, Japan

**Deterministic Predictions of Vessel Responses Based on Past Measurements**

Ulrik Dam Nielsen, Jørgen Juncher Jensen, Technical Univ of Denmark, Denmark

**Hydrodynamic Forces in Low Speed and Station-Keeping Model Test of DP Vessels [Proceedings only]**

Qiaosheng Zhao, Qiang Sun, Naxin Wei, Xijian Wang, China Ship Scientific Research Center, China

**84. RENEWABLE ENERGY IX:  
Offshore Wind Foundations (V. 1)**

**Wednesday June 28 10:30 Grand C**

**Chair:** Martin Achmus, Leibniz University Hannover, Germany

**Dynamic Responses of Offshore Wind Turbines on Bucket Foundations in Sand Considering Soil-Structure Interaction**

Rui He, Hohai Univ, China

**The Seismic Response of Composite Bucket Foundation for Offshore Wind Turbines under Scour Conditions**

Nan Jia, Hongyan Ding, Puyang Zhang, Jing Liu, Tianjin Univ, China

**The Onshore Construction Process of Composite Bucket Foundations for Offshore Wind Turbines**

Hongyan Ding, Yaohua Guo, Puyang Zhang, Yonggang Liu, Tianjin Univ, China

**Instrumentation of Impact Driven Monopile Foundations for Offshore Wind Turbines by Means of Adhesive Technology**

Philipp Stein, Gregor Wisner, TU Braunschweig; Hauke Sychla, Grundbauingenieure Steinfeld und Partner; Jorg Gattermann, Elisabeth Stammen, Klaus Dilger, TU Braunschweig, Germany

**Capacity Degradation Method for Driven Steel Piles under Cyclic Axial Loading**

Martin Achmus, Khalid Abdel-Rahman, Dominik Schaefer, Leibniz Univ Hannover, Germany; Yu-Shu Kuo, Chih-Yin Chung, Yu-Hsiu Tseng, National Cheng Kung Univ, Taiwan, China;

**85. SUBSEA, PIPELINES, RISERS VI:**

**Pipeline 1 (V. 2)**

**Wednesday June 28 10:30 RegencyAB**

**Chair:** Ljiljana D Oosterkamp, Statoil, Norway

**Effect of Pipe-Soil Interface Roughness on Undrained Uplift Capacity of Buried Offshore Pipelines**

Shubhrajit Maitra, Santiram Chatterjee and Deepankar Choudhury, IIT Bombay, India

**Technical Challenges of Design for Installation of Reel-layed Pipe-in-Pipe System for a Deepwater Application**

T.Sriskandarajah, Subsea 7, UK; Don MacKay, Subsea 7, USA; Venu Rao, Daowu Zhou, P. Ragupathy, Subsea 7, UK; Shahryar Kashani, Subsea 7; Brian Power, Murphy Exploration & Production, USA

**Experimental Study on Dynamic Response of Pipes under Lateral Impact**

Ling Zhu, Qingyang Liu, Jieling Kong, Mingsheng Chen, Wuhan Univ of Tech, China; Bin Wang, Brunel Univ London, UK

**86. HPM V:**

**Arctic Materials 2 (V. 4)**

**Wednesday June 28 10:30 RegencyC**

**Chair:** O. M. Akselsen, SINTEF, Norway

**Co-Chair:** Kibong Kang, Yeonsei University, Korea

*Continue*

**87. COASTAL IV:**

**Storm Surge (V. 3)**

**Wednesday June 28 10:30 Harbour**

**Chair:** Luca Martinelli, University of Padova, Italy

**Co-Chair:** Shinji Sassa, Port and Airport Research Inst, Japan

**Analysis of Ship Mooring Force Influence Factors in Three Gorges Ship Lock and Experimental Research**

Chen Zhang, Lizheng Wang, Shunhuai Chen, Wuhan Univ of Tech; Wei Zhang, Wuhan Rules and Research Inst, China

**Wave Height to Depth Measures During Extreme Runup**

James G Herterich, Frederic Dias, University College Dublin, Ireland

**Simulation of Storm Surge in Northeast Coast of the US; A Closer Look at the Wind Forcing**

Marissa J Torres, M Reza Hashemi, Scott Hayward, Isaac Ginis, Malcolm Spaulding, Univ of Rhode Island, USA



**88. OCEAN TECHNOLOGY IX:  
Structural Health Monitoring 2 (V. 1)**

**Wednesday June 28 10:30 Bayside**

**Chair** Hirpa G Lemu, University of Stavanger, Norway  
**Co-Chair:** Constantine Michailides, Liverpool John Moores University, UK

**Advanced Reliability Assessment of Offshore Wind Turbine Monopiles by Combining Reliability Analysis Method and SHM/CM Technology [Oral presentation]**  
Athanasios Kolios, Lin Wang, Cranfield Univ, UK

**Assessment and Analysis of Structural Health Monitoring Techniques for Rotating Machines**  
Hirpa G Lemu, Univ of Stavanger, Norway

**Clustering Techniques for Data Analysis and Data Completion of Monitored Structural Responses of an Offshore Floating Structure**  
Ioannis P Panapakidis, Technological Education Inst of Thessaly, Greece; Constantine Michailides, Liverpool John Moores Univ, UK; Demos C Angelides, Aristotle Univ of Thessaloniki, Greece

**Improvement of Structural Monitoring of Jacket Platform**  
Michele Rizzo, Michele Betti, Ostilio Spadaccini, Andrea Vignoli, Univ of Florence, Italy

**89. ADVANCED SHIP TECH II:  
Ship Design & Production 2 (V. 4)**

**Wednesday June 28 10:30 Sand. AB**

**Chair** Kimihiro Toh, Kyushu University, Japan

*Continue*

**90. GEOTECH V:  
Foundation & Loads 2 (V. 2)**

**Wednesday June 28 10:30 Sand. CD**

**Chair:** Yun Wook Choo, Kongju National University, Korea

**On the Cautious Estimation of Characteristic Soil Strength for Axial Pile Capacity**  
Knut O Ronold, DNV GL, Norway

**Investigation of Arching Effect Using Large Scale Model Test for Pile-Supported Embankment**  
Su Hyung Lee, Il Hwa Lee, Yeong Tae Choi, Min Taek Yoo, Korea Railroad Research Inst; Young-Hoon Jung, Kyung Hee Univ, Korea

**Centrifuge Modeling of Cyclic Degradation of Axially Loaded Piles in Sand for Offshore Wind Turbine Structures**  
Bao Li Zheng, Univ of California-Davis; Jacquelyn Allmond, Geosyntec Consultants; Bruce L Kutter, Univ of California-Davis; Christopher Hunt, Geosyntec Consultants; Daniel W Wilson, Univ of California-Davis; Tom McNeilan, McNeilan & Associates, USA

**Experimental Study on the Bearing Capacity Considering the Shear Key Location of Waveform Micropile**  
Young-Eun Jang, Univ of Science & Technology; Jin-Tae Han, Korea Inst of Civil Eng & Building Technology; Byoung-II Kim, Myongji Univ, Korea

**A Numerical Study into the Impact of Soil Coring on Lateral Capacity of Piles with Large Diameter**  
Xiao Juan Li, Guo Liang Dai, Wei Ming Gong, Xue Liang Zhao, Southeast Univ, China

**Generalized Semi-analytical Solution for Laterally Loaded Pile in Multi-layered Soils with Transfer Matrix Method**

Ming-xing Zhu, Hong-qian Lu, Lei Wang, Jiangsu Electric Power Design Inst; Wei-ming Gong, Southeast Univ, China

**91. ENVIRONMENT I:  
Oil Spill and Carbon Capture (V. 1)**

**Wednesday June 28 10:30 Sand. E**

**Chair:** C. Bostater, Florida Institute of Technology, USA  
**Chair:** D P C Laknath, Lanka Hydraulic Institute, Sri Lanka

**The Effects of Spatial and Temporal Resolutions of Hydrodynamic Model on the Simulated Behaviours of Subsurface Oil Spills in the Marine Environment**

Haibo Niu, Shihan Li, Dalhousie Univ, Canada

**Oil Spill Forecasting System**

Chi-Min Chiu, Ching-Jer Huang, Li-Chung Wu, National Cheng Kung Univ, Taiwan, China; Yinglong Joseph Zhang, College of William and Mary, USA; Hao-Cheng Yu, National Sun Yat-Sen Univ, Taiwan, China

**Experimental and Numerical Analysis of Tsunami Triggered Oil Spill from Storage Tanks**

Kyaw Wai Phyto, Osaka Univ, Japan; Junlin Liu, Shanghai Jiao Tong Univ, China; Youhei Takagi, Hiroyoshi Suzuki, Naomi Kato, Osaka Univ, Japan

**In-situ Measurement of Nitrous Oxide Concentrations in the Exhaust Gases in the Underway Vessels**

Mitsuru Hayashi, Kobe Univ; Dong-Hoon Yoo, National Maritime Research Inst; Yoshifuru Nitta, National Inst of Maritime, Port and Aviation Technology; Hirotugu Fujita, Kobe Univ, Japan

**On the Study of a Feasible LCA Method for the Ship Carbon Emissions Considering Uncertainty Correction**

Menglei Mei, Wei Cai, Wuhan Univ of Tech; Siqu Wang, 2CNOOC Energy Technology & Services-oil Production Services, China

**Study on the Characteristic Behaviours of Multiple Jets in Regular Waves**

Zhenshan Xu, Yongping Chen, Hohai Univ, China

**WEDNESDAY 13:15**

**PLENARY**

**Wednesday June 28 13:15 Grand A**

**Ocean Engineering – A Historical Perspective (Presentation cancelled at his doctor's advice on travel; To be published in *Int J Offshore and Polar Engineering*.)**

Prof. Marshall Tulin, Univ of California at Santa Barbara, USA

**92. HYDRODYNAMICS XIV:  
CFD 1 (V. 3)**

**Wednesday June 28 14:00 Grand A**

**Chair:** Steven J. Lind, University of Manchester, UK

**On the Coupling of Incompressible SPH with a Finite Element Potential Flow Solver for Nonlinear Free Surface Flows**

Georgios Fourtakas, Peter K. Stansby, Benedict D. Rogers, Steven J. Lind, Univ of Manchester; Shiqiang Yan, Qingwei W. Ma, City University London, UK

**Improved SPH for Simulating Violent Flow and Multi-Body Interaction**

Xing Zheng, Xi-peng Lv1, Harbin Engineering Univ, China; Qingwei Ma, City University London, UK; Wen-yang Duan, Harbin Engineering Univ, China

**Experimental Validation of SPH for Wave Generation and Propagation in Large Wave Tank**

Andi Trimulyono, Hirotsada Hashimoto, Kobe Univ; Kouki Kawamura, National Maritime Research Inst, Japan

**Modelling of Extreme Wave Impact on a Fixed Platform**

Min Luo, Chan Ghee Koh, National Univ of Singapore, Singapore

**SPH Modelling of the Impact of a Flat Plate upon an Aerated Water Surface**

Hassan Sdiq, David I Graham, Jason Hughes, Plymouth Univ, UK

**93. HYDRODYNAMICS XV:**

**DP & Seakeeping Control 2 (V. 3)**

**Wednesday June 28 14:00 Grand B**

**Chair:** Wataru Koterayama, Kyushu University, Japan

**DP Drillship Stationkeeping in Ice - Comparison between Numerical Simulations and Ice Basin Tests**

Mohamed Sayed, Shameem Islam, David Watson, Ivana Kubat, Robert Gash, National Research Council Canada; Brian Wright, B Wright & Associates, Canada

**Development of Track Control System utilizing Heading Control System for Ocean Observation Sailing**

Takayuki Watanabe, Nobukazu Wakabayashi, Kobe Univ; Misako Urakami, Oshima College; Daisuke Terada, National Research Inst of Fisheries Engineering, Japan

**Feature Recognition for Initial Pose Estimation to Enhance Vision-based UAV Relative Navigation**

Haiwen Yuan, Changshi Xiao, Fan Zhang, Wuhan Univ of Tech, China; Chen Shi, George Mason Univ, USA; Huixian Ye, Shanghai Advanced Research Inst; Supu Xiu, Chunhui Zhou, Wuhan Univ of Tech, China; Qiliang Li, George Mason Univ, USA

**A Technology for Measuring the Fender Motion Based on the Sensor JY901**

Dongmei Yang, Zhiqun Guo, Hongqing Chen, Harbin Engineering Univ, China

**Simulation Study on Course Adaptive Control for Ship Navigating in Continuous Curved Channel**

Yanmin Xu, Junchao Zhao, Hongbing Zou, Chunming Zou, Hongxu Guan, Wuhan Univ of Tech, China

**Dynamic Speed Control Model for Very Large Ship in Restricted Waters**

Huanhuan Li, Jingxian Liu, Ryan Wen Liu, Wuhan Univ of Tech, China

**Numerical Study on Squat of KVLCC2 in Infinite and Shallow Water**

Fangfan Hu, Jiangtao Qin, Lilan Zhou, Keqiang Chen, Wuhan Univ of Tech, China

**94. RENEWABLE ENERGY X:**

**Offshore Wind Aerodynamics (V. 1)**

**Wednesday June 28 14:00 Grand C**

**Chair:** Amy Robertson, National Renewable Energy Lab, USA

**Co-Chair:** Frank Adam, University of Rostock, Germany

**A Focus on Fixed Wind Turbine Tests to Improve Coupled Simulations of Floating Wind Turbine Model Tests**

Pauline Bozonnet, IFP Energies Nouvelles, France; François Caille, Cecile Melis, SBM Offshore, Monaco; Frédéric Blondel, IFP Energies Nouvelles, France; Cécile Melis, SBM Offshore, Monaco; Yann Poirrette, Timothée Perdrizet, IFP Energies Nouvelles, France

**Experimental Investigation of Aerodynamic Damping Effects on a Semi-Submersible Floating Offshore Wind Turbine**

Jiahao Chen, Fei Duan, Shanghai Jiao Tong Univ, China; Zhiqiang Hu, Newcastle Univ, UK

**Effects of Inter-Turbines Spacing on Aerodynamics for Wind Farms Based on Actuator Line Model**

Yong Ai, Decheng Wan, Shanghai Jiao Tong Univ, China; Changhong Hu, Kyushu Univ, Japan

**Coupled Aero-hydrodynamic Analysis on a Floating Offshore Wind Turbine under Extreme Sea Conditions**

Yang Huang, Decheng Wan, Shanghai Jiao Tong Univ, China; Changhong Hu, Kyushu Univ, Japan

**Combining AeroDyn V15 and MATLAB to Design Basin Model Test Blade for a 6MW Floating Offshore Wind Turbine**

Zi-wei Guo, Yan-ping He, Long Meng, Yong-sheng Zhao, Shanghai Jiao Tong Univ, China

**Investigation of the Aerodynamics of a Floating Vertical Axis Wind Turbine in Pitch Motion**

Hang Lei, Jiabao Lu, Dai Zhou, Zhaolong Han, Shanghai Jiao Tong Univ, China

**Aerodynamic Performance of Floating Offshore Wind Turbines by Using Modified BEM Method**

Lei Duan, Yi Lin, Ye Li, Shanghai Jiao Tong Univ, China

**KEYNOTE**

**Wednesday June 28 14:00 RegencyAB**

**Introduction:** Howard Wang, ExxonMobil Production Co., USA

**Leveraging Technology for Deepwater and Arctic Developments in a Challenging Energy World [Oral presentation]**

Brian McShane, IntecSea, USA

**95. SUBSEA, PIPELINES, RISERS VII:**

**Pipeline 2 (V. 2)**

**Wednesday June 28 14:00 RegencyAB**

**Chair:** Mason Wu, DMAR, USA

**Next Generation Heating of Subsea Oil Production Pipelines**

Jens Kristian Lervik, SINTEF Energy Research; Øyvind Iversen, Nexans Norway; Kristian Thinn Solheim, SINTEF Energy Research, Norway

**A Method for Identifying Free Span of Subsea Pipelines**

Ningsheng Liao, Qingxin Ding, Hang Zhang, Shuqiang Du, Shimin Zhang, China Univ of Petroleum-Beijing; Biao Tang, CNPC offshore Engineering, China

**Research on the Error Correction Algorithm for Caliper Center Offset in the Offshore Pipeline**

Hao Wang, Shimin Zhang, Zhaojun Feng, Hang Zhang and Wenming Wang, China Univ of Petroleum-Beijing, China

**Time-History Seismic Design of Integrated Subsea Pipeline System**

Hadi Suroor, Gang Dong, Genesis, USA

**Fatigue Analysis of Rigid Locked Wellhead**

Brian Healy, Lifeng Feng, Vivek Jaiswal, Partha Sharma, DNV GL, USA

**96. HPM VI:  
Composite Materials (V. 4)**

**Wednesday June 28 14:00 RegencyC**

**Chair:** Harovel G Wheat, Univ of Texas at Austin, USA

**Ultimate Bearing Force and Failure Process of Corner Joint Under Compressive Load**

Kai Qin, Hao Jin, Renjun Yan, Linzhi Xu, Yaoyu Hu, Wuhan Univ of Tech, China

**Research on Ultimate Strength and Damage Behavior of L-type Composite Joints**

Bailu Luo, Yingfu Zhu, Xionghui Yang, China Ship Development & Design Center, China

**Degradation of Marine Reinforced Concrete Berth Structures on Sakhalin Island**

Sergei N Leonovich, Eugeny E Shalyi, Lev V Kim, Aleksei G. Dzhogolyuk, Far Eastern Federal Univ, Russia

**Studies on Anti-Icing/Icephobic Performances of Nano-SiO<sub>2</sub>/Amino-Silicone Modified Epoxy Coatings**

Jifeng Zhang, Qiang Xie, Harbin Engineering Univ; Chao Wang, Heilongjiang Academy of Science; Limin Zhou, Hong Kong Polytechnic Univ, China

**Fundamental Study on Strength Development of High-Fluidity Ductile-Fiber-Reinforced Cementitious Composites Using Recycled Fine Aggregate**

Yumi Maruyama, Ken Watanabe, Naoto Otsu, Tokai Univ, Japan

**Calibration of the Cohesive Parameters of a Fiberglass Reinforced Plastic Plates with an Embedded Delamination by Experiments**

Greta Maggiani, Dario Boote, Tomaso Gaggero, Marco Gaiotti, Cesare Mario Rizzo, Univ of Genova, Italy

**97. COASTAL V:  
Coastal Structures I (V. 3)**

**Wednesday June 28 14:00 Harbour**

**Chair:** Demos Angelides, Aristotle Univ. of Thessaloniki, Greece

**Numerical Simulation of Wave Overtopping Over Low-Crested Breakwaters Using the Immersed Boundary Method**

Theofano I Koutrouveli, Athanassios A Dimas, Univ of Patras, Greece

**Real Sea Waves Interaction with an Array of Cylinders in Tandem**

Xinran Ji, Hainan Univ; Jinxuan Li, Shuxue Liu, Haochen Zhang, Dalian Univ of Tech, China

**The Influence of Wave Overtopping on the Stability Analysis of Vertical Breakwaters**

Li-Hung Tsai, Inst of Transportation; Hung-Chu Hsu, National Cheng Kung Univ; Cheng-Jung Hsu, National Sun Yat-Sen Univ; Meng-Syue Li, National Cheng Kung Univ, Taiwan, China

**The Reflection Performance of Two Horizontal Plates before Vertical Wall**

Zhenglin Tian, Zhaochen Sun, Shuxiu Liang, Dalian Univ of Tech, China

**The Experimental Investigation on the Protections of the Uncompleted Breakwaters under the Long-Term Wave Conditions in the Open Mediterranean Sea**

Sheng Peng, Youde Feng, Xiandao Feng, CCCC Second Harbour Engineering, China

**98. OCEAN TECHNOLOGY X :  
Jack-up & Jacket 1 (V. 1)**

**Wednesday June 28 14:00 Bayside**

**Chair:** L F. Boswell, City University London, UK

**Practical Performance of OPC-grout for Offshore Wind Turbines in Large-scale Execution Tests**

Dario Cotardo, Ludger Lohaus, Michael Werner, Leibniz Univ Hannover, Germany

**An Innovative Hybrid Substructure for Offshore Wind Turbines**  
Marina Stümpel, Steffen Marx, Peter Schaumann, Torsten Schlurmann, Leibniz Univ Hannover; Gunter Seidl, SSF Ingenieure AG; Joachim Göhlmann, GRBV, Germany

**Retrofitting of Monopile Transition Piece for Offshore Wind Turbines**

Junwon Seo, William Schaffer, South Dakota State Univ; Monique Head, Mehdi Shokouhian, Morgan State Univ, USA

**Simulation and Semi-Analytical Tool for Wave Loading on Deck with Underneath Obstacles**

Yu Chen, Inst. of High Performance Computing; Yanling Wu, Lloyd's Register Global Technology Center; Xin Lv, Jing Lou, Inst. of High Performance Computing; Anand Bahuguni, Johan Gullman-Strand, Lloyd's Register, Singapore

**Study on the Technology of Land Sliding Launching of Jack-up Rigs**

Wei Zhang, Yuhan Wang, Ruijia Zhou, Jinyang Song, Xingfeng Zheng, Guiyuan Cui, Shanghai Waigaoqiao Shipbuilding, China

**99. ADVANCED SHIPTECH III:  
Ship Design & Production 3**

**Wednesday June 28 14:00 Sand. AB**

**Chair:** Dongkyu Shin, Hyundai Heavy Industries, Korea

**CFD-Based Hull Form Optimization for Enhancement of Resistance and Seakeeping Performances**

Aiqin Miao, Decheng Wan, Shanghai Jiao Tong Univ, China

**Resistance Optimization of a Cruise Ship Using a Hybrid Approach**

Jiayi He, Hongmei Chen, Hai Yu, Xiaoqing Xiong, Sheming Fan, Marine Design & Research Inst of China, China; Rui Sun, Virginia Polytechnic Inst & State Univ, USA

**A Study on the Bionic Design Method for Yacht Shape**

Yapeng Li, Wei Cai, Wuhan Univ of Tech, China

**Stress Field Analysis of 135-degree Sharp Corners under Bending Load Based on Notch Stress Strength Theory**

Linzhi Xu, Renjun Yan, Wei Shen, Feng He, Yaoyu Hu, Wuhan Univ of Tech, China

**Simplified Nonlinear Kinetic Analysis during Fabrication Process of Ship Hull Plate [Proceedings only]**

Shuiming Zhang, Cungen Liu, Xuefeng Wang, Shanghai Jiao Tong Univ, China

**100. GEOTECH VI:  
Foundation & Loads 3 (V. 2)**

**Wednesday June 28 14:00 Sand. CD**

**Chair:** C F Leung, National Univ of Singapore, Singapore

**Experimental Study on Axial Bearing Properties of Rock-socket Diaphragm Wall Foundation**

Huiyuan Deng, Guoliang Dai, Xueliang Zhao and Weiming Gong, Southeast Univ, China

**Decommissioning of Offshore Piles Using Vibration**

Craig Davidson, Michael Brown, Andrew Brennan, Jonathan Knappett, Univ of Dundee, UK

**Casting Finish Control of Steel Piles Driven by the Vibratory Hammer Method**

Shuichi Shimomura, Nihon Univ; Masaki Nakai, Marufuji Sheet Piling, Japan

**A Signal Processing Approach to Detect Unknown Pile Length**

Sheng-Huoo Ni, Ji-Lung Li, Yu-Zhang Yang, Zhi-Tong Yang, National Cheng Kung Univ, Taiwan, China

**Compressive and Uplift Static Load Tests of Shaft and Base Grouted Concrete Bored Piles**

Jialin Zhou, Erwin Oh, Griffith Univ, Australia; Xin Zhang, Hongsheng Jiang, Shandong Jianzhu Univ, China; Mark Bolton, Griffith Univ, Australia; Peisen Wang, Tianjin Univ, China

**Half 2D Model Tests on Seepage Failure of Soil in Front of Sheet Piles and Non-Dimensional Formulization of the Critical Hydraulic Head Difference  $H_c$  [Proceedings only]**

Shigeru Nagai, Tsutomu Tanaka, Kohji Kasamatsu, Kazuya Inoue, Kobe Univ; Takashi Miki, National Inst for Rual Engineering, Japan

**101. ENVIRONMENT II:  
Climate Effects & Diffusivity (V. 1)**

Wednesday June 28 14:00 Sand. E

**Chair:** F Lalli, ISPRA, Italy

**Co-Chair:** Haibo Niu, Dalhousie University, Canada

**Assessment of Levee Flood Defence Structures against the Impacts of Predicted Climate Change – A Case Study of the Humber Estuary, UK**

Lee Sencier, Ravindra Jayaratne, Univ of East London, UK

**Evaluation of Horizontal Diffusivity in the Sea Surface Layer**

Agnese Pini, Giovanni Leuzzi, Paolo Monti, Univ of Rome “La Sapienza”, Italy

**Numerical Modelling of Mud Flocculation in a Turbulent Settling Column**

Chunyang Xu, Yongping Chen, Hohai Univ, China

**Experimental Investigation of Vortex Tubes with Laval Nozzle**

Viktor S Vlasenko, Vacheslav V Slesarenko, Aleksander N Gulkov, Far Easter Federal Univ; Dmitriy A Zhidkov, Bauman Moscow State Technical Univ, Russia

**WEDNESDAY 16:20**

**102. HYDRODYNAMICS XVI:  
CFD 2 (V. 3)**

Wednesday June 28 16:20 Grand A

**Chair:** K Tanizawa, National Maritime Research Inst, Japan

**Numerical Study of a Buoyant Round Jet in a Stagnant Environment**

Yen-Lung Chen, Shih-Chun Hsiao, Yu Hsiao, National Cheng Kung Univ, Taiwan, China

**Geometric Modeling over Background Cartesian Grid Using Radial Basis Function**

Shaoshan Zhou, Tingqiu Li, Qiu Jin, William Geraint Price, Pandeli Temarel, Dominic A Hudson, Wuhan Univ of Tech, China

**Investigation of Bubble Dynamics near Free Surface in Compressible Fluid**

Wei Xiao, Tongshun Yu, Ocean Univ of China; Yingyu Chen, Harbin Engineering Univ; Xujie Wang, Ocean Univ of China, China

**Modeling of 2D Irregular Waves on a Sloped Bottom Using a Fully Nonlinear Navier-Stokes/VOF Formulation**

Luca Oggiano, Fabio Pierella, Jacobus de Vaal, Tor Anders Nygaard, Roy Stenbro, IFE, Norway; Emile Arens, CD-adapco, UK

**103. HYDRODYNAMICS XVII:**

**Added Resistance (V. 3)**

**Wednesday June 28 16:20 Grand B**

**Chair:** Decheng Wan, Shanghai Jiao Tong University, China

**Wave Added Resistance and Propulsive Performance of a Cruise Ship in Waves**

Petri Valanto, YongPyo Hong, Hamburg Ship Model Basin HSVA, Germany

**Numerical and Experimental Study on the Estimation of Added Resistance of an LNG Carrier in Waves**

Taeyoung Kim, Seonoh Yoo, Semyun Oh, Hyun Joe Kim, Dongyeon Lee, Booki Kim, Samsung Heavy Industries, Korea

**Experimental Study on the Characteristics of the Motions and Added Resistance in Regular Head Waves of KVLCC2 [Oral presentation]**

Jin-Won Yu, Cheol-Min Lee, Inwon Lee, Jung-Eun Choi, Pusan National Univ, Korea

**Numerical Investigation on Added Resistance with Wave Steepness for KVLCC2 in Short and Long Waves**

Mingyu Kim, Univ of Strathclyde; Olgun Hizir, Ponente Consulting; Osman Turan, Atilla Incecik, Univ of Strathclyde, UK

**Mesh Sensitivity Analysis for Numerical Simulation of a Damaged Ship Model**

Ivana Martic, Nastia Degiuli, Andrea Farkas, Univ of Zagreb; Josip Bašić, Univ of Split, Croatia

**Hydrodynamic Analysis and Model Test Study of Wind Turbine Installation Vessel**

Zhuang Kang, Xiang Xu, Wenchi Ni, Cheng Zhang, Harbin Engineering Univ, China

**104. RENEWABLE ENERGY XI:**

**Offshore Wind: Floating 1 (V. 1)**

**Wednesday June 28 16:20 Grand C**

**Chair:** Roelof C Dragt, TNO, Netherlands

**A Study on Hydrodynamics of Several Typical Floating Platforms for Wind Turbines**

Xuedong Zhang, Zhiqun Guo, Harbin Engineering Univ, China; Qingwei Ma, City University London, UK

**Feasibility Analysis of Floating Offshore Wind Turbine with Single Point Mooring System**

Yan Li, Yougang Tang, Tianjin Univ, China; Qiang Zhu, Univ of California-San Diego, USA; Xiaoqi Qu, Jiawei Zhai, Ruoyu Zhang, Tianjin Univ, China

**Concept Design and Global Performance Evaluation for 6MW Spar-type Floating Offshore Wind Turbine**

Tao Zhou, Yanping He, Long Meng, Yongsheng Zhao, Shanghai Jiao Tong Univ, China

**Prestressed Ultra High Performance Concrete Members for a TLP Substructure for Floating Wind Turbines**



Daniel Walia, Paul Schünemann, Univ of Rostock; Mathias Kuhl, ESG Edelstahl und Umwelttechnik GmbH; Frank Adam, Hauke Hartmann, Univ of Rostock; Jochen Großmann, Gicon Holding GmbH; Uwe Ritschel, Univ of Rostock, Germany

**A Modular TLP Floating Substructure to Maximize the Flexibility within the Supply Chain**

Frank Adam, Univ of Rostock; Colline Behr, ESG Edelstahl & Umwelttechnik GmbH; Daniel Walia, Uwe Ritschel, Univ of Rostock; Jochen Großmann, GICON Holding GmbH, Germany

**Study on Coupling Effect of TLP-type FOWT with Flex-joints**

Xun Meng, Meng Liu, Yanli Li, Ocean Univ of China; Dawei Chu, Shandong Provincial Key Lab of Ocean Engineering, China; Changzhi Wu, Curtin Univ, Australia

**105. SUBSEA, PIPELINES, RISERS VIII:**

**Pipeline 3 (V. 2)**

**Wednesday June 28 16:20 RegencyAB**

**Chair:** AM Gresnigt, Delft Univ of Tech, Netherlands

**Numerical Modelling of Impact to Pipelines by Real Geometry Trawl Gear Using LS-DYNA**

Ljiljana Djapic Oosterkamp, Statoil, Norway; Daniel Hilding, DYNAmore Nordic AB, Sweden; Håvar Ilstad, Statoil, Norway

**Challenges in Offshore Pipeline Decommissioning and What Can We Learn from Integrity Management Practices**

Yijun Shen, Paul Birkinshaw, Roland Palmer-Jones, ROSEN Group, UK

**Ovality Prediction of Reeled Seamless and Seam Welded Pipes**

Michael Martinez, IFP Energies Nouvelles, France; Aurélien Pépin, TechnipFMC, UK; Paul Sicsic, TechnipFMC, France

**Analysis of Fibre Glass Pipe Subjected to Tensile Load**

Yuxin Xu, Zhejiang Univ; Shanying Lin, Harbin Engineering Univ; PanFang, Yong Bai, Zhejiang Univ, China

**Austenite Grain Growth Behavior after Recrystallization Considering Solute-Drag Effect and Pinning Effect**

Kenzo Tashima, Shinya Sakamoto, Takuya Hara, Nippon Steel & Sumitomo Metal, Japan

**KEYNOTE**

**Wednesday June 28 16:20 RegencyC**

**Introduction:** Hyun Woo Jin, ExxonMobil Research & Engineering Co., USA

**The Metallurgy of Structural Steels for Cryogenic Use [Oral presentation]**

J. W. Morris Jr, University of California at Berkeley, USA

**106. HPM VII:**

**Cryogenic Materials 1 (V. 4)**

**Wednesday June 28 16:20 RegencyC**

**Chair:** Neerav Verma, ExxonMobil Upstream Research, USA

**A/SA 553 Type III (Quenched and Tempered 7% Nickel) Steel Plates Capabilities Dedicated to Liquefied Hydrocarbons Storage Tanks and Transportation Vessels Fabrication**

Dany Cornut, Natalia Loukachenko, Sylvain Pillot, ArcelorMittal, France; Fabian Arrogante, Patrick Toussaint, Didier Paul, ArcelorMittal, Belgium

**Investigation of Stress Relaxation Effect of Retained  $\gamma$ -Fe using 9% Ni Steel**

Daiki Nakanishi, Tomoya Kawabata, Shuji Aihara, Univ of Tokyo, Japan

**Study on Methods to Enhance Properties of Polyurethane Foam Made of New Blowing Agents**

Yeongbeom Lee, Youngcheol Yang, Korea Gas Corp, Korea

**Development and Practical Application of 7%Ni-TMCP Steel for Large Capacity LNG Storage Tanks**

Tepei Okawa, Takahiro Kamo, Hitoshi Furuya, Hironori Wakamatsu, Yasunori Takahashi, Toshimichi Nagao, Nippon Steel & Sumitomo Metal; Hiroshi Nishigami, Atsushi Iida, Sho Tomita, Osaka Gas; Shuichi Hirai, Masahiko Mitsumoto, Shutaro Shinpo, Toyo Kanetsu K.K., Japan

**Development and Practical Application of 7%Ni-TMCP Steel for Large Capacity LNG Storage Tanks (Part 2) [Oral presentation]**

Sho Tomita, Hiroshi Nishigami, Atsushi Iida, Osaka Gas co.; Tepei Okawa, Takahiro Kamo, Hitoshi Furuya, Hironori Wakamatsu, Yasunori Takahashi, Toshimichi Nagao, Nippon Steel & Sumitomo Metal; Shuichi Hirai, Masahiko Mitsumoto, Shutaro Shinpo, Toyo Kanetsu K.K., Japan

**107. COASTAL VI:**

**Coastal Structures 2 (V. 3)**

**Wednesday June 28 16:20 Harbour**

**Chair:** Demos Angelides, Aristotle Univ of Thessaloniki, Greece

**Co-Chair:** Susumu Araki, Osaka University, Japan

**An Experimental Study on Sand Dune Cover Over a Coastal Structure**

Badryah Almarshed, Jens Figlus, Texas A&M Univ, USA

**Numerical Investigation of Floating Breakwater Coupled with Mooring System Using Openfoam**

Zhe Ma, Xianyun Zhang, Dongsheng Qiao, Dalian Univ of Tech; Jiawen Sun, State Oceanic Administration; Gangjun Zhai, Dalian Univ of Tech, China

**Dynamic Simulation of a Kelp Raft Culture System under Current**  
Wenwan Cheng, Zhaochen Sun, Shuxiu Liang, Dalian Univ of Tech, China

**A Method to Estimate Aging of Large Size Rubber Marine Fender**

Hitoshi Akiyama, Bridgestone Corp; Teruya Shiomi, Japan Oil, Gas & Metals National Corp; Atsuo Omura, Shuji Yamamoto, Coastal Development Inst of Tech; Shigeru Ueda, IDEA Consultants; Toshiro Kamada, Osaka Univ, Japan

**An Experimental Study of the Hydrodynamic Performance on the Anti-rolling Type Floating Breakwater [Proceedings only]**

Zhiwen Yang, Mingxiao Xie, Zhiqiang Hou, Tianjin Research Inst for Water Transport Eng; Xinran Ji, Hainan Univ; Weijun Guo, Dalian Maritime Univ; Fang He, Zhejiang Univ, China

**The 3D-Numerical Simulation of Wave Impact on a Horizontal Plate [Proceedings only]**

Dongxu Wang, Jinsong Gui, Dailan Ocean Univ; Jiawen Sun, Environmental Monitoring Center, SOA; Zhe Ma, Dalian Univ of Tech, China

**108. OCEAN TECHNOLOGY XI:**

**Jack-up & Jacket 2 (V. 1)**

**Wednesday June 28 16:20 Bayside**

**Chair:** Yu Chen, Inst. of High Performance Computing, Singapore

**Co-Chair:** Gilberto FM de Souza, Univ of São Paulo, Brazil

**Simulation of Wave Forces on a Gravity Based Foundation by a BEM Based on Fully Nonlinear Potential Flow**

Jeffrey C Harris, Konstantin Kuznetsov, Christophe Peyrard  
Université Paris-Est; Sylvain Saviot, EDF R&D, France; Amin  
Mivehchi, Stephan T Grilli, Univ of Rhode Island, USA; Michel  
Benoit, Ecole Centrale Marseille, France

**Seabed Change and Soil Resistance Assessment of Jack up  
Foundation**

Chu-Kuan Lin, CECI Engineering Consultants; Jaw-Guei Lin;  
National Taiwan Ocean Univ; Ya-Lan Chen, Chin-Shen Chang, CECI  
Engineering Consultants, Taiwan, China

**Numerical Simulation of Effects of the Spudcan Penetration on  
Pile Groups of Jacket Platforms**

Jianhua Wang, Yifei Fan, Jianping Ma, Tianjin Univ, China

**Spar Platform Oil Storage and Offloading System Design**

Weiwei Liu, Jin Wang, Jia Huang, Yang Liu, Yang Li, COTEC  
Offshore Engineering, China

**Research on Methodology of Jack-up Uplift Operation Analysis  
[Proceedings only]**

Hongtao Li, Chang Gao, Jianbing Qu, China Classification Society,  
China

**109. ADVANCED SHIP TECH IV:  
Ultimate Strength & Fatigue (V. 4)**

**Wednesday June 28 16:20 Sand. AB**

**Chair:** Sa Young Hong, KRISO, Korea

**The Assessment of the Ultimate Hull Girder Strength of RO-RO  
Ship after Damages**

Muhammad Zubair Muis Alie, Ganding Sitepu, Samuel Izaak  
Latumahina, Hasanuddin Univ, Indonesia

**Experimental and Numerical Study on the Ultimate Strength of  
Box Girder Structures**

Kimihiro Toh, Tatsuki Nemoto, Masahiro Maeda, Takao Yoshikawa,  
Kyushu Univ, Japan

**The Prediction Research about the Ultimate Strength of Ship  
Hull Based on Scaled Test**

Xiaobin Li, Jiamin Gong, Wuhan Univ of Tech, China

**Transverse Strength and Reliability Assessment on Ore Carrier  
Cross-Deck Structures**

Ling Zhu, Man Pan, Han-wei Zhou, Wuhan Univ of Tech, China;  
Purnendu K. Das, ASRANet Ltd, UK

**Simulation Research on Fatigue Crack Propagation Behavior in  
Bulb Stiffeners in Ship Structural Details**

Jingxia Yue, Hao Xie, Zhifan Dang, Wuhan Univ of Tech; Zheng He,  
Wuhan Univ, China; Wengang Mao, Chalmers Univ of Tech, Sweden

**Research on Screening Fatigue Assessment Method based on  
New Common Structural Rules**

Shijian Cai, Jiameng Wu, Yuan Wang, Marine Design & Research  
Inst of China; Fangchao Yan, Shanghai Bestway Marine Engineering  
Design, China

**A Study on the Influence of Weather Routing on the Preciseness  
of Ship Structure's Fatigue Assessment**

Luis De Gracia, Osaka Univ; Hitoi Tamaru, Tokyo Univ of Marine  
Science & Tech; Naoki Osawa, Osaka Univ; Toichi Fukasawa, Osaka  
Prefecture Univ, Japan

**110. GEOTECH VII:  
Soil Property and Mechanics 1 (V. 2)**

**Wednesday June 28 16:20 Sand. CD**

**Chair:** Vincenzo Silvestri, Ecole Polytechnique de Montreal, Canada

**Stabilization of Marine Dredged Sediments (MDS) by Industrial Byproducts in Honam Area**

Tan Manh Do, Young-sang Kim, Chonnam National Univ, Korea

**Effects of Porosity on Mechanical Characteristics of Vesicular Basalts**

Soonbo Yang, Shinji Sassa, Port and Airport Research Inst, Japan

**A Preliminary Investigation to the Permeability of Carbonate Sand Formations: A Case Study**

Ye Wu , Yin Wang, Yubin Renand Qing Yang, Dalian Univ of Tech, China

**Post-grouting of Drilled Shaft Tips in Coral-reef Limestone Formations: A Case Study**

Zhi-hui Wan, Guo-liang Dai, Wei-ming Gong, Southeast Univ, China

**111. UNDERSEA I:  
Sensors and Observation (V. 2)**

**Wednesday June 28 16:20 Sand. E**

**Chair:** Shojiro Ishibashi, JAMSTEC, Japan

**Co-Chair:** Wenrong Hu, Shanghai Jia Tong University, China

**Development of an Autonomous OBEM Measurement Vehicle for Offshore Resources Exploration**

Satoru Yamaguchi, Kyushu Univ; Sumoto Hirofumi, Kagoshima Univ; Taishiro Katsu, Yasuki Kono, Kyushu Univ, Japan

**3D Image Mosaicking for Seabed Mapping Applying a Stereo Vision**

Shojiro Ishibashi, JAMSTEC, Japan

**Design and Deployment Analysis of Subsea Deployable Structures**

Yanjun Li, Tsung-chow Su, Bing Ouyang, Florida Atlantic Univ, USA

**Oceanographic Observation by Disk Type Underwater Glider for Virtual Mooring**

Masahiko Nakamura, Wataru Koterayama, Yuzuru Ito, Takeshi Matsuno, Joshiro Noda, Kyushu Univ; Yasuhiro Morii, Nobuhiro Yamawaki, Kenichi Shimizu, Nagasaki Univ, Japan

**The Development Status of an Underwater Multiple Observation System**

Kiyotaka Tanaka, Hiroshi Yoshida, Shojiro Ishibashi, Yutaka Ohta, Makoto Sugawara, JAMSTEC, Japan

**One Algorithm of the Autonomous Unmanned Vehicle Single Beacon Navigation and Its Accuracy Investigation [Proceedings only]**

Andrei I. Mashoshin, Concern CSRI Elektropribor, JSC, Russia

**WEDNESDAY 19:00**

<b>19:00</b>	<b>Grand Peninsula</b>
<i>Annual Conference Banquet</i>	
<b>27th ISOPE Cultural Event, Best Paper, Best Student Paper, Outstanding Student Scholarships, Best Organizer(s) and ISOPE Awards</b>	
<i>Don't forget the banquet ticket!</i>	

**THURSDAY 08:00**

**112. HYDRODYNAMICS XVIII:**

**CFD 3 (V. 3)**

**Thursday June 29 08:00 Grand A**

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

**Numerical Simulation of Floating Body under Heave Oscillations Using 2D IMLPG-R**

Rijas A S, Sriram V, IIT Madras, India

**Coupling of Viscous and Potential Flow Models with Free Surface: Implementation and Application to Floating Structures**

Xin Lu, Dominic Denver John Chandar, Chen Yu, Jing Lou, Inst of High Performance Computing, Singapore

**Coupled Mooring Analysis of a CALM Buoy by a CFD Approach**

Haoyuan Gu, Hamn-Ching Chen, Texas A&M Univ; Linyue Zhao, Saipem America, USA

**A Hybrid Approach Coupling MLPG-R with QALE-FEM for Modelling Fully Nonlinear Water Waves**

Shiqiang Yan, Qingwei Ma, City University London, UK

**Validation of an Open-source CFD Tool to Support Efficient Design of Offshore Gravity-based Structures Exposed to Extreme Waves**

Hossein Babaei, Scott Baker, Andrew Cornett, National Research Council Canada, Canada

**Using CFD to Assess the Hydrodynamic Loads on Non-Standard Jack-up Leg Shapes**

Zana Sulaiman, Andries Hofman, Cees Wallenburg, GustoMSC BV, Netherlands

**Modelling Wave Interaction with Deformable Structures Based on a Multi-region Approach within OpenFOAM**

P. J. Mart'inez Ferrer, L. Qian, Z. H. Ma, D. M. Causon, C. G. Mingham, Manchester Metropolitan Univ, UK

**113. HYDRODYNAMICS XIX:**

**Internal Waves (V. 3)**

**Thursday June 29 08:00 Grand B**

**Chair:** Jin S Chung, ISOPE, USA

**Co-Chair:** Ming-Hung Cheng, National Taiwan Ocean Univ, Taiwan, China

**Lattice Boltzmann Based Internal Wave-maker**

Kai Wang, Yang Yu, Liuming Yang, Guoxiang Hou, Huazhong Univ of Science & Tech; Sheng Xu, Shihua Xu, China Ship Development & Design Center, China

**Influences and Countermeasures of Internal Waves on Deepwater Drilling in the South China Sea**

Liangbin Xu, Jianliang Zhou, Chaowei Li, Leixiang Sheng, Yu Wang, Xining Hao, CNOOC Research Center, China

**Modelling Wave Trains from Internal Solitary Waves in South China Sea**

Xu Wang, Jifu Zhou, Dalin Tan, Inst of Mechanics, CAS, China

**Numerical Study on Flow Evolution of Mode-2 Internal Solitary Waves Propagating over Variable Topography**

Ming-Hung Cheng, National Taiwan Ocean Univ; Chih-Min Hsieh, National Kaohsiung Marine Univ; Robert R Hwang, National Taiwan Ocean Univ; Wen-Chang Yang, National Applied Research Labs; Shih-Feng Su, Tamkang Univ, Taiwan, China

**An Experimental Study of Internal Solitary Wave Forces on a Semi-Submersible**

Min Chen, Ke Chen, Yun-Xiang You, Chen Chen, Shanghai Jiao Tong Univ, China

**Wave Simulation Using an Internal Wave-Maker in a CIP-based Model**

Zhouteng Ye, Mengyu Li, Xizeng Zhao, Zhejiang Univ, China

**Experiments on Internal Waves Generated By a Self-Propelled Model in a Stratified Fluid**

Hongwei Wang, Ke Chen, Yunxiang You, Xinshu Zhang, Minhua Shu, Shanghai Jiao Tong Univ, China

**114. RENEWABLE ENERGY XII:**

**Offshore Wind: Floating 2 (V. 1)**

**Thursday June 29 08:00 Grand C**

**Chair:** Moo Hyun Kim, Texas A&M University, USA

**Co-Chair:** Climent Molins, Univ Politècnica de Catalunya, Spain

**Design and Dynamic Performances of Y-Wind Floating Offshore Wind Turbine Platform**

Sung Yoon Boo, Steffen Allan Shelly, Daejun Kim, VL Offshore, USA

**Experimental Study for the Aligned Wind/Wave Direction Effects on the Dynamics of a Semi-submersible Floating Wind Turbine System**

Shengtao Zhou, Chao Li, Yiqing Xiao, Harbin Inst of Tech; Xiaoping Song, Yongqing Liu, Yimin Hu, XEMC Windpower, China

**Uncertainty Analysis of OC5-DeepCwind Floating Semisubmersible Offshore Wind Test Campaign**

Amy N Robertson, National Renewable Energy Lab, USA

**Reliability of Mooring Lines and Shared Anchors of Floating Offshore Wind Turbines**

Spencer T Hallowell, Sanjay R Arwade, Casey M Fontana, Don J DeGroot, Univ of Massachusetts; Brian D Diaz, Charles P Aubeny, Texas A&M Univ; Melissa E Landon, Univ of Maine, USA

**Multiline Anchors for the OC4 Semisubmersible Floating System**

Casey M Fontana, Sanjay R Arwade, Don J DeGroot, Spencer T Hallowell, Univ of Massachusetts; Charles Aubeny, Texas A&M Univ; Melissa Landon, Univ of Maine; Andrew Myers, Jerome Hajjar, Northeastern Univ, USA; Senol Ozmutlu, Vryhof Anchors, Netherlands;

**Numerical Simulation of Floating Offshore Wind Turbine Constrained by Delta Mooring System**

Hyunseong Min, Jun Zhang, Texas A&M Univ, USA

**Probabilistic Distribution of Mooring Line Tension for Floating Offshore Wind Turbine**

Min Zhang, Yanjian Wu, Junfeng Du, Yu Xu, Ocean Univ of China, China

**115. SUBSEA, PIPELINES, RISERS IX:**

**Pipeline 4 (V. 2)**

**Thursday June 29 08:00 RegencyAB**

**Chair:** Yijun Shen, Rosen Group, UK

**Fiber-Optic Acoustic Leak Detection for Multiphase Pipelines**

Shane Siebenaler, Southwest Research Inst; Venkat Krishnan, ExxonMobil Upstream Research; Jordan Nielson, John Edlebeck, Southwest Research Inst, USA

**Prediction of CTOD Based on GE/EPRI for Pipes with a Semi-elliptical Surface Crack under Global Bending**

Youn-Young Jang, Nam-Su Huh, Seoul National Univ of Science & Tech; Jae-Bin Lee, Ki-Seok Kim, Woo-Yeon Cho, POSCO, Korea

**Effect of Internal Pressure on Ductile Fracture of Circumferential Weld Joints of X65 Pipeline**  
Shoma Onuki, Yusuke Seko, Tokyo Gas, Japan

**116. HPM VIII:  
Cryogenic Materials 2 (V. 4)**

**Thursday June 29 08:00 RegencyC**

**Chair:** J. W. Morris Jr, University of California at Berkeley, USA  
**Co-Chair:** Keiji Ueda, JFE Steel Corp., Japan

**Experimental Investigation on No Vent Fill Process of Cryogenic Liquid**

Kyoung Joong Kim, Lingxue Jin, Korea Advanced Inst of Science & Tech; Youngcheol Kim, Korea Testing Laboratory; Sangkwon Jeong, Korea Advanced Inst of Science & Tech, Korea

**Tensile and High Cycle Fatigue Behaviors of High-Mn Steels at Ambient and Cryogenic Temperatures [Oral presentation]**

Sangshik Kim, Wongyu Seo, Daeho Jeong, Hyokyung Sung, Gyeongsang National Univ; Jehyun Lee, Changwon National Univ, Korea

**Research of YS355 Low Temperature Service Ferritic Steel Plates for LPG Carriers**

Deng Luo, Zhen Wang, Daheng Xiao, Hunan Valin Xiangtan Iron & Steel; Zhongzhu Liu, CITIC Metal; Wenbin Zhai, Chengxi Shipyard, China

**Safety Evaluation of High Manganese Austenitic Steel under Accident Condition Using High Strain-Tensile Test [Oral presentation]**

Dowon Seo, Jiwon Yu, Kihwan Kim, Geon Shin, POSCO, Korea

**Technical Review on the Cryogenic High Manganese Steels [Oral presentation]**

Keiji Ueda, Kazukuni Hase, Daichi Izumi, JFE Steel, Japan

**A Microscopy and Microanalysis Study of Austenitic (Invar Alloy) Weldments [Oral presentation]**

A Ozekcin, H Jin, ExxonMobil Research & Engineering, USA; N S Lim, C G Park, Pohang Univ of Science & Tech, Korea

**117. COASTAL VII:  
Sediment Transport, Coastal Erosion 1 (V. 3)**

**Thursday June 29 08:00 Harbour**

**Chair:** Athanassios A Dimas, University of Patras, Greece

**Large-Eddy Simulation of Oscillatory Flow, Sediment Transport and Morphodynamics over Ripples**

Georgios A Leftheriotis, Athanassios A Dimas, Univ of Patras, Greece

**Ridge-Runnel and Swash Dynamics Field Experiment on a Steep Meso-Tidal Engineered Beach: Numerical Model Simulation of Ridge Accretion**

Jens Figlus, Youn-Kyung Song, Texas A&M Univ; Patricia Chardón-Maldonado, Jack A Puleo, Univ of Delaware, USA

**Design and Operation of Sonde Arrays to Measure Fluid Mud in the Marine Environment**

Charles Roger Bostater Jr., Tyler Rotkiske, Taylor Oney, Emem Obot, Florida Inst of Tech, USA

**Numerical Modelling of Arctic Coastal Erosion due to Breaking Waves Impact Using REEF3D**

Nadeem Ahmad, Hans Bihs, Mayilvahanan Alagan Chella, Øivind A. Arntsen, Ankit Aggarwal, NTNU, Norway

**Experimental Study of the Influence of Wave Breaking Over a Sloping Beach on the Flow Upstream of the Surf Zone**

Konstantina A Galani, Athanassios A Dimas, Univ of Patras, Greece

**Physical and Numerical Modelling of Trench Infill**

David Todd, Syed A. Ali, Richard J. S. Whitehouse, Michiel A. F. Knaapen, HR Wallingford, UK

**118. OCEAN TECHNOLOGY XII:**

Design 1 (V. 1)

**Thursday June 29 08:00 Bayside**

**Chair:** Alan M Wang, COOEC, China

**Research of Damping Characteristics for Fluctuating System "Structure-Liquid" on the Basis of Limiting Transition Idea**

Nikolai N Taranukha, Irina N Zhurbina, Komsomolsk-na-Amure State Tech Univ, Russia; Jun Guo, Harbin Engineering Univ, China

**Analysis on Design Method of Expansive Stressed Grouted Clamp for Platforms Assessing the Modified Stiffness and the Increased Environmental Loads**

Wan Lin Zhu, Xiang Shi, JianRen Chen, Ocean Univ of China; Lei Zhou, ChuanJie Zhang, COOEC, China

**A Hybrid Time-Frequency Domain Method for Evaluation of Fatigue Damage in Offshore Structures**

Chaoshuai Han, Yongliang Ma, Xianqiang Qu, Peijiang Qin, Harbin Engineering Univ, China

**Design for the Reliability of the Deepwater Immersed Tunnel of Hongkong-Zhuhai-Macau Bridge Project**

Wei Lin, Zhigang Zhang, Xiaodong Liu, Ming Lin, CCCC HZM Island & Tunnel Project General Office, China

**Wind-field Measurement of a Long-span Bridge near Yangtze River Estuary**

Man Xu, Weiwei Guo, He Xia, Beijing Jiaotong Univ; Shaoqin Wang, Beijing Univ of Civil Eng & Architecture, China

**Study on Protective Tooling Design of Dock Corridor**

Hongtao Yuan, Chao Wang, Yuhan Wang, Yan Wen, Danlei Zhao, Hankun Yang, Shanghai Waigaoqiao Shipbuilding, China

**Availability Assessment of an Offshore Gas Treatment System Using Stochastic Petri Nets [Proceedings only]**

Andre Gustavo Ramos, Gilberto Francisco M de Souza, Univ of São Paulo, Brazil

**119. ADVANCED SHIP TECH V:**

High-Speed Planing (V. 4)

**Thursday June 29 08:00 Sand. AB**

**Chair:** Teemu Manderbacka, NAPA Ltd, Finland

**On the Roll Motion Prediction of High Speed Multi-hull Vessels**

Claudio Maria Apollonio, Giuliano Vernengo, Univ of Genoa, Italy; Luca Bonfiglio, Massachusetts Inst of Technology; Stefano Brizzolara, Virgian Tech, USA; Dario Bruzzone, Univ of Genoa, Italy

**Numerical and Experimental Studies of Submergence Depth Influence on the Resistance of a Swath with Inclined Struts**

Lifu Mao, Chengzhu Wei, Yinghui Li, Hong Yi, Shanghai Jiao Tong Univ, China

**Hydrodynamics Prediction of a Semi-planing Wave-piercing Craft**

Chengzhu Wei, Lifu Mao, Yinghui Li, Hong Yi, Shanghai Jiao Tong Univ, China

**Numerical Research on the Added Mass of Trimaran from Transition State to Semi-planing State Based on the Boundary Element Method**



Lei Zhang, Jia Ning Zhang, Dan Nie, Hao Jian Zhang, Dalian Maritime Univ, China; Yu Chen Shang, Univ of New Orleans, USA

**Experimental Study of the Propulsion Performance of a Water-jet Planing Monohull**

Hanbing Sun, Zhiqun Guo, Zhiyuan Sun, Guoge Tan, Jiayuan Zhuang, Harbin Engineering Univ, China

**Collapse Test of SWATH under Transverse Loads**

Zhiyong Pei, Xinrun Feng, Ping Yang, Ling Zhu, Wuhan Univ of Tech, China

**120. GEOTECH VIII:  
Soil Property and Mechanics 2 (V. 2)**

**Thursday June 29 08:00 Sand. CD**

**Chair:** C F Leung, National Univ of Singapore, Singapore  
**Co-Chair:** Youngsang Kim, Cheonnam National Univ, Korea,

**End Effect of T-bar Penetrometer Using 3D FE Analysis**

Yue Wang, Yuxia Hu, Muhammad Shazzad Hossain, Univ of Western Australia, Australia

**Triaxial Testing Beyond Yielding**

Tomas Sabaliauskas, Lars Bo Ibsen, Aalborg Univ, Denmark

**Effect of Rotation Rate on Field Vane Shear Strength**

Hiroshi Hirabayashi, TOA Corp; Masanori Tanaka, Port and Airport Research Inst; Ryuzo Tomita, KOA KAIHATSU Co, Japan

**Trial Development of High Pressure Torsional-Shear Test System on Hollow Cylindrical Specimens**

Shohei Noda, Sho Kimura, Yasuhide Sakamoto, Hideki Minagawa, Norio Tenma, National Inst of AIST, Japan

**Numerical Simulation Method of Running Properties of High-speed Train under Subgrade Settlement**

Yanmei Cao, He Xia, Jia Guo, Beijing Jiaotong Univ, China

**121. UNDERSEA II:  
AUV and Control (V. 2)**

**Thursday June 29 08:00 Sand. E**

**Chair:** M Nakamura, Kyushu University, Japan

**A Study of Vehicle Design to Substantiate an Underwater Docking System for an AUV**

Yutaka Ohta, Shojiro Ishibashi, Yoshitaka Watanabe, Makoto Sugawara, Kiyotaka Tanaka, JAMSTEC; Toshio Iseki, Shintaro Yamanaka, Tokyo Univ of Marine Science & Tech; Hiroyoshi Suzuki, Osaka Univ, Japan

**Depth Control of an Autonomous Underwater Vehicle Based on L1 Adaptive Theory**

Wenjin Wang, Guanxue Wang, Yingkai Xia, Gang Liu, Guohua Xu, Huazhong Univ of Science & Tech, China

**Underwater Vehicle Model Structure and Parameters Discovering with Genetic Programming based Symbolic Regression**

Nailong Wu, Chao Wu, Tong Ge, Xu-Yang Wang, Shanghai Jiao Tong Univ; Rui Yang, Ocean Univ of China, China

**Heading Control of Autonomous Underwater Vehicle Based on Sliding Mode Control**

Ran Guo, Ying Chen, Gang Liu, Guanxue Wang, Guohua Xu, Huazhong Univ of Science & Tech, China

**Study of the Vibration Transfer Function about Small UUV**

Arom Hwang, Hyongwoong Kwon, Koje College, Korea

**THURSDAY 10:30**

**122. HYDRODYNAMICS XX:  
CFD 4 (V. 3)**

**Thursday June 29 10:30 Grand A**

**Chair:** Masashi Kashiwagi, Osaka University, Japan

**A Two-phase Incompressible-Compressible (Water-Air) Smoothed Particle Hydrodynamics (ICSPH) Method Applied to Focused Wave Slam on Decks**

Steven J Lind, Qinghe Fang, Peter K Stansby, Benedict D Rogers, Georgios Fourtakas, Univ of Manchester, UK

**CFD Study of VIM of a Paired-Column Semi-Submersible Platform**

Weiwen Zhao, Decheng Wan, Shanghai Jiao Tong Univ, China

**Numerical Simulation of a Damaged Ship Flooding with Three-Dimensional SPH Method**

F.R. Ming, H. Cheng, A.M. Zhang, Harbin Engineering Univ, China

**Wave-Resistance Computation via CFD and IGA-BEM Solvers: A Comparative Study**

Xinning Wang, Sotirios P. Chouliaras, Panagiotis D. Kaklis, Univ of Strathclyde, UK; Alexandros A.-I. Ginnis, National Technical Univ of Athens; Constantinos G. Politis, Technological Educational Inst of Athens, Greece; Konstantinos V. Kostas, Nazarbayev Univ, Kazakhstan

**A Hybrid Solver Based on Efficient BEM-potential and LBM-NS Models: Recent LBM Developments and Applications to Naval Hydrodynamics**

C.M. O'Reilly, S.T. Grilli, Univ of Rhode Island, USA; J.C. Harris, Université Paris-Est, France; A. Mivehchi, Univ of Rhode Island, USA; C.F. Janssen, Hamburg Univ of Technology, Germany; J.M. Dahl, Univ of Rhode Island, USA

**A Hybrid Solver Based on Efficient BEM-potential and LBM-NS Models: Recent BEM Developments and Applications to Naval Hydrodynamics**

Amin Mivehchi, Univ of Rhode Island, USA; Jeffrey C Harris, Univ Paris-Est, France; Stephan T Grilli, Jason M Dahl, Chris M O'Reilly, Univ of Rhode Island, USA; Konstantin Kuznetsov, Univ Paris-Est, France; Christian F Janssen, Hamburg Univ of Technology, Germany

**Experimental and Numerical Simulation on the Whole Water Exit of a Spheroid**

Qigang Wu, Baoyu Ni, Xiaolong Bai, Yanzhuo Xue, Harbin Engineering Univ, China

**123. HYDRODYNAMICS XXI:  
Drag & Drag Reduction (V. 3)**

**Thursday June 29 10:30 Grand B**

**Chair:** Petri Valanto, Hamburg Ship Model Basin HSVA, Germany

**The EFD and CFD Study of Rudder-Bulb-Fin System in Ship and Propeller Wake Field of KVLCC2 Tanker in Calm Water**

Tho Quang Truong, Ping-Chen Wu, Osaka Univ; Kaoru Aoyagi, ClassNK; Kenta Koike, Yu Akiyama, Sanoyas Shipbuilding; Yasuyuki Toda, Osaka Univ, Japan

**The Ship Wall-Pressure Distribution Characteristics on Gas Film Drag Reduction**

Shengqiang He, Jiamei Wang, Shunhui Chen, Aokui Xiong, Lizheng Wang, Hao Wang, Wuhan Univ of Tech, China

**Model Test Research of Low-Speed Vessel on Gas Film Drag Reduction**

Lizheng Wang, Shengqiang He, Jiamei Wang, Shunhui Chen, Yan Jin, Qiong Li, Wuhan Univ of Tech, China

**Numerical Simulation on Drag Reduction of River-Sea Bulk Cargo by Gas Film**

Fan Yang, Lizheng Wang, Jiamei Wang, Shunhui Chen, Liang Luo, Min Wang, Wuhan Univ of Tech, China

**In-Service Performance Evaluation of Low Frictional AF Marine Coating**

Inwon Lee, Hyun Park, Pusan National Univ, Korea

**Numerical Investigation of Shark Skin Inspired Riblet Drag Reduction Structure**

Yansheng Zhang, Osman Turan, Univ of Strathclyde, UK

**Drag Calculation of Macroscopic Objects with Riblet Microstructure [Proceedings only]**

Wei Chen, Huazhong Univ of Science & Tech; Hao Zhang, Lei Wang, Wenjun Leng, Wuhan Second Ship Design & Research Inst; Guoxiang Hou, Huazhong Univ of Science & Tech, China

**124. RENEWABLE ENERGY XIII:**

**Floating 3 (V. 1)**

**Thursday June 29 10:30 Grand C**

**Chair:** Andrew J Goupee, University of Maine, USA

**OC5 Task II Simulations with FloaWDyn Numerical Model**

P. Trubat, A. Campos, C. Molins, D. Alarcón, Univ Politècnica de Catalunya, Spain

**FAST Model Calibration and Validation of the OC5-DeepCwind Floating Offshore Wind System against Wave Tank Test Data**

Fabian F Wendt, Amy N Robertson, Jason M Jonkman, National Renewable Energy Lab, USA

**Experimental Validation of a Spectral-Based Structural Analysis Model Implemented in the Design of the VoltornUS 6MW Floating Offshore Wind Turbine**

Christopher K Allen, Anthony M Viselli, Andrew J Goupee, Habib J Dagher, Univ of Maine, USA

**Global Performance Analysis of 5MW WindFloat and OC4 Semi-submersible Floating Offshore Wind Turbines (FOWT) by Numerical Simulations**

H.C. Kim, M.H. Kim, J.Y. Lee, Texas A&M Univ, USA; E.S. Kim, POSCO, Korea; Z. Zhang, Renergy Offshore Engineering, China

**Hydroelastic Analysis of Multi-Unit Floating Offshore Wind Turbine Platform (MUFOWT)**

HeonYong Kang, Moo-Hyun Kim, Texas A&M Univ, USA; Kyung-Hwan Kim, KeyYong Hong, Korea Research Inst of Ships and Ocean Engineering, Korea

**125. SUBSEA, PIPELINES, RISERS X:**

**Pipeline 5 (V. 2)**

**Thursday June 29 10:30 RegencyAB**

**Chair:** David Y Du, Subsea 7, USA

**Co-Chair:** Howard Wang, ExxonMobil Production Co., USA

**Analytical Solution for Lateral Buckling of Unburied Subsea Pipelines with Sleeper**

Zhenkui Wang, Yougang Tang, Tianjin Univ, China

**Physical Study on Wave-induced Response of Sandy Seabed around a Trenched Pipeline**

Dongying Dai, Jisheng Zhang, Yanyan Zhai, Rui He, Hohai Univ; Tiantian Zhang, China Three Gorges Corp, China

**Study on the Asphaltene Deposition Prediction Theory and Method in Deepwater Crude Oil Pipelines**

Ping Lu, Xiaying Du, CNOOC China; Li Yang, Southwest Petroleum Univ; Zhaoguang Qu, Chunyu Liu, CNOOC China, China

**Study on Pigging Solution of Subsea Wet Gas Pipeline**

Yufei Wan, Renwei Liu, Wenguang Wang, Xiaying Du, Zhaoguang Qu, Chunyu Liu, Xin Qian, CNOOC, China

**Research on Waterproof for Subsea Pipe End by Spraying Polyurea Elastomer**

Jia Xu, Huang Jun, Jia Lusheng, CNOOC Research Inst, China

**A Methodology to Assess the Structural Reliability of Corroding Subsea Pipeline under Gas-Liquid Flow**

Yuan Min, Weichao Yu, Xiaoping Li, Jing Gong, China Univ of Petroleum-Beijing, China

**126. HPM IX:**

**Fatigue and Fracture 1 (V. 4)**

Thursday

June 29

10:30

RegencyC

**Chair:** Takuya Hara, Nippon Steel & Sumitomo Metal Corp., Japan

**Co-Chair:** Sarah E Mouring, US Naval Academy, USA

**Experimental Study on Fatigue Characteristics of T-welded Joint under Repeating Two-step Load**

Di Sun, Jin Gan, Zhou Wang, Wei-guo Wu, Wuhan Univ of Tech, China

**Experimental Study on Fatigue Characteristics of Typical Welded Joints of River-Sea-Going Ship**

Xiaoyuan Gao, Jin Gan, Di Sun, Weiguo Wu, Wuhan Univ of Tech, China

**Enhanced Consideration of Residual Stresses in the Nominal Stress Approach for Fatigue Design of Welded Joints**

Jonas Hensel, Thomas Nitschke-Pagel, Klaus Dilger, TU Braunschweig, Germany

**Brittle Crack Propagation Behavior in Steel Subject to Bending (Development of Simplified Arrest Toughness Evaluation Testing Using SEN(B) Specimen)**

Yuki Nishizono, Tomoya Kawabata, Shuji Aihara, Univ of Tokyo, Japan

**Influence of Different Load Histories on the Cyclic Material Behavior of Nodular Cast Iron for Thick-walled Application**

Christoph Bleicher, Rainer Wagener, Heinz Kaufmann, Tobias Melz, Fraunhofer Inst for Structural Durability & System Reliability, Germany

**127. COASTAL VIII:**

**Sediment Transport, Coastal Erosion 2 (V. 3)**

Thursday

June 29

10:30

Harbour

**Chair:** Y. Yamamoto, Tokai University, Japan

**Tropical Cyclone-Induced Coastal Hazards, Impacts and Causes on the Coast of China**

Zai-Jin You, Ludong Univ, China

**Analysis of Coastal Erosion in Khlong Wan Coast**

Kornvisith Silarom, King Mongkut's Inst of Tech, Thailand; Yoshimichi Yamamoto, Tokai Univ, Japan; Nunthawath Charussrojthanadech, King Mongkut's Inst of Tech, Thailand

**Experimental Study on the Erosion of the Breakwater - A Case Study of Mai-Liao Harbor**

Wei-Chun Hu, Chi-Fang Chan, Chao-Lung Ting, National Taiwan Univ; Chung-Pan Lee, I-Fan Tseng, National Sun Yat-sen Univ; Yung-

Fang Chiu, Inst of Transportation; Pei-Yu Lee, Wei-Lun Li, National Taiwan Univ, Taiwan, China

**Numerical Simulation of Scour Pattern and Scour Depth Prediction in Front of a Vertical Breakwater Using OpenFoam**

Nikolaos Karagiannis, Theofanis Karambas, Christopher Koutitas, Aristotle Univ. of Thessaloniki, Greece

**Prediction of Gravel Beach Storm Profiles under Bimodal Seastates**

Andrea Polidoro, Tim Pullen, HR Wallingford; Jack Eade, National Oceanography Centre; Belen Blanco, HR Wallingford; Travis Mason, National Oceanography Centre, UK

**128. OCEAN TECHNOLOGY XIII :**

Design 2 (V. 1)

**Thursday June 29 10:30 Bayside**

**Chair:** Bor-Feng Peng, Oil Field Development Engineering, USA

**Co-Chair:** Nikolai N Taranukha, Komsomolsk-na-Amure State Tech Univ, Russia

**Numerical Study on the Out-of-Plane Bending (OPB) Behaviors of Studless Mooring Chain Links in Fairlead Structures**

Meng Luo, Caspar Heyl, Shell International Exploration & Production, USA

**Abnormal State Diagnosis for Vibration Signal Using Probability Density Estimation and DTW**

Kyu-Tack Hong, Seyun Hwang, Jang-Hyun Lee, Inha Univ, Korea

**Dynamic Analysis on the Pressure Relief Process of Hydrocarbon Pressure Vessel with Multi-Components under External Fire**

Zhongde Zhang, Xin Qian, Yufei Wan, Wenguang Wang, Jihai Liu, Renwei Liu, Ming Hao, CNOOC, China

**Time History Fatigue Analysis of Bolted Connection of Deepwater Offshore Substructure under Dynamic Wind Loading with ESDU Spatial Coherence**

Bor-Feng Peng, Cheng-Yo Chen, Carlos Llorente, Oil Field Development Engineering; USA

**Time Domain Decision-making Support based on Ship Behavior Monitoring and Flooding Simulation Database for On-board Damage Control**

Hee Jin Kang, Jin Choi, Geun-Tae Yim, Haeseong Ahn, Korea Research Inst of Ships & Ocean Engineering, Korea

**129. ADVANCED SHIP TECH VI:**

Sea Trial & Performance (V. 4)

**Thursday June 29 10:30 Sand. AB**

**Chair:** Sung Yoon Boo, VL Offshore, USA

**Assessment of Ship Operating Performance by Using Full Scale Measurement**

Se-Won Kim, Jae-Han Kim, Daewoo Shipbuilding & Marine Engineering Min-Guk Seo, KRISO; Jin-Woo Choi, Young-Bum Lee, Sung-Kon Han, Daewoo Shipbuilding & Marine Engineering, Korea

**Investigation on the Scale Effect of Manoeuvrability Based on Model Tests and Sea Trials of a Ship**

Xiaojian Liu, Jun Nie, Zhaodan Xia, Sheming Fan, Marine Design & Research Inst of China, China

**Numerical and Experimental Analysis of Oscillating Fluid Tanks**

Biagio Passione, Nicola Pozzi, Sergej Antonello Sirigu, Giovanni Bracco, Politecnico di Torino, Italy; Stefano Brizzolara, MIT, USA; Giuliana Mattiazzo, Politecnico di Torino, Italy

**Development of a New Practical Ship Motion Calculation Method with Forward Speed**

Seppo Kalske, Teemu Manderbacka, NAPA Ltd, Finland

**2.5D Method for Pulsating Pressure Induced Waves on the Free Surface**

Zhiqun Guo, Qingwei Ma, Hanbing Sun, Hongbin Hao, Harbin Engineering Univ, China

**Standard Zigzag Maneuver Simulations in Calm Water and Waves with Direct Propeller and Rudder**

Jianhua Wang, Decheng Wan, Shanghai Jiao Tong Univ; Xinguo Yu, China Ship Development and Design Center, China

**Wavelet Denoising for Ship Model Test Data in Identification of Ship Manoeuvring Mathematical Model**

Yan Jiang, Zaojian Zou, Shanghai Jiao Tong Univ, China

**Simulation and Design of USV Target Detection and Tracking System Based on Multi-ultrasonic Location [Proceedings only]**

Supu Xiu, Yuanqiao Wen, Haiwen Yuan, Changshi Xiao, Chunhui Zhou, Wuhan Univ of Tech, China

**130. GEOTECH IX:**

**Geohazard & Liquefaction (V. 2)**

Thursday

June 29

10:30

Sand. CD

**Chair:** Knut O Ronold, DNV GL, Norway

**Co-Chair:** Yun Wook Choo, Kongju National Univ, Korea

**Criteria for the CPT-based Liquefaction Severity Index Classification**

Chih-Sheng Ku, Chaow-Wei Chen, Ya-Chun Lee, I-Shou Univ, Taiwan, China

**An Experimental Study on Liquefaction Strength Property of Improved Sand by Micro-Particles**

Kentaro Uemura, Tokyo City Univ; Takamitsu Sasaki, Kyokado Engineering; Naoaki Suemasa, Kazuya Ito, Tokyo City Univ; Koichi Nagao, Sato Kogyo Co; Shunsuke Shimada, Kyokado Co, Japan

**Liquefaction Resistance of Sand under Sequenced Earthquake Motions**

Takaaki Kobayashi, Shinji Sassa, Keita Watanabe, Port and Airport Research Inst, Japan

**Correlation between Liquefaction Resistance and Penetration Resistance of Swedish Weight Sounding Tests**

Kenta Kumada, Noriaki Sako, Shuichi Shimomura, Toshio Adachi, Nihon Univ; Tsutomu Hirade, Building Research Inst, Japan

**GNSS Buoy Array in the Ocean for a Synthetic Geohazards Monitoring System**

Teruyuki Kato, Univ of Tokyo; Yukihiro Terada, Kochi College; Keiichi Tadokoro, Nagoya Univ; Akira Futamura, Yuge College; Morio Toyoshima, Shin-ichi Yamamoto, Mamoru Ishii, Takuya Tsugawa, Michi Nishioka, Kenichi Takizawa, NICT; Yoshinori Shoji, MRI-JMA; Tadahiro Iwasaki, Naokiyo Koshikawa, JAXA, Japan

**Assessment of the Stability of an Excavation in Clay by Means of CPTU and VST Results**

Vincenzo Silvestri, Ecole Polytechnique de Montréal; Claudette Tabib, Consultant, Canada

**Evaluation of Ground Shaking Characteristics with High Density for a Same Grid Square and Its Application**

Yutaro Okawa, Yoshiya Hata, Osaka Univ; Atsushi Mikami, Tokai Univ, Japan

**131. UNDERSEA III:  
Robotics and Propulsion (V. 2)**

**Thursday June 29 10:30 Sand. E**

**Chair:** Yu Wang, Inst of Automation, CAS, China

**Numerical Prediction of Effective Wake Field for a Submarine Fitted with a Pump-Jet Propulsor via a Hybrid Approach**

Zhiqiang Rao, Chenjun Yang, Shanghai Jiao Tong Univ, China

**DocuScooter: A Novel Robotics Platform for Marine Citizen Science**

David Scaradozzi, Silvia Zingaretti, Luca Panebianco, Corentin Altepe, Univ Politecnica Delle Marche, Italy; S Murat Egi, Galatasaray Univ, Turkey; Marco Palma, Ubaldo Pantaleo, Davide Ferraris, UBICA srl, Italy; Fiorenza Micheli, Stanford Univ, USA

**The Development of the Motor Driver Integrated Subsea Thruster System**

Makoto Sugawara, Hiroshi Yoshida, Shojiro Ishibashi, Yutaka Ohta, Kiyotaka Tanaka, Yukihiro Kida, JAMSTEC, Japan

**Interactions of Tadpole School Swimming in Turbulent Flow**

Wenrong Hu, Xuyang Chen, Shanghai Jia Tong Univ, China

**Switching Control for 3-D Way-point Tracking of a Biomimetic Underwater Vehicle**

Rui Wang, Yu Wang, Shuo Wang, Chong Tang, Inst of Automation, CAS, China

**THURSDAY 12:00**

**STUDENT FORUM**

Refreshment served

Advance Reservation **signed up** at [isope-5@isope.org](mailto:isope-5@isope.org)  
by May 20

**Thursday June 29 12:00 Sequoia A**

**Student Organizers:**

Jocelyn M Kluger and Maha N Haji, Massachusetts Inst of Technology, USA

**Student Advisor:**

Demos Angelides, Aristotle Univ of Thessaloniki, Greece  
Laurie Boswell, City, University London, UK  
Harovel G Wheat, University of Texas at Austin, USA

**132. HYDRODYNAMICS XXII :**

**Tsunami 1 (V. 3)**

**Thursday June 29 14:00 Grand A**

**Chair:** Hua Liu, Shanghai Jiao Tong University, China

**FPGA Based Solution for Fast Tsunami Wave Propagation Modeling**

Mikhail M Lavrentiev, Alexey A. Romanenko, Konstantin K. Oblaukhov, Novosibirsk State Univ; Andrey G Marchuk, Inst of Computational Mathematics & Mathematical Geophysics; Konstantin F. Lysakov, Mikhail Yu. Shadrin, Inst of Automation & Electrometry, Russia

**Tsunami Detection by High Frequency Radar Using a Time-Correlation Algorithm: Performance Analysis Based on Data from a HF Radar in British Columbia**

Charles-Antoine Guerin, Univ de Toulon, France; Stephan T Grilli, Patrick Moran, Annette Grilli, Univ of Rhode Island, USA; Tania Lado Insua, Ocean Networks Canada, Canada

**An Empirical Formula of Evaluation of Wave Amplitude for Trans-Ocean Tsunamis**

Hua Liu, Wei Wu, Zhicheng Zhang, Shanghai Jiao Tong Univ, China

**Tsunami Run-Up Modeling with Adaptive Mesh Refinement: Monai Valley Benchmark Test**

Han Soo Lee, Hiroshima Univ, Japan

**A Study on Characteristics of Local Pressure on Coastal Dikes Induced by Tsunami Overflow**

Takahide Honda, Teppei Omata, Chathura Deshapriya Manawasekara, Yukinobu Oda, Kazunori Ito, Taisei Corp, Japan

**Experimental Study on Reduction of Tsunami Wave Force Acting on Land Structures Due to Protective Barriers**

Tsuyoshi Ikeya, Tokyo Univ of Marine Science & Tech; Kazuki Suzuki, Seiya Suenaga, Nobuyuki Iwamae, Takako Fukuyama, Yoshinobu Akiyama, Tomokazu Tateno, Kajima Corp, Japan

**133. HYDRODYNAMICS XXIII:**

**Seakeeping Dynamics 1 (V. 3)**

**Thursday June 29 14:00 Grand B**

**Chair:** Masashi Kashiwagi, Osaka University, Japan

**Co-Chair:** Yachong Liu, Marine Design & Research Inst. of China, China

**Hydrodynamic Performance of Tandem Oscillating Foils in Waves**

Huimei Xie, Dongjiao Wang, Sough China Univ of Tech; Zijun Lin, Hunan Univ; Shouqiang Qiu, Jiawei Ye, South China Univ of Tech, China

**Numerical Calculation on Propeller-induced Pressure Fluctuation of a River-to-sea Ship**

Weiguo Wu, Jiezheng Wei, Yongshui Lin, Tao Yang, Wuhan Univ of Tech; Shengjie Qin, National Deep Sea Center; Tao Yang, Wuhan Univ of Tech, China

**An Innovative Force Sensor to Evaluate the Drag of Small Outboard Motor Watercrafts**

Giuseppe Conte, David Scaradozzi, Daniele Mannocchi, Anna Maria Perdon, Univ Politecnica delle Marche, Italy

**Stability Analysis of Randomly Excited Ship Parametric Roll Resonance**

Xiao Zhang, China Ship Development & Design Center; Hezhen Yang, Shanghai Jiao Tong Univ; Zhiqiang Xie, Du Shen, Chunxu Wang, China Ship Development & Design Center, China

**Numerical Study of the Characteristics of Strongly Stratified Flows Past a Cylinder**

Mingchang Niu, Yong Ding, Weizhuang Ma, Yuce Xi, Harbin Engineering Univ, China

**134. RENEWABLE ENERGY XIV:**

**Wind Energy Simulations (V. 1)**

**Thursday June 29 14:00 Grand C**

**Chair:** Matthew Hall, Univ of Prince Edward Island, Canada

**Comparing Fatigue Loads in Floating Wind Turbine Basin Tests: Geometric-scaled, Performance-scaled, and Hybrid Approaches**

Matthew Hall, Univ of Prince Edward Island, Canada; Andrew Goupee, Univ of Maine, USA

**3D Fully Nonlinear Beam Dynamics of Offshore Wind Turbines [Oral presentation]**

Carten Corte, Corte (Ingenierbuero), Germany



**Geometric Parameters' Effect Characterization and Design Optimization of a Micro Scale Cross-flow Turbine for an Improved Performance**

Endashaw Tesfaye Woldemariam, Hirpa G Lemu, Univ of Stavanger, Norway; G. Gary Wang, Simon Frazer Univ, Canada

**A First-Order Dynamics and Cost Comparison of Wave Energy Converters Combined with Floating Wind Turbines**

Jocelyn M Kluger, Alexander H Slocum, Themistoklis P Sapsis, Massachusetts Inst of Technology, USA

**135. SUBSEA, PIPELINES, RISERS XI:  
Installation (V. 2)**

**Thursday June 29 14:00 RegencyAB**

**Chair:** Howard H Wang, ExxonMobil Production Co., USA

**Low Cycle Tearing in a Deepwater Buckle Arrestor Assembly Girth Weld during S-Lay Installation**

Ruud Selker, Ping Liu, INTECSEA; Erich Jurdik, Jay Chaudhuri, South Stream Transport BV, Netherlands; Andrea Fonzo, Massimo di Biagio, Centro Sviluppo Materiali, Italy

**Research on the Installation Window of Marine Riser in Deepwater Drilling: Based on the Mechanics Analysis and Actual Sea Environment**

Yanbin Wang, Deli Gao, Jun Fang, China Univ of Petroleum-Beijing, China

**Experimental Investigation into Free Surface Effects on the Hydrodynamic Performance of the Plates**

Hema Wadhwa, INTECSEA, Australia

**136. HPM X:  
Fatigue and Fracture 2 (V. 4)**

**Thursday June 29 14:00 RegencyC**

**Chair:** Yasuhiro Shinohara, Nippon Steel & Sumitomo Metal, Japan

**Co-Chair:** Hyunjo Jun, ExxonMobil Research & Engineering, USA

**Effect of Sour Acidizing Treatments on the Fatigue Crack Growth Performance of Welded C-Mn Line Pipe Steels**

Ramgopal Thodla, Colum Holtam, DNV GL; Weiwei Yu, Jonathan Bowman, Chris Leinweber, Xiaoyan Yan, Apurva Batra, Chevron Energy Technology; Brandon Gerst, DNV GL, USA

**Comparing Fracture Toughness Transition Curves for X70 Pipe**

William Mohr, Paul Zelenak, EWI, USA

**Effect of Acidizing Treatments on the Fatigue Performance of Welded C-Mn Line Pipe Steels**

Weiwei Yu, Apurva Batra, Jonathan Bowman, Chevron Energy Technology; Ramgopal Thodla, Colum M Holtam, DNV GL; Chris Leinweber, Xiaoyan Yan, Chevron Energy Technology; Brandon Gerst, DNV GL, USA

**Comparing Transition Curves for Charpy and CTOD for Four Offshore Steels**

William Mohr, Paul Zelenak, EWI, USA

**Effect of Sour Acidizing Treatments on the Fracture Toughness Performance of Welded C-Mn Line Pipe Steels**

Weiwei Yu, Jonathan Bowman, Chevron Energy Technology; Ramgopal Thodla, Colum Holtam, DNV GL; Chris Leinweber, Xiaoyan Yan, Apurva Batra, Chevron Energy Technology; Brandon Gerst, DNV GL, USA

**Prediction of Charpy Impact Property of Weld Simulated HAZ of High-Strength Steel by Weakest-Link Fracture Model**

Michihiro Kunigita, Shuji Aihara, Tomoya Kawabata, Tadashi Kasuya, Univ of Tokyo, Japan

**A New Likelihood Function for Obtaining Weibull Stress Parameters for Cleavage Fracture Initiation in Inhomogeneous Materials**

Itsuki Kawata, Shuhei Yoshizu, Hiroaki Nakai, Kazuki Shibanuma, Shuji Aihara, Univ of Tokyo, Japan

**137. COASTAL IX:  
Coastal Management (V. 3)**

**Thursday June 29 14:00 Harbour**

**Chair:** L.-K. Chien, National Taiwan Ocean Univ., Taiwan, China  
**Co-Chair:** Yongping Chen, Hohai University, China

**A Study of Coastal Protection Zone Designation and Disaster Risk Assessment under Climate Change in Taiwan [Oral presentation]**

Lien-Kwei Chien, C-C Hsieh, W-P Huang, J-P Wu, National Taiwan Ocean Univ, Taiwan, China

**A Monitoring and Modeling Study for Kikiaola Harbor in Hawaii, USA**

Lihwa Lin, Zeki Demirbilek, US Army Engineer Research & Development Center; Thomas D. Smith, US Army Corps of Engineers, USA

**Investigation on Coastline Evolution Using Long-Term Observations and Numerical Modelling**

Elvira Armenio, Francesca De Serio, Michele Mossa, Technical Univ of Bari; Biagio Nobile, CoNISMa; Antonio F Petrillo, Technical Univ of Bari, Italy

**Effect of Jetties in Coastal Change at Chumphon Estuary**

Atsanupong Promngam, Nunthawath Charusrojthanadech, Komson Maleesee, King Mongkut's Inst of Tech Ladkrabang, Thailand; Yoshimichi Yamamoto, Tokai Univ, Japan

**138. OCEAN TECHNOLOGY XIV:  
Float-over Installation 1 (V. 1)**

**Thursday June 29 14:00 Bayside**

**Chair:** Alan M. Wang, Offshore Oil Engineering Co., China  
**Co-Chair:** Ju-Hwan Cha, Mokpo National Univ, Korea

**A Comprehensive Field Measurement for Floatover Installations**

Shaohua Zhu, Wentai Yu, Min He, Alan M. Wang, Offshore Oil Engineering; Xin Li, Lei Wang, Shanghai Jiao Tong Univ, China

**Experimental Analysis of Topside Transportation with a Double-barge Float-over System**

Daniele Dessi, Edoardo Faiella, Marine Technology Research Center; Corrado Pigna, Cristiano Celli, Thiago Miliante, Enrico Di Paolo, TechnipFMC Rome Operating Center, Italy

**A Model Test for Docking Operations of a Transportation Vessel during Float-over Installation**

Y J Kwon, B W Nam, N W Kim, H W Kwak, I B Park, D H Jung, H G Sung, Korea Research Inst of Ships & Ocean Engineering, Korea

**Experimental Investigation on Mating Operation during Float-over Installation of a Large Topside in Waves**

N W Kim, B W Nam, Y J Kwon, S K Cho, I B Park, H G Sung, Korea Research Inst of Ships & Ocean Engineering, Korea

**A Development of Crane Operation Training Simulator Prototype for Offshore Installation Work at the Open Sea**

Sangmoo Lee, Eungkon Kim, Yangryul Choi, Xinnos Co; Juhwan Cha, Mokpo National Univ, Korea

**139. ADVANCED SHIP TECH VII:**

**Powering 1 (V. 4)**

**Thursday June 29 14:00 Sand. AB**

**Chair:** Jerzy E Matusiak, Aalto Univ; Finland

**RANS Simulation of Self-Propulsion Ship Model Test Coupled with PI Controller**

Hai-peng Guo, Zao-jian Zoua, Yi Liu, Jin Chen, Shanghai Jiao Tong Univ, China

**Design and Experimental Verification of Water-Jet Shrink-Flow Pump Based on Controllable Velocity Moment Method**

Youlin Cai, Sheming Fan, Zonglong Wang, Ning Li, Guorui Ji, Science and Technology on Water-jet Propulsion Laboratory, China

**Numerical Simulation of the Viscous Flow in a Waterjet Intake Duct under Backward Conditions**

Hui-Li Xu, Zao-Jian Zou, Shanghai Jiao Tong Univ, China

**Numerical Study on the Influence of the External Axial Excitation to the Unsteady Characteristics of a Propeller**

Minhua Shu, Ke Chen, Yunxiang You, Xinshu Zhang, Hongwei Wang, Shanghai Jiao Tong Univ, China

**Numerical Investigation of Open-Water Performance of Contra-Rotating Propellers**

Dongya He, Decheng Wan, Shanghai Jiao Tong Univ; Xinguo Yu, China Ship Development and Design Center, China

**Design and Verification of Water-jet Propulsion Pump Noise Test Device in Ordinary Environment [Proceedings only]**

Zonglong Wang, Marine Design & Research Inst of China; Guorui Ji, Youlin Cai, Science and Technology on Water Jet Propulsion Laboratory, China

**140. GEOTECH IX:**

**Geohazard & Liquefaction (V. 2)**

**Thursday June 29 14:00 Sand. CD**

**Chair:** Yun Wook Choo, Kongju National Univ, Korea

*Continue*

**141. UNDERSEA IV: ROV, Towed Vehicles and USV (V. 2)**

**Thursday June 29 14:00 Sand. E**

**Chair:** Satoru Yamaguchi, Kyushu University, Japan

**Co-Chair:** Guoha Xu, Huazhong University of Science and Technology, China

**3D Nonlinear Coupled Simulation of Cable and Tow-Body System**

Gwangsoo Go, Euntaek Lee, Hyung Taek Ahn, Univ of Ulsan, Korea

**Track-keeping and Positioning Control in Vessel Towing Operation**

Shikun Pang, Jingyang Liu, Shanghai Jiao Tong Univ; Shengjie Yu, China Classification Society; Lifu Mao, Hong Yi, Shanghai Jiao Tong Univ, China

**Dynamic Bayesian Network Controller Design and Its Application on Ship Autopilot**

Jian Wang, Jingyang Liu, Shikun Pang, Hong Yi, Shanghai Jiao Tong Univ, China

**Numerical Analysis of the Motion of ROV Applying ANC Method to Motion of Tether Cable**

Hiroyoshi Suzuki, Hiroto Tomobe, Asako Kuwano, Osaka Univ; Kazuhiro Takasu, Akishima Labs (Mitsui Zosen); Tomoya Inoue, Jyunya Ishiwata, JAMSTEC, Japan

**Field Tests of an Integrated ASV/ROV Platform**

Giuseppe Conte, David Scaradozzi, Daniele Mannocchi, Nicolò Ciuccoli, Univ Politecnica Delle Marche, Italy

**THURSDAY 16:20**

**142. HYDRODYNAMICS XXIV:**

**Tsunami 2 (V. 3)**

**Thursday June 29 16:20 Grand A**

**Chair:** Dale Kerper, DHI Water & Environment, USA

**Nearshore FSO Response under Rapidly Varying Landslide Tsunami Hydrodynamic Loads**

Dale Kerper, DHI Water & Environment, USA; Shubhra Misra, Chevron Energy Technology, USA; Hans Fabricius Hansen, DHI Water & Environment, Denmark; Fengyan Shi, Univ of Delaware; Pramod Rao, Chevron Energy Technology; James T Kirby; Univ of Delaware; Ed Willey, Chevron Energy Technology; David B Ervin, Chevron Shipping, USA

**Nonlinear Finite Element Analysis of RC Walls Subjected to Tsunami and Debris Impact**

Atsushi Shibayama, Yoshinori Miyagawa, Naoto Kihara, Hideki Kaida, Central Research Inst of Electric Power Industry, Japan

**Effect of Scour Protections against Tsunami Overflow at a Landward Toe of Coastal Dikes**

Naoki Takegawa, Yutaka Sawada, Toshinori Kawabata, Kobe Univ, Japan

**Investigation of the Artificial Underwater Object's Protection Properties Using Numerical Modeling**

Kensaku Hayashi, Alexander P Vazhenin, Univ of Aizu, Japan; Andrey G Marchuk, Geophysics of SB RAS, Russia

**Strong Motion Prediction during a Scenario Earthquake along the Coast of Sea of Japan**

Masaki Yamauchi, Yoshiya Hata, Osaka Univ; Akira Murata, Kanazawa Univ; Yasuko Kuwata, Kobe Univ; Maki Koyama, Gifu Univ; Tadayoshi Nakashima, Hokkaido Univ; Masakatsu Miyajima, Kanazawa Univ, Japan

**143. HYDRODYNAMICS XXV:**

**Seakeeping Dynamics 2 (V. 3)**

**Thursday June 29 16:20 Grand B**

**Chair:** Masashi Kashiwagi, Osaka Univ, Japan

**Co-Chair:** Yachong Liu, Marine Design & Research Inst. of China, China

**Hydrodynamic and Wave Performance around a Ship Hull on the Free Surface under Stokes Waves**

Shengtao Chen, Dalian Maritime Univ, China

**An Improved Method to Calculate Inertial Forces and Dynamic Loads of Whole Ship**

Zhe Cheng, Shaoxiong Zhang, Zekun Bian, Wuhan Univ of Tech, China

**Effects of Non-uniform Heading Distribution and Variant Speeds on EDW**

Yachong Liu, Jiameng Wu, Wenbo Zhu, Marine Design & Research Inst. of China, China

**Analysis of the Coupled Horizontal and Torsional Loads of an Ultra Large Containership**

Yuwen Liu, Hui Li, Kaihong Zhang, Baoli Deng, Yakang Peng, Harbin Engineering Univ, China

**144. RENEWABLE ENERGY XV:  
Offshore Wind - Design & Install (V. 1)**

**Thursday June 29 16:20 Grand C**

**Chair:** Moo-Hyun Kim, Texas A&M Univ, USA

**Cable Route Optimization for Offshore Wind Farms in Morphodynamic Areas**

Thomas Roetert, Tim Raaijmakers, Bas Borsje, Deltares, Netherlands

**A Study of New Installation Concepts of Offshore Wind Farms By Means Of Simulation Model**

Abderrahim Ait Alla, Stephan Oelker, Marco Lewandowski, Michael Freitag, Klaus-Dieter Thoben, Univ of Bremen, Germany

**Challenges in Using Operational Data for Reliable Wind Turbine Condition Monitoring**

Jannis Tautz-Weinert, Simon J Watson, Loughborough Univ, UK

**WFSV-PL: An Hybrid Carbon Composite Wind Farm Supply Vessel [Proceedings only]**

Valerio Costa, Naval architect; Dario Boote, Gianmarco Vergassola, Tatiana Pais, Alberto Ferrari, Univ of Genoa, Italy; Karol Sugalski, Maritime Univ of Szczecin, Poland

**145. SUBSEA, PIPELINES, RISERS XII:**

**Thursday June 29 16:20 RegencyAB**  
**Panel**

**Chair:** Howard H Wang, ExxonMobil Production Co., USA

**146. HPM XI:  
Fatigue and Fracture 3 & Tubulars (V4)**

**Thursday June 29 16:20 RegencyC**

**Chair:** Stefan Herion, KoRoH GmbH, Germany

**Co-Chair:** Tomoya Kawabata, University of Tokyo, Japan

**Numerical Simulation of SENT Tests for Welded X80 Line Pipes [Oral presentation]**

Yasuhiro Shinohara, Nippon Steel & Sumitomo Metal; Eiji Tsuru, Nippon Steel & Sumikin Technology; Takuya Hara, Nippon Steel & Sumitomo Metal, Japan

**Buckling of Multiple Inside Geometry (MIG) Hollow Sections**

Oliver Fleischer, Stefan Herion, KoRoH GmbH; Peter Lang, Stephan Scheri, Vallourec Deutschland GmbH, Germany

**Beam Element Including Local Member and Joint Plasticity Effects**

Lasse Tidemann, Steen Krenk, Technical Univ of Denmark, Denmark

**Study on Rectification Method on Cruciform Joint Exceeding IACS Fabrication Tolerance**

Sang-Woo Lee, Yong-Woon Kim, Kyung-Seok Lee, Dong-Ju Jeong, Ki-Sub Choi, Jung-Sin Jae, Daewoo Shipbuilding & Marine Engineering, Korea

**Perforated Steel-to-Composite Joints under Static and Dynamic Loading**

Sarah E Mouring, US Naval Academy, USA; Luke A Louca, Reuben J Brambleby, Imperial College London, UK

**Computational Analysis of Grouted Connections**

Efstathios E Theofokoglou, Gerogia Papaefthimiou, National Technical Univ of Athens, Greece

*isope*

## KEYNOTE

Thursday June 29 16:20 Harbour

**Introduction:** Seok-Won Hong, KRISO, Korea

**Senvion Wind Turbine on Floating Platform – Approach, Engineering Results, Projects and Prospects from a Turbine Manufacturer’s Point of View [Oral presentation]**  
Ricard Buils Urbano, DNV GL, UK

### 147. RENEWABLE ENERGY XVI: Offshore Wind - Design & Energy Storage (V. 1)

Thursday June 29 16:20 Harbour

**Chair:** Robert L Waid, Marine Development Associates, USA

**How does Accuracy of Weather Forecasts Influence the Maintenance Cost in Offshore Wind Farms?**  
Helene Seyr, Michael Muskulus, NTNU, Norway

**Preventative Maintenance Optimization for Offshore Wind Turbine Gearbox**  
Jichuan Kang, Mingxin Li, Liping Sun, Mian Wang, Harbin Engineering Univ, China

**Assessment of Wind/Wave Basin Capability for Emulating Active Blade Pitch and Generator Control Influence on Floating Wind Turbine Response**  
Christopher K Allen, Andrew J Goupee, Univ of Maine, USA

**Wind Tunnel Validation of a Wind Observer for Wind Farm Control**  
Filipo Campagnolo, Johannes Schreiber, Andrea Martínez Garcia, Carlo L. Bottasso, Technical Univ of Munich, Germany

**About the Ageing within Lithium-ion Battery Systems**  
Thorsten Grün, Kevin Stella, Karlsruhe Inst of Tech, Germany

**Performance Evaluation of Household Li-Ion Battery Storage Systems**  
Nina Munzke, Bernhard Schwarz, Karlsruhe Inst of Technology, Germany

### 148. OCEAN TECHNOLOGY XV: Float-over Installation Instalation 2 (V. 1)

Thursday June 29 16:20 Bayside

**Chair:** Bo Woo Nam, KRISO, Korea

**Experimental Analysis of the Station Keeping Response of a Double-barge Float-over System with an Elastically Scaled Physical Model**  
Daniele Dessi, Edoardo Faiella, Francesco Saltari, Marine Technology Research Center; Corrado Pigna, Cristiano Celli, Thiago Miliante, Enrico Di Paolo, TechnipFMC, Italy

**Dynamic Analysis of a Long Surface Casing during Installation into a Subsea Well**  
Marcio Yamamoto, Ken Takagi, Ryota Wada, Univ of Tokyo, Japan; Cristiano Agostini, Univ of Sao Paulo; Edgard B Malta, Technomar, Brazil

**Inverse Kinematics of 2-DOF Rotary Crane Systems Fixed on Two Floating Barges for Collaborative Tasks during Offshore Installation Operations**  
Jun-Hyeok Bae, Ju-Hwan Cha, Sol Ha, Ming-woo Koo, Doo-Yeoun Cho, Mokpo National Univ, Korea

**Modeling Patterns for Performance Analyses of Offshore Production Systems**

Huixing Meng, Ecole Polytechnique; Leila Kloul, Univ de Versailles, France; Antoine Rauzy, NTNU, Norway

**Analysis of Shallow Conductor Dynamics and Subsea Wellhead Stability Considering Sand Liquefaction**

Deqiang Tian, Honghai Fan, Chaowei Li, Zixiang Wen, Yuhan Liu, Wenlong Jiang, China Univ of Petroleum-Beijing, China

**149. ADVANCED SHIP TECH VIII:  
Powering 2 (V. 4)**

**Thursday June 29 16:20 Sand. AB**

**Chair:** Evangelos Boulougouris, University of Strathclyde, UK

**Simulation of a Ship Propulsion System Performance during Manoeuvring in Shallow Waters**

Panagiotis Mizythras, Christos Pollalis, Evangelos Boulougouris, Gerasimos Theotokatos, Univ of Strathclyde, UK

**Feasibility Study on Thrust Produced by Stabilizing Fins in Waves**

Jerzy Edward Matusiak, Aalto Univ; Patrik Pentti Rautaheimo, Elomatic Ltd, Finland

**Non-Cavitation Noise Numerical Simulation of Propeller behind Ship Hull**

Shuai Sun, Xin Chang, Hongyu Zhang, Liyu Ye, Harbin Engineering Univ, China

**Experimental Studies on Hydrodynamics of a Floater-Adjusted Wave Propulsion Device**

Hongbin Hao, Harbin Engineering Univ, China; Qingwei Ma, City Univ London, UK; Kangping Liao, Xing Zheng, Harbin Engineering Univ, China

**Prediction of Hydrodynamic Performance for Rim-driven Thruster**

Tao Yang, Ziru Li, Keqiang Chen, Wei He, Wuhan Univ of Tech, China

**Modeling and Analysis of Under-actuated Parallel-Link Mechanism for Motion Reduction Device of Ship**

Akihiro Morinaga, Ikuo Yamamoto, Nagasaki Univ, Japan

**Effect of Rotating Disc and Flow Separation Phenomena on the Performance of a Marine Cycloidal Propeller**

Joseph Prabhu J, Vishwanath Nagarajan, Mohammed Rabius Sunny, Om Prakash Sha, IIIT Kharagpur, India

**150. GEOTECH X: Panel**

**Thursday June 28 16:20 Sand. CD**

**Chair:** Haydar Arslan, ExxonMobil Production Co., USA

**Co-Chair:** Yun Wook Choo, Kongju National Univ, Korea

**151. UNDERSEA V: Panel (V. 2)**

**Thursday June 29 16:20 Sand. E**

**Chair:** S Yamaguchi, Kyushu Univ, Japan

**FRIDAY 08:00 – 17:00**

**152. RENEWABLE ENERGY XVII:**

**IEA Wind OC5 Workshop**

**Friday June 30 08:00 Sandpebble E**

**Chair:** Fabian Vorpahl, SEVION, Germany

**Co-Chair:** Amy Robertson, NREL, USA

**153. RENEWABLE ENERGY XVIII:**

**IEA Wind OC5 Workshop**

**Friday                      June 30                      10:30                      Sandpebble E**

**Chair:** Fabian Vorpahl, SEVION, Germany

**Co-Chair:** Amy Robertson, NREL, USA

**154. RENEWABLE ENERGY XIX:**

**IEA Wind OC5 Workshop**

**Friday                      June 30                      14:00                      Sandpebble E**

**Chair:** Fabian Vorpahl, SEVION, Germany

**Co-Chair:** Amy Robertson, NREL, USA

**155. RENEWABLE ENERGY XX:**

**IEA Wind OC5 Workshop**

**Friday                      June 30                      16:20                      Sandpebble E**

**Chair:** Fabian Vorpahl, SEVION, Germany

**Co-Chair:** Amy Robertson, NREL, USA

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