# TECHNICAL PROGRAM

## The Fourteenth (2004) International Offshore and Polar Engineering Conference

Toulon, France, May 23–28, 2004

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-2004 Technical Program Committee (TPC) received in writing before December 24, 2003 are reflected in this program. Final corrections will be updated in the Conference Proceedings and the Final Program. Proceedings CD-ROM will be available as a set of 4 volumes (2,800 pp. est.) from ISOPE during and after the Conference.

## SUNDAY

**Conference Reception**
**18:00 Sunday,** May 23 **Hotel Mercure**

## MONDAY 08:30

### Conference Opening Addresses

by
National and Regional Authorities, France

### 1. OCEAN TECHNOLOGY REVIEW (V. 1)

Monday May 24 08:30 Vauban

**Chair**: Herrouin, G, Ifremer, France
**Co-Chair**: Ueda, Y, Osaka University, Japan

**Perspectives in Operational Oceanography**
Jean-Francois Minster, President, Ifremer, France

**Challenges Encountered While Constructing the World's Largest Spar**
Stephen R. Perryman, Holstein Spar Manager, BP, Houston, USA

**The World's First Dual FSO for LNG/Condensate**
Han, Sung Yong, SamSung Heavy Industries, Korea

**Deep-sea Neutrino Telescope ANTARES**
John Carr, Centre de Physique des Particules de Marseille, France

# MONDAY 13:20

Plenary Presentation I (V.3)

**Monday** May 24 13:20 Vauban

**Numerical Modeling of Environmental Impact Assessment of Ocean Structures**
Kyozuka, Y, Kyushu Univ, Japan
Introduction by Choi, Hang S, Seoul National Univ, Korea

## 2. OFFSHORE I: Subsea Installation & Operations (V. 1)

Monday May 24 14:00 Vauban

**Chair**: Teigen, P, Statoil, Norway
**Co-Chair**: Duggal, A, FMC-SOFEC, TX, USA

**Template Installation Offshore – Wave Diffraction Effects on Splash Zone Forces**
Reinholdtsen, S-A, Braaten, H, Sandvik, P, MARINTEK, Norway

**Vertical, Resonant Response of Suspended Objects during Subsea Installation Operations**
Teigen, P, Statoil, Norway

**Numerical Prediction of Wave Loads on Subsea Structures in the Splash Zone**
Buchner, B, Bunnik, T, Loots, E, MARIN, The Netherlands

**Experimental Investigation of Subsea Structures during Installation and the Related Wave Loads, Added Mass and Damping**
Bunnik, T, van der Wal, R, MARIN, The Netherlands

**The Interaction Effects of Mooring in Close Proximity of Other Structures**
De Wilde, J, Buchner, B, de Boer, G, MARIN, The Netherlands

**FPSO Roll Response**
Waals, O J, MARIN; van der Cammen, J J, Bluewater Energy Services, The Netherlands

**Experiences with Designing and Testing ABB's Subsea Heatbank**
Friedmann, J D, Lussier, C, Damsleth, P, Scigliano, M, ABB Offshore System, Norway

**Torsional Capacity of Subsea Foundations**
Finnie, I M S, Morgan, N, Lloyds Register, UK

## 3. METOCEAN I: Waves (V. 3)

Monday May 24 14:00 Colbert

**Chair**: Prevosto, M, Ifremer, France
**Co-Chair**: Athanassoulis, G A, National Technical Univ of Athens, Greece

**Freak Waves and Their Conditional Probability Problem**
Haver, S K, Vestbxstad, T M, Andersen, O J, Statoil; Jakobsen, J B, Stavanger University College, Norway

**Sensitivity Study of Sea State Parameters in Correlation to Extreme Wave Occurrences**
Olagnon, M, IFREMER, France; Magnusson, A K, Norwegian Meteorological Inst, Norway

**Wavelet Transform Technique for Analysis of Freak Waves and Its Impact**
Kwon, S H, Lee, H S, Kim, C H, Texas A&M Univ, USA

**Joint Time-frequency Properties of Freak Waves**
Shin, Y J, Kim, T H, Powers, E J, Univ of Texas at Austin; Kim, N S, Kim, C H, Texas A&M Univ, USA

**Successive Wave Crests in Gaussian Seas**
Fedele, F, Univ of Vermont, USA; Arena, F, Univ "Mediterranea" of Reggio Calabria, Italy

**Velocities for Non-Gaussian Seas**
Baxevani, A, Rychlik, I, Lund Univ, Sweden

**The Occurrence of Extreme Crests and the Nonlinear Wave-wave Interaction in Deep-water Random Seas**
Fedele, F, Univ of Vermont, USA

## 4. HYDRO Dynamics and Forces I (V. 3)

Monday May 24 14:00 Bonaparte

**Chair**: Choi, H S, Seoul National University, Korea
**Co-Chair**: Noblesse, F, David Taylor Model Basin; USA

**Directional Metocean Criteria for Mooring and Structural Design of Floating Offshore Structures**
Francois, M, Bureau Veritas; Quiniou-Ramus, V, TOTAL; Legerstee, F, Vazeille, A, Bureau Veritas, France

**On the Development and Validation of the Fluid-structures-interaction Model for a Numerical Wave-maker**
Derradji-Aouat, A, Inst for Marine Dynamics, NRC, Canada

**Fully Nonlinear Wave Interactions with Floating Bodies Undergoing Large Motions**
Koo, W C, Kim, M H, Texas A&M Univ, USA

**Radiation and Diffraction Problems of a Floating Body in a Two-layer Fluid of Finite Depth**
Kashiwagi, M, Ten, I, Kyushu Univ, Japan

**Investigations on Hydrodynamic and Mechanical Coupling Effects for Deepwater Offloading Calm Buoy**
Berhault, C, Gerin, P, Ricbourg, C, Heurtier, J M, Principia RD, France

**Experimental Study of the Non-linear Wave Interaction with a Vertical Plate**
Molin, B, Remy, F, Kimmoun, O, Ecole Superieure d'Ingenieurs de Marseille, France

**Forces on a Vertical Cylinder Given by Random High Wave Groups Interacting with a Current**
Arena, F, Romolo, A, Univ "Mediterranea" di Reggio Calabria, Italy

**Visualization of Floating Body Responses Using Java 3D™**
Mathai, T, The Glosten Associates, USA

**Application of Direct Boundary Element Method to Three Dimensional Hydrodynamic Analysis of Interaction between Sea Waves and Floating Offshore Structures**
Kazemi, S, Incecik, A, Univ of Newcastle upon Tyne, UK

**Free Vibrations of Elastically Supported, Semi-submerged Horizontal Rectangular Cylinder**
Sulisz, W, Wilde, P, Wisniewski, M, Polish Academy of Sciences, Poland

## 5. GEOTECH I: Centrifuge Modeling & Piles (V. 2)

Monday May 24 14:00 Port cros, Hotel

**Chair**: Allersma, H, Delft Univ of Technology, The Netherlands
**Co-Chair**: Garnier, J, Laboratoire Central des Ponts et Chausses, France

**Centrifuge Research on Methods Improving Capacity Offshore Foundation Systems**
Allersma, H G B, Delft Univ of Technology, The Netherlands

**Centrifuge Investigation of the Installation and Lateral Response of Pile Groups in Sand**
Ghosh Roy, D, Bransby, M F, Univ of Dundee, UK

**Centrifuge Modeling of Laterally Loaded Pile in Cemented Calcareous Soils**
Ismail, M, Stewart, D, Univ of Western Australia, Australia

**Centrifuge Tests on Some Soil-structure Interaction Problems**
Allersma, H G B, Delft Univ of Technology, The Netherlands

**Centrifuge Modeling of LANPL Transportation in Sand Deposits by Ground Water Flow**
Hayashi, Y, Allersma, H G B, Delft Univ of Technology, The Netherlands

**Offshore Pile Design and Monitoring at the Ieodo Ocean Research Station**
Yoon, G l, Shim, J S, Korea Ocean R&D Inst, Korea

**Experimental Study on the Circular Rock-Filled Cages Skirted Group Piles Capacity in Kao-Ping River**
Shao, K Y, I-Shou Univ; Chen, S C, Tsai, C L, Ministry of Transportation & Communication, Taiwan, China

**The Capacity of Circular and Square Sheet Pile Foundation on Sand under Combined Loading**
Punrattanasin, P, Khon Kaen Univ, Thailand; Izawa, J, Kusakabe, O, Tokyo Inst of Technology, Japan

## 6. DECOMMISSIONING I: (V. 1)

Monday May 24 14:00 Porquerolles, Hotel

**Chair**: Capanoglu, C, IDEAS, USA

**Comparative Assessment of Decommissioning Application of Typical North Sea and the Gulf of Mexico Approaches to Several Categories of Offshore Platforms in the Middle East**
O'Connor, P E, BP Amoco Corp, USA

**Decommissioning of Offshore Platforms: Overview of Recent Platform Removals and Contracting Strategies**
Van Voorst, O, Platform Brokers, The Netherlands

**Decommissioning of Platforms Hope, Heidi, Hazel and Hilda**
Basavalingandoddi, C, California State Lands Commission, USA

**Removal and Deconstruction of Maureen Alpha Platform – The World's Largest Gravity Based Steel Structure**
Kristing, K, Aker Kvaerner Offshore Partners, Norway

**The Sub Bottom Cutter (SBC)Project: New, Safe and Environment-friendly Technology for Decommissioning Offshore Structures**
Grant, E, Cutting Underwater Technologies Ltd (CUTUK), UK; de Martino, L, TS Tecnospamec, Italy

**Decommissioning of Offshore Platforms Utilizing Cost Effective Single Lift Technology**
Andresen, J F, SeaMetric International, Norway

**Simulation of Navigational Aids during Offshore Field Cessation**
Kjerstad, N, Bjoerneseth, O, Aalesund University College, Norway

**The Decommissioning of Submerged Structures: Prototype Equipment Design and Assessment**
Cavallo, E, Michelini, R C, Molfino, R M, Univ of Genova, Italy

## 7. HYDRATES AND MINING I (V. 1)

Monday May 24 14:00 Raimu 1

**Chair**:Komai, T, AIST, Japan

**Engineering Significance and Consequences of Gas Hydrate in Deep and Ultra Deep Water Development**
Kumar, P, Sonawane, A K, Oil and Natural Gas Corp, India

**Analytical Estimation of Seabed Deformation in Methane Hydrate Production**
Ogisako, E, Nishio, H, Okuno, T, Shimizu Corp, Japan

**The Impact of the Porous Microstructure of Gas Hydrates on Their Macroscopic Properties**
Kuhs, W F, Genov, G, Goreshnik, E, Klapp, S, Staykova, D K, Univ of Goettingen, Germany

**Measurement of Thermal Conductivity of Artificial Hydrate Sediment Sample**
Yamamoto, Y, Kawamura, T, Ohtake, M, Komai, T, National Inst of AIST ; Nakagawa, F, Tsuji, T, Nihon Univ ; Tsukada, Y, National Inst of AIST, Japan

**Laboratory Evidence of Microbial-Sediment-Gas Hydrate Synergistic Interactions in Ocean Sediments**
Rogers, R E, Zhang, G, Woods, C E, Dearman, J L, Mississippi State Univ, USA

**Effect of Methane Hydrate in Pore Space on Mechanical Properties of Sand**
Nishio, S, Ogisako, E, Abe, T, Shimizu Corp ; Akagawa, S, Hokkaido Univ, Japan

**Dissociation Behavior of Methane Gas Hydrate in Silicone Oil at the Temperature Condition of Under 0**
Kawamura, T, Yamamoto, Y, Yoon, J H, Sakamoto, Y, Komai, T, Haneda, H, Ohtake, M, National Inst of AIST ; Ohga, K, Hokkaido Univ, Japan

## 8. FLOW-INDUCED VIBRATIONS I (V. 3)

Monday May 24 14:00 Raimu 2

**Chair**: Fontaine, E, Institut Français du Petrole, France
**Co-Chair**: Otsuka, K, Osaka Prefecture Univ, Japan

**Coupled RANS Methods to Study Full-scale SPAR Vortex Induced Motion**
Woodburn, P, Gallagher, P, Atkins Process, UK

**Multi-modal Response of Long Marine Risers in Severe Sheared Flows**
Lucor, D, Brown Univ; Triantafyllou, M S, MIT; Karniadakis, G E, Brown Univ, USA

**Experimental and Numerical Study on Vortex Induced Vibration of Long Risers**
Senga, H, Hong, Y P, Koterayama, W, Kyushu Univ, Japan

**Laboratory Investigation of Long Riser VIV Response**
De Wilde, J, Huijsmans, R, MARIN, The Netherlands

**Motion Trajectory of Bare and Suppressed Tubulars Subjected to Vortex Shedding at Subcritical and Critical Reynolds Numbers**
Lee, L, Allen, D W, Henning, D L, Shell Global Solutions (US), USA

**Wind-induced Vibrations Assessed with CFD and Fluid-structure Interaction Coupling**
Herfjord, K, Selstad, H, Norsk Hydro, Norway

**Flow-induced Vibrations of a High Mass Ratio Filament**
Schouveiler, L, Eloy, C, Le gal, P, IRPHE, France

**SCR Fatigue Life Associated to VIV and Soil Interaction**
Fontaine, E, Institut Français du Petrole, France

## 9. POLAR & ICE I: Polar Research (V. 1)

Monday May 24 14:00 Dumont

**Chair**: Chung, J, ISOPE, Cupertino, CA, USA
**Co-Chair**: Voelker, R P, US Maritime Administration, USA

**New Generation Polar Research Vessel Design Initiated**
Voelker, R P, US Maritime Administration; Sutherland, A, National Science Foundation; Owen, H, Olsgaard, P, Holik, J, Raytheon Polar Services; St. John, J, Iyerusalimiskiy, A, Karnes, D, Science & Technology Corp, USA

**MABEL — The First Seafloor Observatory for Multidisciplinary Long-term Monitoring in Polar Environment**
Cenedese, S, Tecnomare SpA; Calcara, M, INGV, Italy; Evers, K-U, HSVA, Germany; Favali, P, INGV; Gasparoni, F, Tecnomare SpA, Italy

**RV "MARIA S. MERIAN": A Medium-sized Ice-margin Research Vessel for Polar Research**
Von Broeckel, K, Univ of Kiel, Germany

**Sea Ice Variations in Lutzow-Holmbukta, Antarctica, Derived from Ice Navigation Log during the Period of 1980-2003**
Ushio, S, National Inst of Polar Research, Japan

**The CCGS *Amundsen*: a Canadian research icebreaker for international collaboration in the study of the changing Arctic** [Oral Presentation Only]
Louis Fortier, Martin Fortier, Université Laval, Canada

**Calibrations of the Electromagnetic-inductive (EMI) Measurements for the Winter Antarctic Sea-ice and Snow in the 110-120oE Sector**
Tateyama, K, Shirasawa, K, Hokkaido Univ; Uto, S, National Maritime Research Inst; Enomoto, H, Kitami Inst of Tech; Tamura, T, Hokkaido Univ; Muto, Chiba Univ; Ushio, S, NIPR, Japan; Lytle, V, Worby, T, Massom, R, Univ of Tasmania, Australia

**Internet-based Teleoperation of the Romeo ROV in Polar Environments**
Caccia, M, Bono, R, Bruzzone, G, Spirandelli, E, Veruggio, G, CNR – ISSIA Sez. Di Genova, Italy

## 10. MECHANICS & STRUCTURES I (V. 4)

Monday May 24 14:00 Puget

**Chair**: Karadeniz, H, Delft Univ of Technology, The Netherlands
**Co-Chair**: Kawano, K, Kagoshima Univ, Kagoshima, Japan

**Inelastic Large Deflection Analysis of Plates and Stiffened Panels due to Global Buckling**
Chen, Y, Technip Offshore, USA

**Performance of a Novel Self Installing Platform Concept**
Pinna, R, Cole, G K, Murphy, D, Univ of Western Australia, Australia

**Development of Towing Support Tool Named Optimum Towing Support System (OTSS)**
Hara, S, Yamakawa, K, Hoshino, K, Yukawa, K, Hasegawa, J, Tanizawa, K, Ueno, M, National Maritime Research Inst, Japan

**Shapes of Submerged Funicular Arches**
Chai, Y H, Univ of California Davis, USA; Wang, C M, National Univ of Singapore, Singapore

**Strength Assessment of Hatch Covers for Existing Cape Size Bulk Carriers**
Ergas, I, Zheng, Y L, Dracos, V, Univ of Glasgow and Strathclyde, UK

**Optimum Temperature of Brine Heating System for Above-ground LNG Storage Tank**
Oh, B T, Hong, S H, Yang, Y M, Kim, Y K, Korea Gas Corp, Korea

**Cost-effective Rehabilitation of Kao-Ping Bridge across the Kao-Ping River**
Shao, K Y, I-Shou Univ; Chen, S C, Tsai, C L, Ministry of Transportation & Communications, Taiwan, China

**Experimental and Numerical Examination on Accuracy of Caustics Method**
Mori, T, Kanawa Univ; Shozu, M, Maizuru Nat'l College of Tech; Hirose, H, Kinjo Univ, Japan

# TUESDAY 08:00

## 11. OFFSHORE II: Nonlinear Wave Loads (V. 1)

Tuesday May 25 08:00 Vauban

**Chair**: Duggal, A, FMC-SOFEC, USA
**Co-Chair**: Teigen, P, Statoil, Norway

**An Improved Volume of Fluid Method for Wave Impact Type Problems**
Kleefsman, K M T, Veldman, A E P, Univ of Groningen, The Netherlands

**Validation of Second-order Analysis in Predicting Diffracted Wave Elevation around Vertical Cylinders**
Kristiansen, T, Baarholm, R, Stansberg, C T, MARINTEK, Norway

**Wave Impacts on Ship-type Offshore Structures in Steep Fronted Waves**
Voogt, A, Buchner, B, MARIN, The Netherlands

**Prediction of Green Sea Loads on FPSO in Random Seas**
Stansberg, C T, Berget, K, Hellan, O, Hermundstad, O A, Kristiansen, T, MARINTEK ; Hansen, E, Complex Flow Design, Norway

**Coupling Freak Wave Events with Green Water Simulations**
Huijsmans, R H M, MARIN, van Groesen, E, Univ of Twente, The Netherlands

**Influence of Breakwaters in Reducing the Effects of Green Water Loading Onboard High Speed Container Vessels Using CFD**
Varyani, K S, Pham, X P, Univ of Glasgow and Strathclyde, UK

**Scale Experiments for the Measurement of Motions and Wave Run-up on a TLP Model Subjected to Monochromatic Waves**
Chatjigeorgiou, I K, Mavrakos, S A, Grigoropoulos, G, National Technical Univ of Athens, Greece; Maron, A, Canal de Experiencias Hidrodinamicas de El Pardo, Spain

## 12. METOCEAN II: Waves & Sea State 1 (V. 3)

Tuesday May 25 08:00 Colbert

**Chair**: Jenkins, A D, University of Bergen, Norway
**Co-Chair**: Tanizawa, T, National Maritime Research Inst, Japan

**Experimental Study on Arrayed Buoy GPS Wave Information System – Results of Comparison between GPS Buoy System and Acoustic Wave Height Meter**
Hou, S, Kouguchi, N, Kobe Univ; Fujii, H, Oshima National College of Maritime Tech; Ishida, H, Kobe Univ; Deguchi, I, Osaka Univ, Japan

**Wave Measurements by X-band Radar: From Spectral to Single Wave Detection**
Hessner, K, Reichert, K, Dittmer, J, OceanWaveS GmbH, Germany

**On the Return Period of Non-linear High Wave Crests during Storms**
Arena, F, Univ "Mediterranea" of Reggio Calabria, Italy

**Verification of a Simplified Double Peak Spectral Model for Ocean Waves**
Torsethaugen, K, SINTEF; Haver, S, Statoil, Norway

**Dangerous Sea-state for Marine Operations**
Toffoli, A, Katholieke Univ Leuven, Belgium; Lefevre, J-M, Meteo-France, France; Monbaliu, J, Katholieke Univ Leuven, Belgium; Bitner-Gregersen, E, Det Norske Veritas, Norway

**Comparative Analysis of Wave Regimes Obtained with TRANSFER and MAR3G Methodologies**
Capitao, R, Fortes, C J, LNEC; Carvalho, F, Inst de Meteorologia, Portugal

## 13. HYDRO Dynamics and Forces II (V. 3)

Tuesday May 25 08:00 Bonaparte

**Chair**: Chaplin, J R, Southampton Univ, UK
**Co-Chair**: Ikeda, Y, Osaka Prefecture Univ, Japan

**Wave Forces on an Array of Vertical Circular Cylinders: Experimental Study on the Second Order near Trapping**
Contento, G, D'Este, F, Sicchiero, M, Codiglia, R, Calza, M, Univ of Trieste, Italy

**An Experimental Study of Wave Drifting Force Free Model**
Terao, Y, Ishida, K, Yamada, Y, Senou, T, Tokai Univ, Japan

**Numerical and Experimental Study of Flow Characteristics around Two Vertical Cylinders**
Shin, Y S, Halla Univ; Jo, C H, Inha Univ, Korea

**Viscous Flow across a Translating Circular Cylinder**
Chen, B F, Chu, C C, National Sun Yat-sen Univ, Taiwan, China

**Gaussian- and Non-Gaussian-input Method for Extraction of QTFs from Test Data of Offshore Structures**
Kim, N S, Kim, C H, Texas A&M Univ, USA

## 14. GEOTECH II : Piles & Caissons (V. 2)

Tuesday May 25 08:00 Port cros, Hotel

**Chair**: Bransby, M F, Univ of Dundee, UK

**A Case Study on the Sand Compaction Pile (SCP) at Busan Newport Project in Korea**
Kim, S S, Hanyang Univ; Kim, J K, Byun, K J, Samsung Corp, Korea

**Assessment of the Effects of Faults Intersecting TLP Pile Foundation: A Case History Review**
Audibert, J M E, Al-Khafaji, Z, Fugro-McClelland Marine Geosciences; Campbell, K, Fugro Geoservices; Guion, J, El Paso, USA

**Axial Capacity of Caissons in Clay Installed by Jacking and by Suction**
Chen, W, Randolph, M, Univ of Western Australia, Australia

**Inclined Pull-out of Suction Caissons**
Supacharawote, C, Gourvenec, S, Univ of Western Australia, Australia

**Uplift Capacity of Buried Offshore Pipelines**
El-Gharbawy, S L, Morgan, V, C-CORE, Canada; Olipant, J, Fisher, R, Technip Offshore (UK), UK

**Engineering Properties and Pile Shaft Resistance for Clayey Ground in Sunan Area of China**
Shi, M L, Southeast Univ; Xia, Z X, Transportation Bureau of Wuxi City, China

**Characteristics of Hardened Cement Slurry in Bored Precast Pile**
Suzuki, N, Chuken Consultant; Nguyen, Q H, Tamano, T, Kanaoka, M, Osaka Sangyo Univ, Japan

## 15. DECOMMISSIONING II: Panel (V. 1)

Tuesday May 25 08:00 Porquerolles, Hotel

**Chair**: O'Connor, P E, BP Amoco Corp, USA

**The New DnV Recommended Practice (DnVRP) for Marine Operations During the Removal of Decommissioned Offshore Platforms**
Alvaer, P O, Det Norske Veritas, Norway

**Safety Considerations in Offshore Decommissioning**
Billington, C J, Bolt, H M, Williams, J R, BOMEL Limited, UK

**20 Years of Decommissioning Experience in the Gulf of Mexico, How Does It Translate to the Rest of the World?**
Thornton, W, WINMAR Consulting Services, Inc, USA

**Followed by Panel Discussions.**

## 16. HYDRATES AND MINING II (V. 1)

Tuesday May 25 08:00 Raimu 1

**Chair**:Yamazaki, T, AIST, Japan
**Co-Chair**: Rogers, R E, Mississippi State Univ, USA

**Gas Hydrate Extraction from Marine Sediments by Heat Stimulation Method**
Komai, T, Sakamoto, Y, Kawabe, Y, Kawamura, T, Yamamoto, Y, AIST, Japan

**Numerical Simulation of a Droplet Behavior Using Unstructured Mesh**
Rho, T J, Hong, G S, KRISO/KORDI, Korea; Sato, T, Univ of Tokyo, Japan

**Experimental and Numerical Analysis of Flow Characteristics for Two-phase Mixture through Lifting Pipe of On-land Hydraulic Lifting System**
Yoon, C H, Lee, D K, Park, Y C, Kwon, K S, Kwon, S K, Korea Inst of Geoscience & Mineral Resources, Korea

**Development of Solid-liquid-gas Three-fluid Transient Model for Air-lift System**
Yoon, C H, Park, Y C, Lee, D K, Kwon K S, Kwon, S K, Korea Inst of Geoscience & Mineral Resources ; Kwon, O K, Korea National Oil Corp, Korea

**Model Tests of Ocean Nutrient Enhancer « TAKUMI » in Deep-sea Basin**
Maeda, K, Tamura, K, Kokubun, K, Ohkawa, Y, Yago, K, Takai, R, Shintomi, K, National Maritime Research Inst, Japan

**Concept for a Wave Driven Mechanical Artificial Downwelling System (Meadows-1)**
Handschuh, R, Schulte, E S, Germany

## 17. FLOW-INDUCED VIBRATIONS II (V. 3)

Tuesday May 25 08:00 Raimu 2

**Chair**: Koterayama, W, RIAM, Kyushu Univ, Japan
**Co-Chair**: Huang, S, Univ of Glasgow and Strathclyde, UK

**Mean Wake Flow and Drag on Downstream Cylinder**
Huang, S, Bai, W, Univ of Glasgow and Strathclyde, UK

**Analytical Methods for Calculation of In-plane and Out-of plane Eigenmodes and Eigenfrequencies of SCRs**
Averbuch, D, Le Cunff, C, Martins, A, Biolley, F, Institut Francais du Petrole, France

**Control of Vortex Shedding Passed Cylinders**
Bruneau, C H, Mortazavi, I, Univ Bordeaux 1, France

**Vortex Shedding Reduction in 3D Wakes Using Belt Actuators and Genetic Algorithms**
Poncet, P, INSA Toulouse, France; Koumoutsakos, P, Swiss Federal Inst of Technology, Switzerland

**Effect of Helical Strakes on Hydrodynamic Forces on an 8-shaped Oscillating Cylinder**
Mikata, N, Otsuka, K, Osaka Prefecture Univ, Japan

**Control of Wind-induced Nonlinear Oscillations in Suspended Cables**
Abdel-Rohman, M, Kuwait Univ, Kuwait

## 18. POLAR & ICE II: Ice Engineering 1 (V. 1)

Tuesday May 25 08:00 Dumont

**Chair**: Izumiyama, K, National Maritime Research Institute, Japan

**A Simple Stefan Approach to Freezing of Salt Water at a Cold Plane Surface**
Weber, J E, Univ of Oslo, Norway

**The Mechanical Properties of Refrozen Cracks**
Langhorne, P J, Univ of Otago; Haskell, T G, Industrial Research, New Zealand

**An Energy Conserving Oceanographic Profiler for Use under Mobile Ice Cover: ICYCLER**
Fowler, G A, Siddall, G R, Prinsenberg, S J, Bedford Inst of Oceanography, Canada

**Peculiarity of Heat and Water Vapor Exchange at the Ocean Surface in the Presence of Ice Floes**
Yegorov, K L, Russian State Hydrometeorological Univ, Russia

**Long-range Forecasting of the Iceberg Population on the Grand Banks**
Peterson, I K, Bedford Inst of Oceanography, Canada

**Synergy of Active and Passive Satellite Microwave Data: Application for Studies of Ice Conditions and Navigation in the Seasonally Ice-covered Seas**
Kouraev, A V, CESBIO; Papa, F, LEGOS; Mognard, N M, CESBIO, France; Buhariain, P I, Water Problems Inst of RAS, Russia

## 19. MECHANICS & STRUCTURES II (V. 4)

Tuesday May 25 08:00 Puget

**Chair**: Ellinas, C P, Mott McDonald Ltd, UK
**Co-Chair**: Kajaste-Rudnitski, J, Helsinki Univ of Technology, Finland

**A Study on the Control and Analysis of Buckling Distortion in Welded Structure with Thin Steel Plates**
Jang, K B, Cho, S H, Jang, T W, Samsung Heavy Industries, Korea

**Fluid Compressibility Effects on the Stochastic Dynamic Response of Fluid-structure Systems**
Bayraktar, A, Hancer, E, Karadeniz Technical Univ, Turkey

**An Axi-symmetric Finite Element for Analyses of Soil-structure and Fluid-structure Interactions**
Karadeniz, H, Delft Univ of Technology, The Netherlands

**Non-linear Dynamic Analysis of Offshore Platform Structures Using Exact Pipe Element**
Horr, A M, Gifford and Partners Consulting Engineers, UK; Safi, M, Univ of Waterloo, Canada

**Study on Non-destructive Detection System by Magnetic Characteristics**
Hashimoto, K, Tomita, Y, Osawa, N, Miyashita, T, Osaka Univ, Japan

**Effects of Fatigue and Aging on the Dynamic Behavior of Elastomeric Bearings**
Chou, H W, Huang, J S, National Cheng Kung Univ, Taiwan, China

# TUESDAY 10:40

## 20. OFFSHORE III: FPSO/TLP/VLFS 1 (V. 1)

Tuesday May 25 10:40 Vauban

**Chair**: Natvig, B J, Marine Technology Consulting AS, Norway
**Co-Chair**: Takagi, K, Osaka Univ, Japan

**Shallow Water to Deepwater Development Challenges and Opportunities in Offshore Newfoundland Environment**
Ewida, A, Hurley, S, Edison, S, Teh, C, Petro-Canada, Canada

**A New Multi-cylinder Column Design Enhances Both Structural Integrity and Cost Efficiency**
Capanoglu, C C, International Design, Engineering and Analysis Services, USA

**Motion Analysis of a New Type of Minimal Floating Platform**
Cermelli, C, Busso, C, Roddier, D, Marine Innovation & Technology, USA

**Development of the Hexagonal Floating Structure**
Izumikawa, T, Okinawa Industrial Tech Center; Nagai, M, Ameku, K, Nagai, Y, Univ of the Ryukyus; Kugai, K, Okinawa Kensetsu Kougyou; Sumida, K, Shinohara, J, Daioh Construction, Japan

**An Introduction to Extendable Draft Platform (EDP)**
Xu, Q, Xu, L X, Technip Offshore, USA

**Experimental Study on a Dolphin-fender Moored Pontoon-type Structures**
Kim, J H, Hong, S Y, Cho, S K, Park, S H, KRISO/KORDI, Korea

**ASOP, a New Generation of Offshore Platforms**
Grinius, V G, Elgamiel, H A, Offshore Model Basin, USA

## 21. METOCEAN III: Waves & Sea State 2 (V. 3)

Tuesday May 25 10:40 Colbert

**Chair**: Stansberg, C T, MARINTEK, Norway
**Co-Chair**: Rychlik, I, Lund Univ, Sweden

**A Novel Bi-variable Distribution of Long-term Wind Speed and Wave Height**
Dong, S, Wang, T, Ocean Univ of Qingdao, China; Wei, Y, Univ of Hawaii, USA

**Interaction of Ocean Waves and Currents: How Different Approaches May Be Reconciled**
Jenkins, A D, Univ of Bergen, Norway; Ardhuin, F, Service Hydrographique et Oceanographique de la Marine, France

**Cycle Distributions for Gaussian Waves: Exact and Approximative Results**
Lindgren, G, Lund Univ, Sweden; Broberg, K B, University College Dublin, Ireland

**Objective Analysis of Maximum Typhoon Wave Prediction around Taiwan Water**
Lee, B C, Huafan Univ; Fan, Y M, Yang, B M, National Cheng Kung Univ, Taiwan, China

**Modelling of Swell Spectra at a West Africa Location**
Girard, F, Optimer; Olagnon, M, IFREMER; Quiniou-Ramus, V, Total, France

**IPAS: Interactive Phenomenological Animation of the Sea**
Parenthoen, M, Jourdan, T, Tisseau, J, ENIB, France

**Neural Networks for Estimation of Wave Spectra**
Deo, M C, Namekar, S, Indian Inst of Technology, India

## 22. HYDRO Dynamics and Forces III (V. 3)

Tuesday May 25 10:40 Bonaparte

**Chair**: Kim, CH, Texas A & M Univ, USA
**Co-Chair**: Li, R P, Shanghai Jiao Tong Univ, China

**Sloshing of Partially Filled LNG Carriers**
Huijsmans, R H, Gaillarde, G, MARIN, The Netherlands; Trischler, G, DCN, France; Dallinga, R, MARIN, The Netherlands

**Numerical Simulation of 3D Sloshing Waves in Irregular Tanks**
Chen, B F, Wu, C H, National Sun Yat-sen Univ, Taiwan, China

**Numerical Simulation of Bulk Carriers' Ballast Water Exchange at Sea and Assessment of Sloshing Loads**
Arai, M, Makiyama, H S, Yokohama National Univ, Japan

**Generalized Potential Representation for Wave Diffraction-Radiation by Ships and Offshore Structures**
Noblesse, F, David Taylor Model Basin; Yang, C, George Mason Univ, USA; Khabakhpasheva, T I, Lavrentyev Inst of Hydrodynamics, Russia

**Comparison of Classical and Simple Free-surface Green Functions**
Yang, C, George Mason Univ; Noblesse, F, David Taylor Model Basin; Lohner, R, George Mason Univ, USA

**Time-Domain Simulation of Viscous Nonlinear Waves around Offshore Structures**
Chen, H C, Yu, K, Chen, S Y, Texas A&M Univ, USA

**Calculation of Steady-state Ship Wave Patterns Using a General Rankine Source Method**
Diken, O, Du, S X, Hudson, D A, Temarel, P, Univ of Southampton, UK

## 23. GEOTECH III : Piles &Anchors (V. 2)

Tuesday May 25 10:40 Port cros, Hotel

**Chair**: Wong, P C, ExxonMobil Development Co, USA

**Transition of Soil Strength during Suction Pile Retrieval in Sand**
Bang, S C, South Dakota School of Mines & Tech, USA; Cho, Y K, Daewoo E&C, Korea

**Siting Suction Caissons near Faults: A Review of Three Case Histories**
Audibert, J M E, Fugro-McClelland Marine Geosciences; Campbell, K, Fugro Geoservices, Clukey, E, BP; Stevenson, S, Dominion; Al-Khafaji, Tjok, K M, Fugro-McClelland Marine Geosciences, USA

**Analytical Study on Effect of Thickness on Consolidation Behavior of Quasi-overconsolidated Clays**
Oda, K, Matsui, T, Cho, Y S, Kamitake, H, Osaka Univ, Japan

**Evaluation of Load Bearing Mechanism for Pile with Multiple Stepped Two Diameters**
Uchida, K, Kawabata, T, Kobe Univ; Nakase, H, Tokyo Electric Power Services; Imai, M, Syoda, D, Ooishi, J, Kobe Univ, Japan

**Penetration Analysis of Drag Embedment Anchors in Soft Clays**
Ruinen, R, Vryhof Anchors, The Netherlands

**The Use of Inflatable Anchors in Offshore Sand and Clay Soils**
Newson, T A, Smith, F W, Univ of Dundee; Brunning, P, Stolt Offshore, UK

**Strengthening of Rectangular Reinforced Concrete Plates with Fiber Reinforced Plastics**
Lin, F M, Hu, H T, National Cheng Kung Univ, Taiwan, China

## 24. ROV KAIKO ACCIDENT: Review and Analysis (V. 2)

Tuesday May 25 10:40 Porquerolles, Hotel

**Chair**: Michel, J-L, Ifremer, France
**Co-Chair**: Hong, S W, Korea Research Inst of Ship and Ocean Eng, Korea

**Loss of the Full Ocean Depth ROV Kaiko: Part 1. Full Ocean Depth ROV Kaiko – A Review**
Momma, H, JAMSTEC, Japan

**Loss of the Full Ocean Depth ROV Kaiko: Part 2. Search for the ROV Kaiko Vehicle**
Tashiro, S, JAMSTEC, Japan

**Loss of the Full Ocean Depth ROV Kaiko: Part 3. Analysis of the Accident**
Watanabe, M, JAMSTEC, Japan

## 25. MATERIALS/WELDING/FATIGUE I (V. 4)

Tuesday May 25 10:40 Raimu 1

**Chair**: Ayer, R, ExxonMobil Research & Engineering Co, USA
**Co-Chair**: Tsuru, E, Nippon Steel Co, Japan

**Fatigue Behaviour of Girth Welded Joints of High Grade Risers**
Mecozzi, E, Demofonti, G, Centro Sviluppo Materiali, Italy; Quintanilla, H, Tenaris Group, Mexico; Cumino, G, Dalmine, Italy; Izquierdo, A, Tenaris Group, Mexico

**Fatigue Life Evaluation Based on Modified Notch Strain Approach Considering Welding Residual Stress Relaxation**
Han, J W, Han, S H, Shin, B C, Korea Inst of Machinery & Materials; Kim, J H, Chungnam National Univ, Korea

**Study on Estimation of Fatigue Strength in (α+γ) Dual Phase Stainless Steel**
Nakayama, K, Kanazawa Univ; Shozu, M, Maizuru Nat'l College of Tech; Hirose, H, Kinjo Univ, Japan

**Fatigue Characteristics of Nitrided SACM 645 According to Surface Conditions and Notch Shape**
Suh, C M, Son, K S, Jang, H K, Kim, S C, Kyungpook National Univ, Korea

**Investigation of Impact Toughness of SHLA Steel at Low Temperatures**
Bolshakov, V, Uzlov, O, Pridneprovsk State Academy of Civil Engineering & Architecture, Ukraine

**Penetration Control of TIG Weld by Monitoring Molten Pool Oscillation Induced by Pulse Assist-gas Method**
Ju, J B, Suga, Y, Keio Univ, Japan

**New Formula to Prediction of Cold Cracking Susceptibility of High Strength Steels for Offshore Structures**
Buglacki, H, Polski Rejestr Statkow, Poland

## 26. HYDRATES AND MINING III (V. 1)

Tuesday May 25 10:40 Raimu 2

**Chair**: Hong, S, Korea Research Inst of Ship and Ocean Eng, Korea

**Review of Japan's R&D Results for Manganese Nodule Processing and the Economical Re-evaluation**
Yamazaki, T, National Inst of AIST ; Park, S H, Univ of Tokyo, Japan

**A Study on Prediction Model of Tracked Vehicle for Straight Maneuvering on Soft Soil**
Kim, H W, Choi, J S, KRISO/KORDI, Korea

**An Experimental Study on Steering Performance of Tracked Vehicle on Cohesive Soft Soil by Using Taguchi Method**
Choi, J S, Hong, S, Kim, H W, KRISO/KORDI, Korea

**Dynamic Analysis of Underwater Tracked Vehicle Connected with Flexible Riser**
Hong, S, Kim, H W, Choi, J S, KRISO/KORDI, Korea

**Comparison of the Mineralization of the Ferromanganese Crusts between the West Pacific and the Central Pacific**
Xu, D Y, Qingdao Inst of Marine Geology, China

**Design of Floating Farm on the Sea**
Eto, H, Saito, Y, RIKEN ; Saijo, O, Nihon Univ ; Abe, T, Yoshida, S, RIKEN ; Manzai, S, Abe, H, Nihon Univ, Japan

## 27. POLAR & ICE III: Ice Engineering 2 (V. 1)

Tuesday May 25 10:40 Dumont

**Chair**: Frederking, RMW, National Research Council, Canada
**Co-Chair**: Bekker, A T, Far Eastern State Tech Univ, Russia

**The Scattering of Flexural-gravity Waves by a Sea-ice Shelf Transition**
Williams, T, Squire, V A, Univ of Otago, New Zealand

**On Modelling the Interaction of Large Amplitude Waves with a Single Floe**
Hegarty, G M, Squire, V A, Univ of Otago, New Zealand

**Deformation of Ice Cover on the Northeastern Shelf of Skhalin Island Induced by the Wind**
Tikhoncuk, E, Inst of Marine Geology & Geophysics; Tambovsky, V, Environmental Co of Sakhalin; Shevchenko, G, Sakhalin Inst of Fisheries & Oceanography, Russia

**Performance of the New Canadian Ice Service Ice Thickness Redistribution Model**
Kubat, I, Sayed, M, Canadian Hydraulics Centre, NRC; Carrieres, T, Canadian Ice Service; Savage, S B, McGill Univ, Canada

**Estimations of the Ice and Icebergs Distribution in the Barents Sea**
Buzin, I V, Zubakin, G K, Naumov, A K, Arctic and Antarctic Research Inst, Russia

## 28. RELIABILITY, RISK & SAFETY I (V. 4)

Tuesday May 25 10:40 Puget

**Chair**: Langen, I, Stavanger University College, Norway

**Assessment of the Reliability of Marine Installation Escape, Evacuation, and Rescue Systems and Procedures**
Bercha, F G, Cerovsek, M, Abel, W, Bercha Engineering, Canada

**Optimal Inspection Planning of Logic Structures that are Subject to Fatigue and Random Accidents**
Kawano, A, Univ of Sao Paulo, Brazil

**An Intelligence Method for Structural Reliability Analysis based on Response Surface**
Kang, H G, Gui, J S, Dalian Univ of Technology, China

**Reliability-based Classification Criteria and Their Application Procedures**
Song, Y Z, Sasaki, S, Nippon Kaiji Kyokai, Japan

**Reliability and Availability Studies on Critical Safety Systems of an Offshore Drilling Platform**
Min, J H, Kim, J H, Lee, S J, Chang, K P, Moon, K H, Chang, D J, Hyundai Heavy Industries, Korea

# TUESDAY 13:20

Plenary Presentation II (V.2)

**Tuesday** May 25 13:20 Port cros, Hotel

**Centrifuge Modeling in Offshore Engineering**
Garnier, J, Laboratoire Central des Ponts et Chausses, France
Introduction by Wong, P C, ExxonMobil Development Co, USA

## 29. OFFSHORE IV: FPSO//TLP/VLFS 2 (V. 1)

Tuesday May 25 14:00 Vauban

**Chair**: Stansberg, C T, MARINTEK, Norway
**Co-Chair**: Mathai, T, The Glosten Assoc, USA

**On the Current Trend Towards the Use of Production and Drilling Semi-submersible Platforms in Deepwater**
Ferrari Junior, Jose A, Petrobras, Brazil; Thuestad, T C, Norsk Hydro, Norway

**Increased Fatigue Life of TLP Piles for the Ultra Deep Water Installed by the Pyrodriver**
Van Foeken, R, Jonker, G, IHC Hydrohammer, The Netherlands

**Aerodynamic Behavior of Offshore Triangular Tension Leg Platform**
Jain, A K, IIT Delhi; Chandrasekaran, S, BHUIT, India

**Ringing Response of Vertical Cylinder under the Action of Numerical Simulated Extreme Waves**
Qin, C R, Pang, H L, Zhang, Q H, Han, T, Tianjin Univ, China

**Twisting Behaviour of Pontoon and Semi-submersible Types of Very Large Floating Structure in Regular Oblique Waves**
Phan, T S, Temarel, P, Univ of Southampton, UK

**Hydroelastic Responses of Very Large Floating Structures Lying over Variable Bathymetry Regions**
Athanassoulis, G A, Belibassakis, K A, National Technical Univ of Athens, Greece

**Characteristics of Wave Loading and Structural Response of Mat-type VLFS due to Waves**
Hong, S Y, Cho, S K, Kim, J H, KRISO/KORDI, Korea

**Efficiency of Using Ballasting Materials (Concrete, Iron-ore Concentrate, Sand, etc) to Optimize Weight and Size Parameters of Ice Resistant Constructions Structures of Gravity Type**
Toropov, Y Y, Gintovt, A R, SOE CDB ME'Rubin'; Bellendir, E N, Kostyrya, G Z, Belyaev, B V, VNIIG, Russia

## 30. METOCEAN IV: Sea State & Current (V. 3)

Tuesday May 25 14:00 Colbert

**Chair**: Chen, H-C, Texas A & M Univ, USA

**Non-parametric Modeling of Cyclo-stationary Markovian Processes. Part I: Simulation of Multivariate Sea State Processes**
Monbet, V, UBS/SABRES; Marteau, P-F, UBS/VALORIA, France

**Non-parametric Modeling of Cyclo-stationary Markovian Processes. Part II: Prediction of Multivariate Sea State Processes**
Gamir, F, Marteau, P-F, UBS/VALORIA; Monbet, V, UBS/SABRES, France

**Modelling Significant Wave Height Time Series Using ARMA and ARIMA Models**
Soukissian, T C, National Centre for Marine Research; Kechagioglou, S, Aegean Univ; Prospathopoulos, A, National Centre for Marine Research, Greece

**Sea State Characteristics of Artificially Worsened Observed Storm Events**
Reistad, M, Magnusson, A K, Norwegian Meteorological Inst; Gudmestad, O T, Haver, S, Statoil, Norway

**The Value of In-situ and Remote Sensing Current Measurement Techniques Offshore Angola**
Upton, J, Fugro GEOS; Grant, C, BP Exploration, UK

**Operational Metocean Monitoring at Catenary Anchor Leg Moorings**
Gaffney, A, Bellamy, I, Fugro GEOS, UK

**The Use of Underwater Acoustic Modems to Provide Full Water Column Current Profiles from Dynamically Positioned Drilling Installations**
Crawshaw, M, Mardell, G, Fugro GEOS, UK

## 31. COASTAL ENG I: Coastal Waves (V. 3)

Tuesday May 25 14:00 Bonaparte

**Chair**: Teng, B, Dalian Univ of Technology, China
**Co-Chair**: Yalciner, A C, Middle East Technical Univ, Turkey,

**Investigation of Coastal Waves around Japan with Cross-correlation Analysis between NOWPHAS Wave Observation Data and ECMWF Atmospheric Pressure Data**
Hashimoto, N, Nagai, T, Port and Airport Research Inst, Japan

**Incorporating Third Order Derivative Terms of the Parabolic Absorbing Boundary Condition in CO Finite Elements**

Clyne, M J, Mullarkey, T P, National Univ of Ireland, Ireland

**Moving Boundary Treatment of Hydrodynamic Numerical Models with Slot Patch Method**
Oh, B C, Min, I K, KORDI; Chun, I S, Konkuk Univ, Korea

**A Study on Boussinesq Equation with the Presence of Currents**
Lin, M C, Hsu, C M, Ting, C L, National Taiwan Univ, Taiwan, China

**Formation and Development of Spreading Gravity Currents**
Katsuragi, T, Baba, N, Kan, S, Kitaura, K, Osaka Prefecture Univ, Japan

**Development of Storm Surge Model Coupled with Wave Model and Hindcasting of Storm Surge and Wave Caused by Typhoon 9918**
Kawai, H, Port and Airport Research Inst; Kawaguchi, K, Ministry of Land, Infrastructure and Transport; Hashimoto, N, Port and Airport Research Inst, Japan

**Numerical Implementation of Radiation B.C in Fully Elliptic Modified Mild-slope Equation under FEM Computational Environment**
Cho, Y J, Cho, E K, Univ of Seoul; Kim, M S, Daelim Industrial, Korea

**The Influence of Partially Reflecting Boundaries on Waves in a Harbor**
Lin, J G, Hsiao, S S, National Taiwan Ocean Univ; Chiu, Y F, Center of Harbor and Marine Technology; Fang, H M, Chen, C H, National Taiwan Ocean Univ, Taiwan, China

## 32. GEOTECH IV : Soil Dynamics (V. 2)

Tuesday May 25 14:00 Port cros, Hotel

**Chair**: Chen, J-W, National Cheng Kung Univ, Taiwan, China

**Study on Statistics-based Evaluation of Soil Liquefaction**
Chen, Y R, Hsieh, S C, Chiu, Y C, Chang Jung Christian Univ, Taiwan, China

**Seismic Response of Earth Dam with Varying Depth of Liquefiable Foundation Layer**
Sharp, M K, Adalier, K, US Army ERDC, USA

**Evaluation of Liquefaction Potential by the Test Results of In-situ Frozen Samples**
Chen, Y C, You, P S, National Taiwan Univ of Science and Technology, Taiwan, China

**Influence of Sand Liquefaction on the Self Burial of a Pipe Submitted to Wave Action**
Foray, P, Bonjean, D, Laboratory 3S; Michallet, H, LEGI, France

**Application of GIS to Evaluate the Soil Liquefaction Analysis**
Chien, L K, Chang, C H, Ling, M C, Chen, E L, National Taiwan Ocean Univ, Taiwan, China

**Monitoring of the Foundations of a Coastal Structure Submitted to Breaking Waves: Occurrence of Liquefaction**
Bonjean, D, Laboratory 3S; Michallet, H, Barnoud, J-M, LEGI; Foray, P, Laboratory 3S; Mory, M, ENSGTI; Abadie, S, LASAGEC, France; Piedra-Cueva, I, Univ de Monte-Video, Uruguay

**Artificial Neural Network for the Prediction of Wave-induced Liquefaction**
Cha, D H, Jeng, D S, Blumenstein, M, Griffith Univ, Australia

**Seismic Response Properties of Stratified Ground Including Clay Layer with Various Degrees of Consolidation**

Yamamoto, Y, Sumitomo Mitsui Construction; Hyodo, M, Yoshimoto, N, Yamaguchi Univ; Takahashi, N, Sumitomo Mitsui Construction; Kimura, S, Yamaguchi Univ, Japan

**Applicability of Seismic Deformation Method in Aseismic Analysis of Underground Linear Structure**
Nishida, M, Sumitomo Mitsui Constnruction; Matsui, T, Osaka Univ, Japan

## 33. ENVIRONMENT & SENSING (V. 1)

Tuesday May 25 14:00 Porquerolles, Hotel

**Chair**: Sayed, M, National Research Council, Canada
**Co-Chair**: Kyozuka, Y, Kyushu Univ, Japan

**EXtreme Ecosystem Studies in the Deep OCEan: Technological Developments: EXOCET/D**
Sarradin, P-M, Sarrazin, J, IFREMER, France; Sauter, E, AWI, Germany; Shillito, B, UPMC, France; Waldmann, C, Univ Bremen, Germany; Olu, K, IFREMER, France; Colaço, A, Instituto do Mar, Portugal; EXOCET/D consortium

**Automated Monitoring and Analysis of Micro-vibration in the Hi-tech Industrial Park**
Lin, W C, Chen, Y, Kuo, C W, Southern Taiwan Science Park Administration; Ni, S H, Ko, C C, National Cheng Kung Univ, Taiwan, China

**Study on Ocean Dumping of Dredged Material from Keelung Harbor**
Liu, C I, Su, J C, Sinotech Engineering Consultants; Wang, C H, You, J M, Lai, K H, Keelung Harbor Bureau, Taiwan, China

**An Analysis of the Extraordinary Proliferation of *Ulva* sp. In an Urban Wetlands**
Yauchi, E, Hayami, T, Gomyo, M, Chiba Inst of Technology, Japan

**A Generating Mechanism of Nutrient Trapping Phenomenon by the Coastal Developments**
Lee, I C, Yoon, H S, Ryu, C R, Pukyong National Univ, Korea

**The Dispersion Activities Analysis of Subsurface Plume Flow in Sea Floor**
Lin, C K, China Engineering Consultants, Taiwan, China; Kulasiri, D, Lincoln Univ, New Zealand

**Modeling the Impact of Umm Al Nar Power and Desalination Plant on Water Quality**
Mohamed, K A, Odeh, M, Eco Hydraulic Laboratory, United Arab Emirates

**Comparative Study on the Ocean Current Modeling and Observations by Drilling Buoy**
Chien, H, Chen, P H, Chiou, M D, Kao, C C, National Cheng Kung Univ, Taiwan, China

**The Eddy Northwest of Luzon Island in South China Sea**
Lan, J, Ocean Univ of China, China

## 34. MATERIALS/WELDING/FATIGUE II (V. 4)

Tuesday May 25 14:00 Raimu 1

**Chair**: Wardenier, J, Delft Univ of Technology, The Netherlands

**New Chord Load Functions for Rectangular Hollow Section Joints**
Liu, D K, Wardenier, J, Delft Univ of Technology, The Netherlands ; van der Vegte, Kumamoto Univ, Japan

**Effects of Chord Length and Boundary Conditions on Axial Capacity of Circular Tubular TT-joints**
Zhu, L, Shi, Y J, Wang, Y Q, Shi, G, Tsinghua Univ, China

**Finite Element Analysis of Concrete Plugs Embedded in Tubular Steel Piles**
Nezamian, A, Al-Mahaidi, R, Grundy, P, Monash Univ, Australia

**Static Strength of Thick-walled CHS T-joints Subjected to Brace Axial Loads**
Choo, Y S, Qian, X D, Liew, J Y R, National Univ of Singapore, Singapore ; Wardenier, J, Delft Univ of Technology, The Netherlands

**Secondary Stresses in Lattice Girders : Influence on the Fatigue Strength of Tubular Trusses**
Börger, A J, Romeijn, A, Wardenier, J, Delft Univ of Technology, The Netherlands

**Internal Stress Measurement of Rolled Steels Using Neutron Diffraction**
Gotoh, M, Sasaki, T, Kanazawa Univ; Kamiyama, T, High Energy Accelerator Research Org; Hirose, Y, Kanazawa Univ, Japan

**X-ray Examination of Fracture Surfaces of Dental Material and Other Applications**
Umeda, A, Kanazawa Univ; Hirose, H, Kinjo Univ; Gotoh, M, Kanazawa Univ, Japan; Saito, T, Dalian Inst of Light Industry, China

**Pre-cracking Technique and Its Application to X-ray Fractography of Dental Material and Other Applications**
Umeda, A, Kanazawa Univ; Hirose, H, Kinjo Univ; Gotoh, M, Kanazawa Univ, Japan; Saito, T, Dalian Inst of Light Industry, China

## 35. PIPELINES/RISERS/MOORING I (V. 2)

Tuesday May 25 14:00 Raimu 2

**Chair**: Price, J C, SBM-IMODCO, USA
**Co-Chair**: Jo, C, Inha Univ, Korea

**Safety Concepts in the New Dutch Pipeline Standard NEN 3650**
Guijt, W, Tebodin; Vrouwenvelder, A, Gresnigt, A M, TU-Delft; Dijkstra, G J, Tebodin, The Netherlands

**Strain Based Design Guidelines for Pipelines**
Mohr, B, Gordon, R, EWI; Smith, R, MMS, USA

**Evaluations of Surface and Subsea Pig Launching Systems**
Fakas, E, Chin, J, Univ of Western Australia, Australia

**Technical Viability Study for Alternative of the Flexible Lines Transportation**
Martins, M R, Andrade, B L R, Univ of Sao Paulo, Brazil

**Design of Anode Corrosion Protection System on Electrically Heated Pipelines**
Hesjevik, S M, Statoil; Lervik, J K, Klevjer, G, SINTEF, Norway

**Subsea Pipelines Leak Detection and Location Based on Fluid Transient and FDI**
Bai, L, Yue, Q J, Li, H S, Dalian Univ of Technology, China

**Determination of Undrained Shear Strength Parameters for Buried Pipeline Stability in Deltaic Soft Clays**
Newson, T A, Bransby, M F, Univ of Dundee; Brunning, P, Stolt Offshore, UK

**The Effects of Backfill Soil Properties on Wave-induced Pore Pressure around a Trenched Pipeline**
Gao, F P, Wu, Y X, Inst of Mechanics, CAS, China; Jeng, D S, Griffith Univ, Australia

## 36. POLAR & ICE IV: Ice Engineering 3 (V. 1)

Tuesday May 25 14:00 Dumont

**Chair**: Squire, V A, Univ of Otago, New Zealand

**Analysis of Complex Ice-structure Interactions Using Continuum Mechanics**
Bercha, F G, Bercha Engineering; Glockner, P G, Univ of Calgary, Canada

**Ice-Resistant Fixed Platform for the Kravtsovskoye Field, The Baltic Sea**
Potapov, V M, Lensky, V F, CDB "Corall"; Yershov, B I, Crane-Shelf; Muradov, K V, Lukoil, Russia

**Design Earthquake Load on a Structure in Ice-covered Waters**
Kato, K, Kinki Univ; Toyama, Y, Mitsui Shipbuilding & Engineering, Japan

**Abrasion Effect of Ice Cover on Supports of Offshore Structure in Sakhalin Shelf**
Bekker, A T, Uvarova, T E, Kim, S D, Far Eastern State Technical Univ, Russia

**A Simplified 3-Dimensional Ice Ridge Scour Model**
Choi, K S, Korea Maritime Univ, Korea

**Application of the Mechanical Model for Ice Scour to a Field Site and Simulation Method of Scour Depths**
Kioka, S, Civil Engineering Research Inst of Hokkaido; Ishikawa, R, Hokkaido Univ; Kubouchi, A, Civil Engineering Research Inst of Hokkaido; Saeki, H, Hokkaido Univ, Japan

**Empirical Determination of Iceberg Draft and Cross-sectional Areas**
Barker, A, Sayed, M, Canadian Hydraulics Centre, NRC; Carrieres, T, Canadian Ice Service, Canada

## 37. RELIABILITY, RISK & SAFETY II (V. 4)

Tuesday May 25 14:00 Puget

**Chair**: Ersdal, G, Petroleum Safety Authority, Norway
**Co-Chair**: Louca, L A, Imperial College, UK

**Structural Analysis and Performance of Offshore Materials in Fire and High Strain Rate Events**
Price, J C, SBM-IMODCO, USA

**Response of Topside Structures to Fires and Explosions**
Hamdan, F H, Burgan, B A, Steel Construction Inst, UK

**The Characteristic Analysis on Thermal Properties and Emitting Smoke in the Oil Pool Fires of Engine Room for Fire Safety Design**
Fukuchi, N, Takao, J, Hu, C H, Kyushu Univ, Japan

**Design and Numerical Assessment of Blast Walls Subjected to Hydrocarbon Explosions**
Boh, J W, National Univ of Singapore, Singapore; Louca, L A, Imperial College London, UK; Choo, Y S, National Univ of Singapore, Singapore

**Modelling the Effect of Extreme Diurnal Temperature Changes on Ship Structures for the Assessment of Structural Reliability Using Load Combination Techniques**
Moatsos, I, Das, P K, Univ of Glasgow and Strathclyde, UK

**RAM Study on a Subsea Production System of an Offshore Oil and Gas Plant**
Kim, J H, Lee, S J, Min, J H, Chang, K P, Nam, K I; Lee, D H, Hyundai Heavy Industries, Korea

**Safety Margin of Structural Member of Offshore Structures Subjected to Wave and Current**
Taniguchi, T, Tottori Univ; Kawano, K, Kagoshima Univ, Japan

# WEDNESDAY 08:00

## 38. OFFSHORE V: FPSO/SPAR/TLP/VLFS 3 (V. 1)

Wednesday May 26 08:00 Vauban

**Chair**: Kashiwagi, M, Kyushu Univ, Japan
**Co-Chair**: Roddier, D, Marine Innovation & Technology, USA

**A Study on Hydroelastic Element of a Floating Plate in Waves**
Tsubogo, T, Osaka Prefecture Univ, Japan

**Hydroelastic Behavior of VLMOS in Beam Seas**
Takagi, K, Osaka Univ, Japan

**Experimental Study on Motion of Elastic Floater in Directional Seas**
Hiraishi, T, Okuno, M, Port and Airport Research Inst; Miyazato, T, Ecoh Co, Japan

**Varying Wave Drift Force Acting on Semi-submersible Type Mega-float in Irregular Waves**
Sunahara, S, Tokai Univ; Nishimura, Y, Shipbuilding Research Centre of Japan, Japan

**A Study of Preliminary Structural Design of Pontoon Type VLFS**
Park, S W, Korea Inst of Machinery & Materials; Hong, S Y, Korea Research Inst of Ships & Ocean Eng; Lee, T K, Korea Inst of Machinery & Materials, Korea

**Estimation of Hydrodynamic Forces Acting on a VLFS with a Submerged-plate**
Takaki, M, Lee, S M, Hiroshima Univ, Japan

## 39. METOCEAN V: Climatology (V. 3)

Wednesday May 26 08:00 Colbert

**Chair**: Olagnon, M, IFREMER, France

**Wave Climate in Deep and Shallow Water**
Lopatoukhin, L J, State Univ; Boukhanovsky, A V, Inst for High Performance Computing; Rozhkov, V A, State Univ, Russia

**Wave Climate of North Aegean Sea: Inter-comparison of Topex/Poseidon, Wave Buoy and WAM Model Results**
Kehris, C, Plymouth Univ, UK; Soukissian, T, National Centre for Marine Research, Greece

**Wave and Wind Micro-climates in Saronikos Gulf**
Soukissian, T, Ballas, D, National Centre for Marine Research, Greece

**Wind and Wave Flimatology of the Mediterranean Sea. Part I: Wind Statistics**
Stefanakos, C N, Athanassoulis, G A, National Technical Univ of Athens, Greece; Cavaleri, L, Bertotti, L, ISMAR; Italy; Lefevre, J-M, Meteo-France, France

**Wind and Wave Climatology of the Mediterranean Sea. Part II: Wave Statistics**
Stefanakos, C H, Athanassoulis, G A, National Technical Univ of Athens, Greece; Cavaleri, L, Bertotti, L, ISMAR, Italy; Lefevre, J-M, Meteo-France, France

**A Study of the Wave Climate of Northern Taiwan**
Yim, J Z, Chou, C R, National Taiwan Ocean Univ, Taiwan, China

**Met-ocean Contour Lines for Design Purposes, Correction for Omitted Variability in the Response Process**
Kleiven, G, Norsk Hydro; Haver, S, Statoil, Norway

## 40. COASTAL ENG II: Breakwaters 1 (V. 3)

Wednesday May 26 08:00 Bonaparte

**Chair**: Mizutani, N, Nagoya Univ, Japan
**Co-Chair**: Kee, S T, Seoul National Univ of Technology, Korea

**Differences between Deformations of Submerged Breakwater in Two- and Three-dimensional Experiments**
Araki, S, Osaka Univ; Yanagihara, T, Shimizu Corp; Niijima, H, Fumoto, H, Deguchi, I, Osaka Univ, Japan

**Numerical Simulation for the Interaction of Irregular Wave with Perforated Caissons**
Chen, X F, Li, Y C, Dalian Univ of Technology, China

**Rapidly Installed Membrane Breakwater in the Oblique Seas**
Kee, S T, Seoul National Univ of Technology; Shin, M S, Kunsan National Univ; Cho, W C, Chung-Ang Univ; Han, J O, Seoul National Univ of Technology, Korea

**Large Scale Membrane-type Barrier against Extraordinary Water Surface Elevation**
Tanigaki, S, Mutsuura, M, Isoda, A, Ogasa, M, Mitsubixhi Heavy Industries, Japan

**Hydraulic Characteristics of Rubble Mound Structure in Relation to the Internal Waterlevel Fluctuation**
Ryu, C R, Pukyong National Univ, Korea

**Expected Overtopping Probability Considering Real Tide Occurrence**
Kweon, H M, Gyeongju Univ, Korea

## 41. GEOTECH V : Soil Properties 1 (V. 2)

Wednesday May 26 08:00 Port cros, Hotel

**Chair**: Matsui, T, Osaka Univ, Japan
**Co-Chair**: Newson, T A, Univ of Dundee; UK

**Time Dependency of Deep Sea and Island Clays at Room and Elevated Temperature**
Brandes, H G, Univ of Hawaii, USA

**Hollow Cylindrical Torsional Test under Strain-path Control**
Uchida, K, Fujihara, N, Kobe Univ, Japan

**Normalized Compression Line for Reconstituted Soil**
Hong, Z S, Liu, Z F, Yuan, S H, Southeast Univ, China

**Physical Properties of Natural Sedimentary Soils Deposited in North Shore of the Yangtze River Delta**
Gu, D J, Yuan, S G, Jiangsu Provincial Communications Dept; Shi, M L, Southeast Univ, China

**Compression Behavior of Natural Intermediate Soils Deposited in Jiangsu, China**
Gu, D J, Ye, Y C, Jiangsu Provincial Communications Dept; Hong, Z S, Shi, M L, Southeast Univ, China

**A Note on Soil Structure Resistance of Structured Soils**
Hong, Z S, Liu, S Y, Guo, H L, Southeast Univ, China

**Piezocone Factors and OCR of Marine Clays in Shihwa Region of Korea Obtained from Piezocone Tests**
Jang, I S, KORDI; Kim, B S, SK Engineering and Construction; Kwon, O S, KORDI, Korea

**A New Approach of Settlement Analysis of Soft Clay by the Development of Hybrid-online Simulation Method**
Kwon, Y C, Kazama, M, Uzuoka, R, Sento, N, Tohoku Univ, Japan

## 42. AUV & ROBOTICS I (V. 2)

Wednesday May 26 08:00 Porquerolles, Hotel

**Chair**: Rigaud, V, IFREMER, France
**Co-Chair**: Lee, K H, US Navy Coastal Systems Station, USA

**The Autonomous Vehicle Programme at Ifremer**
Rigaud, V, Opderbecke, J, Lion, P, Laframboise, J-M, IFREMER, France; Ferguson, J S, ISE Research, Canada

**First Sea Trials of the Intervention AUV**
Marty, P, CYBERNETIX; Perrier, M, IFREMER, France

**Development of Compact Deep-sea Monitoring Robot System "TAM-EGG 1"**
Tamura, K, Ando, H, Maeda, K, Ueno, M, Nimura, T, National Maritime Research Inst, Japan

**Underwater Navigation System Based on an Inertial Sensor and a Doppler Velocity Log Using Indirect Feedback Kalman**
Lee, P M, Jeon, B H, Choi, H T, Kim, Y K, KRISO/KORDI; Park, J Y, Oh, J H, KAIST, Korea

**A System of Small AUVs Interlinked with a Smart Cable for Inspection of Underwater Structures**
Yu, S C, Ura, T, Univ of Tokyo, Japan

**Optical Stabilisation for the ALIVE Intervention AUV**
Brignone, L, Perrier, M, IFREMER, France

**A Parametric Identification of the "Olister" Hydrodynamic Behaviour**
Eteki, R, ECA, France

## ISOPE Friction Stir Welding Symposium
Chair: Ayer, R, ExxonMobil Research and Engineering, USA

### 43. FSW I: Mechanisms & Modeling (V. 4)
Wednesday May 26 08:00 Raimu 1

**Chair**: Koo, J Y, ExxonMobil Research & Engineering Co, USA

**Friction Stir Joining of Structural Materials - Microstructure, Properties and Applications**
Jata, K V, Air Force Research Laboratory, USA

**Mechanical Property and Microstructural Mapping of Friction Stir Welded Al 5456**
Fonda, R W, Pao, P S, Jones, H N, Naval Research Laboratory, USA

**The Formation of Nugget Zone Grain Structures in Al-Alloy Friction Stir Welds**
Prangnell, P B, Heason, C, Hassan, Kh, A A, Univ of Manchester and UMIST, UK

**Heat Source Models in Simulation of Heat Flow in Friction Stir Welding**
Schmidt, H, Technical Univ of Denmark/Risø National Laboratory; Hattel, J, Risø National Laboratory, Denmark

**The Thermal Model of Tool Penetrating Workpiece Process for Friction-stir Welding**
Wang, D Y, Feng, J C, Harbin Inst of Technology, China

### 44. PIPELINES/RISERS/MOORING II (V. 2)
Wednesday May 26 08:00 Raimu 2

**Chair**: Lim, F K, 2H Offshore Engineering, UK
**Co-Chair**: Sriskandarajah, T, Kellogg Brown & Root, UK

**A Technique for Modelling the Lateral Stability of On-bottom Pipelines in a Small Drum Centrifuge**
Cheuk, C Y, White, D J, Bolton, M D, Univ of Cambridge, UK

**HF Frequency Measurements of Current Speeds and Direction: Measurement Set-up and Some Findings**
Kleiven, G, Eide, L I, Norsk Hydro, Norway

**Optimisation of Pipeline Routes**
Meisingset, H, Norsk Hydro; Hove, J, Unifob AS; Olsen, G, Norsk Hydro, Norway

**Oscillatory Flow Induced Hydrodynamic Forces upon a Pipeline near Erosive Sandy Seabed**
Wu, Y X, Yang, H P, Pu, Q, Li, K, Gao, F P, Inst of Mechanics, CAS, China

**Nonlinear Interactions among Waves, Current and a Marine Pipeline over Rubble Protection**
Mostafa, A M, Cairo Univ, Egypt

**Comparison on the Stability and Ability of Resisting of Self-Floating Delivery Pipeline**
Li, S S, Qin, C R, Cheng, S B, Tianjin Univ, China

### 45. POLAR & ICE V: Ice Environment & Icing (V. 1)
Wednesday May 26 08:00 Dumont

**Chair**: Bercha, F G, Bercha Engineering Ltd, Canada

**Co-Chair**: Kato, K, Kinki Univ, Japan

**Bubble Curtain to Prevent Freezing**
Eidnes, G, Torum, A, SINTEF, Norway

**Estimation of Oil Area Spilled under an Ice Cover**
Izumiyama, K, Uto, S, Kanada, S, National Maritime Research Inst; Kioka, S, Civil Engineering Research Inst of Hokkaido, Japan

**Experimental Study on Separating Oil Which Trapped under Pack Ice Fields**
Otsuka, N, North Japan Port Consultants; Kondo, H, Ishikawa, R, Saeki, H, Hokkaido Univ, Japan

**Chinese Transmission Lines' Icing Characteristics and Analysis of Severe Ice Accidents**
Jiang, X L, Shu, L C, Sima, W, Xie, S J, Hu, Q, Chongqing Univ, China

**Maximum Withstand Voltage of Artificial Ice-covered Insulators**
Jiang, X L, Zhang, Z J, Sun, C X, Shu, L C, Sima, W, Chongqing Univ, China

### 46. RELIABILITY, RISK & SAFETY III (V. 4)
Wednesday May 26 08:00 Puget

**Chair**: Yao, T, Osaka Univ, Japan

**Risk Based Inspection Planning for an FPSO Hull – the Lessons for Design**
Holdbrook, S J, Kellogg Brown & Root, UK

**Directional Aspects of Collision Risk between Passing Ships and Platforms: A North Sea Case Study**
Wolfram, J, Heriot Watt Univ, UK; Naegli, G, Petrobras, Brazil

**Basic Research on Safety Management of Ferry Cargo under Rough Weather Conditions**
Mizui, S, Sasa, K, Kobayashi, G, Hiroshima Nat'l College of Tech; Kubo, M, Kobe Univ, Japan

**The Role of the Human Factor within Maritime Safety – An Introduction to Critical Aspect and Records**
Lyridis, D V, Ventikos, N P, National Technical Univ of Athens, Freece

## WEDNESDAY 10:40

### 47. OFFSHORE VI: FPSO/SPAR/TLP/VLFS 4 (V. 1)
Wednesday May 26 10:40 Vauban

**Chair**: Ewida, A, Petro-Canada, Canada
**Co-Chair**: Sphaier, S H, COPPE/UFRJ, Brazil

**Study on Dynamic Responses of MOB Connectors**
Yu, L, Shu, Z, Li, R, Shanghai Jiao Tong Univ, China

**Wave Response Analysis of a Floating Artificial Base-building Using Developed Easy Equation of Added Mass**
Saijo, O, Kamekawa, K, Maruyoshi, K, Kawano, S, Nihon Univ; Eto, H, Inst of Physical & Chemical Research; Saito, Y, Nihon Univ, Japan

**Variability of Results of Dynamic Analyses of Spars**
Sarkar, I, Kellogg Brown & Root; Roesset, J M, Texas A&M Univ, USA

**Spar Topsides-to-hull Connection – Welded Vs Grouted**
Luo, M Y H, Zhang, B, Harwood, M, Technip Offshore, USA

**The Heave Motion Characteristics of Truss Spars in Waves**
Rho, J B, Choi, H S, Seoul National Univ, Korea

**Estimating Current Wake Effects on FPSO-Shuttle Dynamics: A Semi-empirical Approach**
Simos, A N, Sparano, J V, Univ of Sao Paulo, Brazil

**Modeling of Springing and Whipping of FPSOs in a Time Domain Sea-keeping Tool**
Ledoux, A, Principia RD ; Mary, C, ENSTA; Couty, N, Principia Marine, France

## 48. METOCEAN VI: Hindcast (V. 3)

Wednesday May 26 10:40 Colbert

**Chair**: Lalli, F, APAT, Italy

**Validation and Assimilation of ENVISAT ASAR Wave Spectra in Wave Model WAM: Toward Operational Use**
Aouf, L, Lefevre, J-M, Meteo-France; Hauser, D, Univ de Versailles; Chapron, B, IFREMER, France

**Investigation of Source Terms in the SWAN Wave Model with NDBC Buoy Data During Hurricane**
Guan, C L, Ocean Univ of China, China; Xie, L, North Carolina State Univ, USA

**Diagnosing Water Vapor Fields over the Ocean from Satellite Infrared Measurements for Use of Marine Weather Analysis**
Takemi, T, Shibayama, K, Osaka Univ, Japan

**Wave Spectra from ENVISAT's Synthetic Aperture Radar in Coastal Areaswave Spectral Inversion Adapted for Coastal Areas: Validation**
Ardhuin, F, SHOM; Collard, F, BOOST Technologies; Chapron, B, IFREMER, France

**A Coupled-mode Technique for Wave-Current Interaction**
Belibassakis, K A, Athanassoulis, G S, National Technical Univ of Athens, Greece

**Modeling of Propagation and Transformation of Transient Water Waves**
Sulisz, W, Chybicki, W, Polish Academy of Sciences, Poland

**Experimental Study of the Wave Climate Close to a Ship in Beam Seas at Fn=0**
Ekman, P, Chalmers Univ, Sweden

## 49. COASTAL ENG III: Breakwaters 2 (V. 3)

Wednesday May 26 10:40 Bonaparte

**Chair**: Ueda, S, Tottori Univ, Japan
**Co-Chair**: Yim, J, National Taiwan Ocean Univ, Taiwan, China

**Physical Model Study on Floating Breakwater**
Dong, G H, Zheng, Y N, Li, Y C, Dalian Univ of Technology; Guan, C T, Lin, D F, Chinese Academy of Fishery Sciences, China

**Numerical Analysis of Wave and Floating Breakwater Interaction Using VOF Method**
Mizutani, N, Rahman, M A, Nagoya Univ, Japan

**Application of the VOF-FEM Model to the Reef Breakwater Built on the Sandy Bed**
Bierawski, L G, Maeno, S, Okayama Univ, Japan

**Measuring Dynamic Response of Floating Breakwater**
Kim, D H, Park, W S, Korea Ocean R&D Inst, Korea

**A Performance of A Multipurpose Breakwater with Twin Hull Float Type**
Kim, S G, Cheju National Univ; Lee, S M, Dongyang Univ; Park, R S, Lee, M S, Univ of Ulsan, Korea

## 50. GEOTECH VI : : Soil Properties 2 (V. 2)

Wednesday May 26 10:40 Port cros, Hotel

**Chair**: Brandes, H G, Univ of Hawaii, USA
**Co-Chair**: Tanaka, Y, Kobe Univ., Japan

**Analytical Study on Effect of Thickness on Consolidation Behavior of Quasi-overconsolidated Clays**
Oda, K, Matsui, T, Cho, Y S, Kamitake, H, Osaka Univ, Japan

**Borehole Squeezing in Soft Clay**
Kay, S, Fugro Engineers, The Netherlands

**Time Effects on One Dimensional Consolidation Analysis**
Sugiyama, M, Tokai Univ; Shirako, H, Kensetsu-kikaku Consultant; Akaishi, M, Tokai Univ, Japan

**Strain-path Controlled Ko Consolidation Test of Marine Clays with Bender Element Test**
Uchida, K, Stedman, D J, Shimizu, M, Kobe Univ, Japan

**Fabric of the Simulated Hydraulic Filled Sand and Its Variation after Shearing**
Jeng, C J, Huafan Univ, Taiwan, China

## 51. AUV & ROBOTICS II (V. 2)

Wednesday May 26 10:40 Porquerolles, Hotel

**Chair**: Momma, H, JAMSTEC, Japan
**Co-Chair**: Opderbecke, J, IFREMER, France

**The Assessment of Self-compensating, Vectored Thruster AUV**
Cavallo, E, Michelini, R C, Univ of Genova, Italy

**Fuel Cell Underwater Vehicle "URASHIMA"**
Hyakudome, T, Aoki, T, Tsukioka, S, Yoshida, H, Ishibashi, S, Inada, T, JAMSTEC; Maeda, T, Hirokawa, K, Yokoyama, K, Tani, T, Mitsubishi Heavy Industries; Sasamoto, R, Tokyo Univ of Mercantile Marine, Japan

**Pressure Balanced Lithium/Ion Secondary Batteries**
Hainsselin, J-P, ECA, France

**A Working AUV Using CAN Bus Interface**
Yoshida, H, Aoki, T, Tsukioka, S, Hyakudome, T, Ishibashi, S, JAMSTEC; Sasamoto, R, Tokyo Univ of Mercantile Marine, Japan

**ALISTAR AUV and Its Autonomy Management System: A Functional View**
Kermorgant, H, Eteki, R, ECA, France

**Underwater Acoustic Color Picture Transmission System for AUV "URASHIMA"**
Ochi, H, Shimura, T, Sawa, T, Amitani, Y, Nakajoh, H, Hyakudome, T, Tsukioka, S, Murashima, T, Aoki, T, JAMSTEC, Japan

**Performance Estimation Tool for Deep Underwater Acoustics Communication**
Viala, C, Noel, C, Semantic TS, France

## ISOPE Friction Stir Welsing Symposium

### 52. FSW II: Steels (V. 4)

Wednesday May 26 10:40 Raimu 1

**Chair**: Nelson, T W, Brigham Young Univ, USA

**The Potential for Friction Stir Welding in Oil and Gas Applications**
Threadgill, P L, TWI Ltd, UK

**Progress in Friction Stir Welding of High Temperature Materials**
Sorensen, C D, Brigham Young Univ, USA

**Advanced Welding Processes for the Upstream Oil & Gas Industry**
Gordon, R, EWI Microalloying; Denney, P, Gould, J, Ames, N, EWI, USA

### 53. OCEAN & WIND ENERGY I (V. 1)

Wednesday May 26 10:40 Raimu 2

**Chair**: Henderson, A R, Ceasa, UK
**Co-Chair**: Matsumiya, H, AIST, Japan

**Review of Current Activities in Offshore Wind Energy**
Zaaijer, M B, Delft Univ of Technology, The Netherlands ; Henderson, A R, Ceasa, UK

**An Investigation for Offshore Wind Power Generation Fleet Development**
Shinkai, A, Yamaguchi, S, Kyushu Univ ; Ikeda, S, Hitachi Ltd ; Nagao, T, Kyushu Univ, Japan

**An Assessment of the Capacity Utilisation Factor of a Combined Offshore Wind and Wave Power Generating Plant**
Clarke, J A, Grant, A D, Johnstone, C M, Univ of Strathclyde, UK

**Simulation of the Electric Self-sufficiency of an Atlantic Island Supplied by Offshore Wind Energy and Wave Energy Associated with a Medium Scale Local Energy Storage**
Babarit, A, Ecole Centrale de Nantes ; Hamed, H B, ENS-Cachan ; Clement, A H, Ecole Centrale de Nantes ; Debusschere, B, ENS-Cachan ; Duclos, G, Ecole Centrale de Nantes ; Multon, B, Robin, G, ENS-Cachan, France

**Feasibility Study on Floating Offshore Wind Farms in Japanese Waters**
Ushiyama, I, Ashikaga Inst of Technology ; Seki, K, Tokai Univ ; Miura, H, Japan Ocean Industries Assoc, Japan

### 54. POLAR & ICE VI: Icing (V. 1)

Wednesday May 26 10:40 Dumont

**Chair**: Lozowski, E P, Univ of Alberta, Canada
**Co-Chair**: Sayed, M, National Research Council, Canada

**Measuring Spongy Accretion Liquid Fraction in an Icing Wind Tunnel**
Lozowski, E P, Inst for Aerospace Research, NRC; Blackmore, R Z, Univ of Alberta; Farzanaeh, M, Karev, A, Univ du Quebec a Chicoutimi, Canada

**A High Resolution Full-scale 3D Model of Glaze Ice Accretion on a Non-energized Station Post Insulator**
Rudzinski, W J, Lozowski, E P, Univ of Alberta; Farzaneh, M, Univ du Quebec a Chicoutimi, Canada

**Ice Flashover Performance and Process on Three Types of EHV DC Insulators at Low Pressure**
Sun, C X, Jiang, X L, Xie, S J, Shu, L C, Sima, W, Chongqing Univ, China

**AC Flashover Performance of Natural Iced Insulators in High Altitude Regions**
Shu, L C, Mei, B X, Jiang, X L, Hu, Q, Yang, Q, Chongqing Univ, China

**Flashover Performance and Process of Iced Composite Insulators in Atmospheric Pressure of 3500 Meters and Above**
Sima, W, Yang, Q, Jiang, X L, Shu, L C, Zhang, Z J, Chongqing Univ, China

## 55. ADVANCED SHIP TECHNOLOGY I (V. 4)

Wednesday May 26 10:40 Puget

**Chair**: Naito, S, Osaka Univ, Japan
**Co-Chair**: Falzarano, J M, Univ of New Orleans, USA

**Buckling/plastic Strength of Bilge Circle and Its Contribution to Ultimate Longitudinal Strength of Ship's Hull Girder**
Maeno, Y, Sanoyas Hishino Meisho; Yamaguchi, H, Osaka Univ; Fujii, Y, Sanoyas Hishino Meisho; Yao, T, Osaka Univ, Japan

**Load Combination for Strength and Fatigue Analyses of Ship Structure**
Shin, Y, Kim, B K, Kim, S, Hwang, C, Wang, X, American Bureau of Shipping, USA; Fyfe, A J, PAFA Consulting Engineers, UK

**A Numerical Calculation of Relative Wave Height Generated by a Seagoing Ship in Waves**
Inoue, Y, Kamruzzaman, M, Yokohama National Univ, Japan

**Time-domain Simulation of Four-quadrant Propeller Flows by a Chimera Moving Grid Approach**
Chen, H C, Texas A&M Univ; Lee, S K, American Bureau of Shipping, USA

**Numerical Analysis of Flow Characteristics around a Rudder by Multi-block Method**
Shin, Y S, Halla Univ; Jo, C H, Inha Univ, Korea

**Estimation Method of Drift Resistance Acting on Broken or Inclined Ships**
Hoshino, K, Hara, S, Yamakawa, K, Yukawa, K, National Maritime Research Inst, Japan

**Numerical Simulation of the Interaction of a Propeller Jet and Ground**
Lobatchev, M P, Pustoshny, A V, Sazonov, K E, Tchitcherine, I A, Krylov Shipbuilding Research Inst, Russia

# WEDNESDAY 13:20

Plenary Presentation I (V.1)

**Wednesday** May 26 13:20 Vauban

**Up-dating the Canadian Standards Association Offshore Structures Code**
Frederking, R, National Research Council; Brown, T, Univ of Calgary; Grant, R, CBCL Limited, Canada
Introduction by Wardenier, J, Delft Univ of Technology, The Netherlands

## 56. OFFSHORE VII: FPSO/SPAR/TLP/VLFS 5 (V. 1)

Wednesday May 26 14:00 Vauban

**Chair**: Roesset, J M, Texas A&M Univ, USA

**Modeling of the Separated Flow over Bilge Keels of FPSO Hulls under Heave and Roll Motions**
Kinnas, S P, Yu, Y H, Kacham, B, Univ of Texas at Austin, USA

**An Experimental and Numerical Study of Roll Motions for a Barge-type LNG FPSO**
Choi, Y R, Univ of Ulsan; Kim, J H, KRISO/KORDI; Song, M J, Kim, Y S, Daewoo Shipbuilding & Marine Engineering, Korea

**A Roll Damping Prediction Method for a FPSO with Steady Drift Motion**
Ikeda, Y, Ali, B, Osaka Prefecture Univ, Japan

**Roll Motion Reduction Devices for Harsh Environmental FPSOs**
Park, I K, Yang, J H, Shin, H S, Hyundai Heavy Industries, Korea

**Effect of Roll Damping on the FPSO Motions**
Lee, D Y, Hong, S K, Choi, Y H, Kim, S E, Samsung Heavy Industries, Korea

**FPSO Roll Damping Prediction from CFD and 2D Model Tests Investigations**
Ledoux, A, Princia RD ; Molin, B, ESIM ; de Jouette, C, Principia RD ; Coudray, T, Technip, France

**Development of Diagonal Tensioning System for Lifting FPSO Topside Module with Eccentric Center of Gravity**
Yang, Y T, Kwon, J S, Kumar, R, Hyundai Heavy Industries, Korea

**Simplified Model of the Nonlinear Oscillations of Two Ships in Tandem**
Souza Junior, J R, Fernandes, C G, Univ of Sao Paulo, Brazil

**Computation of Wave and Current Loads on Offloading FPSOs**
Chen, X-B, Orozco, J-M, Malenica, S, Bureau Veritas, France

## 57. HYDRO Dynamics and Forces IV (V. 3)

Wednesday May 26 14:00 Colbert

**Chair**: Powers, E J, Univ of Texas at Austin, USA
**Co-Chair**: Inoue, Y, Yokohama National Univ, Japan

**Wave Drift Added Mass of a Vertical Circular Cylinder of Which Draft is Same as the Water Depth Derived from a Moving Frame Formulation**
Kinoshita, T, Bao, W, Yoshida, M, Univ of Tokyo, Japan

**Simulation of Ship Motion and Deck-wetting Due to Steep Random Seas**
Kim, C H, Adil, A M, Texas A&M Univ, USA

**Nonlinear Drift Motion of a Ship in Heavy Beam Seas**
Kuroda, T, Hokkaido Univ; Ikeda, Y, Osaka Prefecture Univ, Japan

**Fundamental Model Experiments of a Reduction System for Low-frequency Ship Motions**
Yoneyama, H, Port and Airport Research Inst; Shiraishi, S, Coastal Development Inst of Tech; Satoh, H, Ministry of Land, Japan

**Nonlinear Dynamic Analysis of Ship Capsizing in Random Waves**
Falzarano, J M, Cheng, J, Vishnuboltha, S, Univ of New Orleans, USA

**Wave Groups: Their Characterization and Effects on Moored Ships**
Neves, M G, Capitco, R, Santos, J A, LNEC, Portugal

**A Study on Seaquake Forces Acting on Floating Body due to Seaquake by Three Dimensional Time Domain Analysis**
Jang, R D, Korean Register of Shipping, Korea; Higo, Y, Hiroshima Univ, Japan

**Numerical Study of Nonlinear Loads on Vertical Cylinders in Extreme Waves**
Pang, H L, Zhang, Q H, Qin, C R, Han, T, Tianjin Univ, China

## 58. COASTAL ENG IV: Erosion & Sediment Transport (V. 3)

Wednesday May 26 14:00 Bonaparte

**Chair**: Deguchi, I, Osaka Univ, Japan
**Co-Chair**: Shyue, S W, National Sun Yat-sen Univ; Taiwan, China

**Determination and Control of the Longshore Sediment Transport at Karaburun Fishery Harbor (Black Sea Coast of Istanbul)**
Yuksel, Y, Ari, A, Cevik, E, Yildiz Tech Univ; Fuler, I, Yuksel Proje International; Yalciner, A C, Middle East Technical Univ, Turkey

**Numerical Studies of the Circulation, Sediment Transport, and Dispersion of Contaminants in the Persian Gulf**
Sadrinasab, M, Kaempf, J, Flinders Univ of South Australia, Australia

**A Two-dimensional Vertical Finite-element Mathematical Modeling of Sediment Transport due to Tidal Flow**
Wang, J F, Li, S S, Tianjin Univ; Shi, Z, Shanghai Jiao Tong Univ, China

**Experimental Study on the Beach Drainage Effects**
Damiani, L, Petrillo, A F, Politecnico di Bari, Italy

**Experiment on Sand Transport in an Oscillatory Flow**
Kan, S, Baba, N, Katsuragi, T, Kitaura, K, Osaka Prefecture Univ, Japan

**Applicability of 3D Morphodynamic Model with Shoreline Change Using a Quasi-3D Nearshore Current Model**
Kuchiishi, T, Kato, K, NIKKEN Consultants; Kuroiwa, M, Matsubara, Y, Tottori Univ; Noda, H, Tottori Univ of Environmental Studies, Japan

**Shoreline Configuration Equilibrated with Protective Structures**
Koh, R, Port Hydraulic Research Center, Turkey

**Erosion of an Artificial Beach Constructed on Reclaimed Land**
Yoneda, N, Sugo, Y, Yauchi, E, Chiba Inst of Technology, Japan

## 59. GEOTECH VII : Foundation (V. 2)

Wednesday May 26 14:00 Port cros, Hotel

**Chair**: Kim, S S, Hanyang Univ, Korea
**Co-Chair**: Audibert, J M E, Fugro-McClelland Marine Geosciences; USA

**Earthquake Resistant Foundation Retrofit Designs for Offshore and Coastal Embankments**
Adalier, K, Florida State Univ; Pamuk, A, Zimmie, T F, Rensselaer Polytechnic Inst, USA

**Model Tests in Saturated Sand to Investigate the Behaviour of Multi-footing Caisson Foundation for Offshore Wind Turbines**
Kelly, R B, Houlsby, G T, Byrne, B W, Martin, C M, Univ of Oxford, UK

**Recovery of Wall Friction after Penetration in Skirt Suction Foundation**
Masui, N, Obayashi Corp, Japan

**Penetration Analysis of Spudcan Foundation in Layered Soils**
Mehryar, Z, Hu, Y, Curtin Univ of Technology, Australia

**Study on the Horizontal Bearing Capacity of Bucket Foundations**
Liu, Z W, Win, C R, Tianjin Univ, China

**A 3-D Quality Control System for Foundation Constructions**
Tamura, M, Building Research Inst; Sato, H, Mizutani, Y, Osakabe, T, Kouda, M, Makiuchi, K, Kawamura, M, Nihon Univ, Japan

**Deformation Analysis of Offshore Structure-ground System with Change in Rigidity and Strength of Sand Ground**
Yokohama, S, Miura, S, Hokkaido Univ, Japan

**Case Study on Progressive Displacement Method Constructed in the South Coastal Area in Korea**
Kim, S S, Hanyang Univ; Shin, H Y, Chung-Ang Univ; Han, S J, Hanyang Univ; Sym, S H, Samsung Corp, Korea

## 60. AQUABIO MECHANICS & ROBOTICS (V. 2)

Wednesday May 26 14:00 Porquerolles, Hotel

**Chair**: Kato, N, Osaka Univ, Japan
**Co-Chair**: Wheeldon, H, ECA, France

**Biology-inspired Precision Maneuvering of Underwater Vehicles (Part 3)**
Kato, N, Osaka Univ; Liu, H, Chiba Univ; Morikawa, H, Shinshu Univ; Ando, Y, Shigetomi, T, Osaka Univ, Japan

**Mechanical Characteristics of Caudal Fin Resulting from Caudal Muscle-skeletal Structure of Bluefin Tuna**
Morikawa, H, Yusa, K, Kobayashi, S, Shinshu Univ, Japan

**Controlling Underwater Robots with Electronic Nervous Systems**
Ayers, J, Inst for Non-linear Science/Northeastern Univ, USA; Volkovskii, A, Rukov, N, Selverston, A, Abarbanel, H, Rabinovich, M, Inst for Non-linear Science

**Development of a Novel Type of Underwater Micro Biped Robot with Multi DOF**
Guo, S X, Okuda, Y, Kagawa Univ; Asaka, K, Osaka National Research Inst, AIST, Japan

**Generation of Movement for Multi-link Propulsion Mechanism in Fluid**
Kobayashi, S, Kameyama, T, Morikawa, H, Shinsyu Univ, Japan

**Research on Patrol Algorithm of Multiple Behavior-based RoboFishes**
Sang, H, Wang, S, Tan, M, Zhang, Z, Inst of Automation, CAS, China

**The SeaKeeper Remote Minehunting System**
Ferguson, J S, ISE Ltd, Canada; Waquet, P, DCN SA, France

**An Optical Control for Multiple Unmanned Underwater Crawling Vehicles**
Lee, K H, US Navy Coastal Systems Station, USA

**A Novel Deep-sea Variable Buoyancy Control System**
Bagley, P M, Jamieson, A J, Player, A, Univ of Aberdeen, UK

## ISOPE Friction Stir Welding Symposium
## 61. SW III: Steels and Alloys (V. 4)

Wednesday May 26 14:00 Raimu 1

**Chair**: Threadgill, P L, TWI Ltd, UK
**Co-Chair**: Sorensen, C D, Brigham Young Univ, USA

**Friction Stir Welding and Processing of Ferritic Steels**
Nelson, T W, Su, J Q, Brigham Young Univ, USA

**Friction Stir Welding Equipment and Method for Joining High Melting Temperature Alloy Pipe**
Packer, S M, MegaStir Technologies; Matsunaga, M, Tecnara Tooling, USA

**A Microstructural Study of Friction Stir Welded Joints of Carbon Steels**
Ozekcin, A, Jin, H, Koo, J Y, Bangaru, N V, Ayer, R, ExxonMobil Research and Engineering; Packer, S, MegaStir Technologies, USA

**Friction Stir Welding of Duplex Stainless Steels**
Steel, R J, MegaStir Technologies; Sterling, C J, Brigham Young Univ, USA

**Microstructural Evolution of 304 Austenitic Stainless Steel during Friction Stir Welding**
Kokawa, H, Park, S H, Sato, Y S, Tohoku Univ; Okamoto, K, Hirano, S, Inagaki, M, Hitachi Ltd, Japan

**Friction Stir Welding of Superplastic Zn-22Al Alloy**
Nishihara, T, Kokishikan Univ, Japan

## 62. PIPELINES/RISERS/MOORING III (V. 2)

Wednesday May 26 14:00 Raimu 2

**Chair**: Gresnigt, A M, Delft Univ of Technology, The Netherlands
**Co-Chair**: Nystrøm, P R, ABB Offshore Systems, Norway

**Ultimate Stress Analysis for Subsea Pipeline Design against Earthquake**
Duan, M L, China Classification Society; Sun, Z C, Fudan Univ; Gao, X, China Classification Society; Chen, D C, Peking Univ; Jia, X, Su, J, CNOOC Research Center, China

**Seismic Response Analysis on Free Spanning Submarine Pipeline**
Zhou, J, Li, X, Fan, Y F, Dalian Univ of Technology; Liu, Q T, Victory Oil, China

**Expansion and Buckling Design for Pipe-in-pipe Systems Laid on an Uneven Seabed**
Nystrom, P R, Tornes, K, Rundsag, J O, Ayele, J, ABB Offshore Systems, Norway

**General Expansion and Buckling Behaviour of Pipe-in-pipe Systems**
Tornes, K, Rundsag, J O, Nystrom, P R, ABB Offshore Systems, Norway

**Global Buckling Behaviour of Internally Clad Pipelines**
Tornes, K, Nystrom, P R, Bjordal, K, Rundsag, J O, ABB Offshore Systems, Norway

**Elastic and Inelastic Upheaval Buckling of Pipelines**
Rundsag, J O, Tornes, K, Nystrom, P R, ABB Offshore Systems, Norway

## 63. OCEAN & WIND ENERGY II (V. 1)

Wednesday May 26 14:00 Dumont

**Chair**: Kuo, C, Univ of Strathclyde, UK
**Co-Chair**: Zaaijer, M B, TU-Delft, The Netherlands

**Floating Windfarms for Shallow Offshore Sites**
Henderson, A R, Ceasa, UK ; Bulder, B, ECN ; Huijsmans, R, MARIN ; Pierik, J, ECN ; Snijders, E, MSC ; van Hees, M, MARIN ; Wijnants, G H, Wolf, M J, TNO-BOUW ; Zaaijer, M B, TU-Delft, The Netherlands

**Reliability of Offshore Wind Turbines against Wind and Wave Loading**
Manuel, L, Saranyasoontorn, K, Univ of Texas at Austin ; Sweetman, B A, Texas A&M Univ at Galveston, USA

**Contributions of Naval Architecture to Offshore Wind Energy Devices**
Kuo, C, Sukovoy, L, Univ of Strathclyde, UK

**Hydrodynamic Loading on Offshore Wind Turbines**
Henderson, A R, Ceasa, UK ; Zaaijer, M B, Delft Univ of Technology, The Netherlands

**Numerical Analysis of Large-scale Offshore Vertical Axis Wind Turbine**
Cheboxarov, V V, Cheboxarov, V V, Bekker, A T, Far Eastern State Technical Univ, Russia

**Modelling and Analysis of Foundations of Offshore Wind Turbines**
Zaaijer, M B, Delft Univ of Technology, The Netherlands

**Analysis of the Fatigue Damage on the Large Scale Offshore Wind Turbines Exposed to Wind and Wave Loads**
Yamashita, A, Nippon Steel ; Sekita, K, Tokai Univ, Japan

## 64. ADVANCED SHIP TECHNOLOGY II (V. 4)

Wednesday May 26 14:00 Puget

**Chair**: Park, R S, Univ of Ulsan, Korea
**Co-Chair**: Yamaguchi, S, Kyushu Univ, Japan

**A Stochastic Model for Evaluation of Seakeeping Performance**
Minoura, M, Naito, S, Osaka Univ, Japan

**The Performance Test of Kogas Membrane for Applying to the Large Scale LNG Storage Tank and LNG Carrier**
Kim, Y K, O, B T, Yoon, I S, Hong, S H, Yang, Y M, Korea Gas Corp, Korea

**A Numeric Method for Predicting Wash Waves of SES**
Xie, N, Jasionowski, A, Vassalos, D, Univ of Glasgow and Strathclyde, UK

**Sail and Flow Interaction Taking into Account the Deformation and the Displacements of the Stay**
Mounoury, S, Hauville, F, Institut de Recherche de L'Ecole Navale, France

**Effect of Interaction between Hybrid-sails and the Hull on an Oceangoing Sailing**
Fujiwara, T, Kitamura, F, Ueno, M, Minami, Y, National Maritime Research Inst, Japan

**Position Control of Floating Structure by Neural-net Controller**
Nakamura, M, Kyushu Univ; Shima, T, Nissan Motor, Japan

**Recent studies on Polar Restriction Diagrams for Dynamically Positioned Rigs**
Oliveira, C A F, Vardaro, E, Pallaoro, A A, Petrobras; Jabob, B P, Vieira, L T, COPPE/UFRJ, Brazil

**Deepwater Offshore Loading Using Dynamic Positioning of Tankers**
Kaasen, K E, MARINTEK, Norway; Olsen, C W, Remora Technology; Steube, C G, ConocoPhillips Marine, USA

## WEDNESDAY 18:30

**Conference Annual Banquet**

**18:30** Hyeres

*Bus departs at 18:30 from the Neptune Convention Center.*

# THURSDAY 08:00

### 65. OFFSHORE VIII: FPSO/SPAR/TLP/VLFS 6 (V. 1)

Thursday May 27 08:00 Vauban

**Chair**: Haver, S, Statoil, Norway
**Co-Chair**: Park, I K, Hyundai Heavy Industries, Korea

**First- and Second-order Hydrodynamic Forces and Moments between Two Offshore Structures in Waves**
Ha, M K, Kim, M S, Park, J J, Lee, J H, Samsung Heavy Industries, Korea

**A Finite-element Computation for Three-dimensional Problems of Sloshing in LNG Tank**
Kim, J W, American Bureau of Shipping, USA; Sim, I H, Daewoo Shipbuilding & Marine Eng, Korea; Shin, Y, American Bureau of Shipping, USA; Park, J S, Daewoo Shipbuilding & Marine Eng, Korea; Bai, K J, Seoul National Univ, Korea

**Design Considerations for Modular FPSO Hull System**
Sliwinski, M, Vencor Technologies, Canada

**Investigation on Hydrodynamic Performance of a Turret Moored FPSO by Using Hybrid Model Test Technique**
Zhang, H M, Yang, J M, Xiao, L F, Shanghai Jiao Tong Univ, China

**Testing a FPSO System in Waves**
Sales, J S, Vinicius, Sphaier, S H, COPPE/UFRJ; Maseti, I Q, Henrique S, Correa, S, Petrobras, Brazil

**Performance of BZ25-1 FPSO Exposed to Various Environments during Operation**
Xiao, L F, Yang, J M, Peng, T, Li, X, Shanghai Jiao Tong Univ, China

### 66. HYDRO Nonlinear Waves I (V. 3)

Thursday May 27 08:00 Colbert

**Chair**: Ferrant, P, Ecole Centrale de Nantes, France
**Co-Chair**: Huijsmans, R H M, MARIN, The Netherlands

**The Generation and Propagation of Deep Water Multichromatic Regular and Irregular Nonlinear Long-crested Surface Waves**

Baddour, R E, Inst for Marine Dynamics, NRC; Parsons, W, College of the North Atlantic, Canada

**Generation of Fully-nonlinear Prescribed Wave Fields Using a Spectral Model**
Bonnefoy, F, Le Touze, D, Ferrant, P, Ecole Centrale de Nantes, France

**Performances and Applications of a 3D Wave Tank Accelerated by a Fast Multipole Algorithm**
Fochesato, C, Dias, F, ENS-Cachan, France; Grilli, S, Univ of Rhode Island, USA

**Numerical Simulation of Fully-nonlinear Wave Propagation by Use of a Viscous Numerical Wave Tank (νNWT)**
Park, J C, Pusan National Univ; Heo, J K, Hanjin Heavy Industries; Lee, Y G, Inha Univ; Chun, H H, Pusan National Univ, Korea

**Numerical Simulations of Fully Nonlinear Wave Motions in a Viscous Numerical Wave Tank (νNWT)**
Park, J C, Chun, H H, Pusan National Univ; Park, I R, KRISO/KORDI, Korea

**Comparative Analysis of Finite Element Models Based on the Nonlinear and Linear Time Dependent Mild-slope Equation**
Fortes, C J E M, LNEC, Portugal

**Laboratory Experiments with an Optical Instrument for Measuring, Recording and Imaging Washover**
Yankielun, N E, US Army Cold Regions R&E Lab; Clark, J H, Naval Undersea Warfare Center, USA

## 67. COASTAL ENG V: Tsunami & Current (V. 3)

Thursday May 27 08:00 Bonaparte

**Chair**: Kim, M H, Texas A & M Univ, USA
**Co-Chair**: Mizutani, N, Nagoya Univ, Japan

**3D Direct Numerical Analysis of Wave-Flow Interaction in a Port**
Mizutani, N, Hur, D S, Nagoya Univ, Japan

**Study on Disaster Prediction and Tsunami Refuge Route to Nankai Earthquake**
Okabayashi, K, Tagaya, K, Takeuchi, T, Ono, M, Kochi National College of Technology, Japan

**Experimental Study of Tsunami Inundation in Coastal Urban Area**
Yasuda, T, Hiraishi, T, Port and Airport Research Inst, Japan

**Numerical Simulation of Wave-induced Currents behind a Breakwater and Comparison with PIV Measurements**
Lee, J L, Park, C S, Sungkyunkwan Univ, Korea

## 68. GEOTECH VIII : Soil & Stability 1 (V. 2)

Thursday May 27 08:00 Port cros, Hotel

**Chair**: Chien, L-K, National Taiwan Ocean Univ, Taiwan, China

**Improvement of Soft Hong Kong Marine Deposits by Mixing with Cement**
Yin, J H, Hong Kong Polytechnic Univ, Hong Kong

**Development of the Ready-mixed Soil Material**
Chen, J W, Chang, C F, National Cheng Kung Univ, Taiwan, China

**Electrochemical Cementation of Calcareous Sand for Offshore Foundations**
Shang, J Q, Mohamedelhassan, E E, Univ of Western Ontario, Canada; Ismail, M A, Randolph, M F, Univ of Western Australia, Australia

**A Study of Ground Improvement for Silty Clay Using Electro-osmotic Chemical Grouting**
Ou, C Y, Yang, Y K, National Taiwan Univ of Science and Technology; Chien, S C, Lan-Yang Inst of Technology, Taiwan, China

**Properties of Soilcrete Stabilized with Jet Grouting**
Fang, Y S, National Chiao Tung Univ; Kuo, L Y, Ministry of Transportation and Communications, Taiwan, China

## 69. TOWED CABLES & UNDERWATER OBSERVATION (V. 2)

Thursday May 27 08:00 Porquerolles, Hotel

**Chair**: Drogou, J F, IFREMER, France
**Co-Chair**: Sim, J S, KORDI; Korea

**Dynamic Analysis of a Towed Underwater Vehicle System**
Haugen, G K, Grahl-Madsen, M, Bergen University College, Norway

**Technical Approach and Improvement of Air-gun Towing System**
Shibata, H, Ohwatari, Y, Katayama, T, Nippon Marine Enterprises; Baba, K, Momma, H, JAMSTEC, Japan

**Experimental Study on a Controllable Underwater Towed System**
Ye, J W, Wu, J M, South China Univ of Technology, China

**Design and Modeling of Synthetic Electro-Optical-Mechanical Cables For Use with Moored-Buoy Observatories**
Grosenbaugh, M, Paul, W, and Frye, D, Woods Hole Oceanographic Institution, USA

**First Tests of Penfeld: A New Seabed Penetrometer**
Meunier, J, Sultan, N, Jegou, P, Harmegnies, F, IFREMER, France

**Near Real Time Ocean Observatory Design**
Waldmann, C, Univ of Bremen, Germany

**Marine Architecture and Installation Methods Developed for the Deep Sea Neutrino Telescope**
Valdy, P, IFREMER, France

## 70. MATERIALS/WELDING/FATIGUE III (V. 4)

Thursday May 27 08:00 Raimu 1

**Chair**: Murakawa, H, Osaka Univ, Japan

**Production and Properties of High-Strength Steel Plates for Offshore Applications**
Kern, A, Niessen, T, Schriever, U, Tschersich, H-J, ThyssenKrupp Stahl, Germany

**On the Automation System for Plate Forming by Line Heating**
Lee, J S, Univ of Ulsan, Korea

**Assessment of Corrosion Defects in Pipelines**
Andrade, E Q, Benjamin, A C, Petrobras, Brazil

**Integrity Assessments of High Pressure Pipelines with Axial Flaws**
Ruggieri, C, Univ of Sao Paulo, Brazil

**Modelling of the Manufacturing Process of Tight Fit Pipe**
Focke, E S, TU-Delft/Heerema Marine Contractors Nederland; Gresnigt, A M, Meek, J, TU-Delft, The Netherlands; Nakasugi, H, Kuroki T&P, Japan

**Engineering Critical Assessment of Girth Welds in Laterally Buckling Pipelines**
Sriskandarajah, T, Sreetharan, T, Bedrossian, A, Kellogg Brown and Root, UK

## 71. PIPELINES/RISERS/MOORING IV (V. 2)

Thursday May 27 08:00 Raimu 2

**Chair**: Moshagen, H, Statoil, Norway

**A Probabilistic Model of Hummocks Impact on the Sea Bottom and Subsea Pipelines**
Bekker, A T, Sabodash, O A, Vavilin, R V, Far-Eastern State Technical Univ, Russia

**Estimation of the Action of Gas Pipeline on the Permafrost Soils Using as Foundations**
Minkin, M, Magomedgadzhiyeva, M, Dmitriyeva, S, OPIRS, Russia

**The Complex Damping Dynamic Characteristic Analysis of Submarine Free Spanning Pipelines**
Fu, Q, Guo, H Y, Ocean Univ of China, China

**Response of an Armoured Riser for Arctic Offshore Loading**
Bonnemaire, B, NTNU, Norway

**Numerical Analysis of Marine Riser's Dynamic Behaviour**
Ljustina, A M, Senjanovic, I, Parunov, J, Rudan, S, Univ of Zagreb, Croatia

**Integrated Fluid-structure Model (RVM-FEM) for Riser Analysis**
Martins, S B C, Sphaier, S H, Neto, S F S, COPPE/UFRJ, Brazil

**Natural Frequencies and Mode Shapes of Beams with Step Change in Cross-section**
Kim, Y C, Nam, A V, Yeungnam Univ, Korea

## 72. OCEAN & WIND ENERGY III (V. 1)

Thursday May 27 08:00 Dumont

**Chair**: Hong, S Y, Korea Research Inst of Ship and Ocean Eng, Korea

**Effect of LIMPET Control Algorithms on Transmission Network Power Quality**
Boake, C B, Shiono, M, Folley, M, Queen's Univ Belfast ; Ellen, H, Wavegen, UK

**Marine Energy in the Strait of Gibraltar : A Case of Dike Built Enclosing the Strait**
Cañada, F, Spain

**Hydraulic Characteristic of Floating Buoy for Tidal Current Power Generation**
Kashiwabara, T, Nakajima, N, Kochi National College of Technology ; Kanemoto, T, Kyushu Inst of Technology ; Nakanishi, Y, Kanagawa Univ, Japan

**A Hybrid Model Test of a Deep Water OTEC Mooring System**
Hong, S, Kim, J H, Hong, S W, Hong, S Y, KRISO/KORDI, Korea ; Jalihal, P, Ravindran, M, NIOT, India

**The Oscillating Wave Surge Converter**
Folley, M, Whittaker, T, Boake, C, Osterried, M, Queen's Univ Belfast, UK

**Non-linear Simulation of Wave Energy Devices**
Mingham, C G, Gian, L, Causon, D M, Ingram, D M, Manchester Metropolitan Univ, UK

### 73. COLLISION, IMPACT & DAMAGE (V. 4)
Thursday May 27 08:00 Puget

**Chair**: Ueda, Y, Osaka Univ, Japan
**Co-Chair**: Varyani, K S, Univ of Glasgow, UK

**Numerical Experiments on Slamming of Rigid Wedge-shaped Bodies**
Causon, D M, Mingam, C G, Ingram, D M, Qian, L, Manchester Metropolitan Univ, UK

**SPH and Finite Volume Simulations of a Wedge Water Entry**
Doring, M, Oger, G, Leroyer, A, Alessandrini, B, Visonneau, M, Ecole Centrale de Nantes, France

**Visualization of Shipping Water on Running Ship Foredeck in Regular Head Seas**
Tanizawa, K, Sawada, H, Hoshino, K, Tsujimoto, M, National Maritime Research Inst, Japan

**Mechanics of Ship Grounding**
Kajaste-Rudnitski, J, Varsta, P, Matusiak, J, Helsinki Univ of Technology, Finland

**Dynamic Analysis of the Drillstring Protection System from Ice-Floe Impacting**
Tikhonov, V S, Safronov, A I, Gelfgat, M Y, Aquatic Co, Russia

**A Simplified Numerical Simulation for the Estimation of Transient Behavior of a Back Face Seated Occupant**
Shibue, T, Ohmasa, M, Kinki Univ, Japan

## THURSDAY 10:45

### 74. OFFSHORE IX: Offshore Engineering 1 (V. 1)
Thursday May 27 10:40 Vauban

**Chair**: Boswell, L F, City Univ, UK
**Co-Chair**: Jain, A K, IIT Delhi, India

**Comparative Evaluation of Jack-up and Jacket Structures Using Non-linear Dynamic Analysis**
Panagiotopoulos, P, Izzuddin, B A, Imperial College London; Hamdan, F, The Steel Construction Inst, UK

**Numerical Simulation of Local Scour around a Large-scale Vertical Circular Cylinder due to Combined Wave and Current Action**
Li, Y C, Liu, D L, Cheng, B, Li, L P, Dalian Univ of Technology, China

**Seismic Fragility Analysis of Pile-founded Offshore Platforms**
Yasseri, S F, Kellogg-Brown & Root (UK), UK; Ossei, R, France

**Using Neural Networks in Determining Random Wave-induced Hydrodynamic Forces Acting on a Cylindrical Pile**
Yaghin, M A L; Sanaaty, B, Urmia Univ, Iran

**Assessment of Base-structure Connection by Using Modal Testing Method for Offshore Structures**
Khiem, N T, Son, D, Inst of Mechanics; Luong, H X, Le Quy Don Univ; Tien, P H, NCST, Vietnam

**Static Versus Dynamic Response of Jackets Exposed to Wave-in-deck Loading**
Van Raaij, K, Jakobsen, J B, Stavanger University College, Norway

**Modelling of Marine Growth Effect on Offshore Structures Loading Using Kinematics Field**
Schoefs, F, Univ of Nantes; Boukinda, M L, Belorgey, M, Univ of Caen, France

## 75. HYDRO Nonlinear Waves II V. 3)

Thursday May 27 10:40 Colbert

**Chair**: Grilli, S T, Univ of Rhode Island, USA
**Co-Chair**: Rey, V, Univ of Toulon, France

**Two-phase Flow Modelling of Breaking Waves without Interface Reconstruction**
Duval, M, Astruc, D, Legendre, D, Inst de Mecanique des Fluides de Toulouse, France

**Large Eddy Simulation of Wave Overtopping on Nonuniform Cartesian Cut-sell Grids**
Li, T Q, Troch, P, De Rouck, J, Ghent Univ, Belgium

**Large Eddy Simulation of Vortices Induced by Plunging Breaking Waves**
Lubin, P, Vincent, S, Caltagirone, J-P, Ecole Nationale Superieure de Chimie et de Physique de Bordeaux; Abadie, S, ISA-BTP, France

**Laboratory PIV Measurements of Waves Breaking on a Beach**
Kimmoun, O, ESIM; Branger, H, Zucchini, B, IRPHE, CNRS, France

**Energy Dissipation and Transfer in Breaking Waves Generated by Directional and Multi-frequency Focusing in Deep Water**
Hong, K Y, KRISO/KORDI, Korea; Conde, E M, IPN, Mexico

**Flow Field Measurements in Broken Waves and Bores**
Longo, S, Univ of Parma; Petti, M, Univ of Udine, Italy

**Numerical Modeling and Experiments for Solitary Wave Shoaling and Breaking over a Sloping Beach**
Grilli, S, Gilbert, R, Univ of Rhode Island, USA; Lubin, P, Vincent, S, MASTER-ENSCPB; Astruc, D, Legendre, D, Duval, M, IMFT; Kimmoun, O, ESIM; Branger, H, IRPHE; Drevard, D, Fraunie, P, LSEET; Abadie, S, LaSAGeC, France

## 76. COASTAL ENG VI: Estuary Process (V. 3)

Thursday May 27 10:40 Bonaparte

**Chair**: Li, Y-C, Dalian Univ of Technology, China

**Influence of Stabilization Work of a Narrow Inlet on Tidal Response of an Estuary**
Arita, M, Aoki, S, Toyohashi Univ of Technology, Japan

**The Coastal Erosion and Evolution of the Abandoned Lobe of the Yellow River Delta**
Li, A L, Li, G X, Cao, L H, Yang, R M, Ocean Univ of China, China

**Field Measurement of Tidal Oscillation in an Estuary with a Narrow Inlet**
Aoki, S, Arita, M, Toyohashi Univ of Technology; Deguchi, I, Osaka Univ, Japan

**Field Measurement of Turbidity Maximum in Hiji River Estuary**
Ifuku, M, Ehime Univ, Japan

**Shallow Water Bathymetric Surveys by Using Model Boat**
Shyue, S W, National Sun Yat-sen Univ; Lai, C P, Lai, C T, Strong Co; Chiu, Y F, Center of Harbor and Marine Technology, Taiwan, China

## 77. GEOTECH IX : Soil & Stability 2 (V. 2)

Thursday May 27 10:40 Port cros, Hotel

**Chair**: Bang, S C, South Dakoda School of Mines and Techn, USA
**Co-Chair**: Fakas, E, Univ of Western Australia, Australia

**A New Method for Seismic Slope Stability Analyses of Submarine Normally Consolidated Clays**
Oudhof, J, Fugro Engineers, The Netherlands

**A New Procedure to Determine the Failure of Soil Slopes**
Huang, T K, Chang, Y L, National Chung-Hsing Univ, Taiwan, China

**Concepts for Mitigation of Spudcan-footprint Interaction**
Dean, E T R, Soil Models Limited, UK

**Mechanism Investigation on Instability and Failure of Structures in Seabed-wave-structure Coupling System**
Liu, H X, Liu, J Q, Tianjin Univ, China

**A Preliminary Study on Seabed Instability Induced by Internal Waves**
Chen, C Y, Hsu, J R C, National Sun Yat-sen Univ, Taiwan, China

## 78. UNDERWATER OBSERVATION & INTERVENTION (V. 2)

Thursday May 27 10:40 Porquerolles, Hotel

**Chair**: Person, R, Ifremer, France
**Co-Chair**: Grosenbaugh, M, Woods Hole Oceanographic Inst, USA

**ESONET: The European Seafloor Observatory Network**
Priede, M, Solan, M, Univ of Aberdeen, UK; Mienert, J, Univ of Tromso, Norway; Person, R, IFREMER, France; van Weering, T, Royal NIOZ, The Netherlands; Pfannkuche, O, GEOMAR, Germany; O'Neill, N, CSA Group, Ireland; Tselepides, A, Inst of Marine Biology of Crete, Greece; Thomsen, L, International Univ Bremen, Germany; Favali, P, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Gasparoni, F, Tecnomare, Italy; Zitellino, N, Istituto di Scienze Marine, CNR, Italy; Millot, C, Lab d'Oceanorgr et de Biogeochimie, France; Gerber, H, TFH Berlin, Germany; Miranda, M, Centro de Geofisica, Portugal; Klages, M, Alfred Wegener Inst, Germany

**Construction of the Eardo Marine Observation Base and Its Operation**
Sim, J S, KORDI; Chun, I S, Konkuk Univ, Korea

**ASSEM: A New Concept of Observatories for Long Term Seabed Monitoring**
Blandin, J, Person, R, IFREMER, France; Strout, J M, NGI, Norway; Briole, P, Ballue, V, IPGP, France; Etiope, G, INGV, Italy; Masson, M, CAPSUM, Germany; Golightly, C R, THALES Geosolutions, Belgium; Lykousis, V, NCMR, Greece; Ferentinos, G, Univ of Patras, Greece

**ARENA: A New Scientific Cable-network for Real-time and Long-term Underwater Observation**
Asakawa, K, Kawaguchi, K, JAMSTEC; Shirasaki, Y, Univ of Tokyo; Kojima, J, KDDI R&D Labs; Muramatsu, J, NEC Corp; Horiuchi, Y, KDDI R&D Labs; Mikada, H, JAMSTEC, ARENA Committee members, Japan

**ORION-GEOSTAR-3: A Prototype of Seafloor Multiparametric Network for Geophysical, Oceanographic and Environmental Monitoring**
Beranzoli, L, Istituto Nazionale di Geofisica e Vulcanologia; Calore, D, Tecnomare-ENI SpA; Favali, P, Istituto Nazionale di Geofisica e Vulcanologia; Furlan, F, Tecnomare-ENI SpA, Italy; Marvaldi, J, IFREMER; Nicot, M, Orca Instrumentation, France

**Advanced Deepwater Intervention with MODUS – Latest Results from Model Tests and Full-scale Operations**
Clauss, G, Hoog, S, TU-Berlin; Gerber, H, TFH Berlin, Germany

**Operational Experience with the Deep Sea Salvage Tool GRAB and Possible Application for Oil Pumping in Deep Sea Wrecks**
Valdy, P, IFREMER, France; Mearns, D, Blue Water Recoveries, UK

## 79. MATERIALS/WELDING/FATIGUE IV (V. 4)

Thursday May 27 10:40 Raimu 1

**Chair**: Tomita, Y, Osaka Univ, Japan
**Co-Chair**: Lee, J S, Univ of Ulsan, Korea

**Three-dimensional Thermal-elastic-plastic FEM Analysis for Predicting Residual Stress and Deformation under Multi-pass Welding**
Serizawa, H, Osaka Univ; Shibahara, M, Kanazawa Inst of Tech; Oda, I, Murakawa, H, Osaka Univ, Japan

**Development of Heat Input Estimation Technique during Line-heating Process Based on Inverse Heat Conduction Analysis**
Tomita, Y, Osawa, N, Hashimoto, K, Osaka Univ; Matsuoka, K, Mitsubishi Heavy Industries; Kikuchi, J, Osaka Univ, Japan

**Influence of Heat Input Distribution Parameters on Formation of Pear-shaped Bead Cracking in Narrow Gap Welding**
Wu, Y M, Osaka Univ; Shibahara, M, Kanazawa Inst of Tech; Nakamura, T, National Inst for Materials Science; Murakawa, H, Osaka Univ, Japan

**A Simple Measuring Method of Welding Inherent Deformation Using Inverse Analysis**
Liang, W, Sone, S, Serizawa, Murakawa, H, Osaka Univ, Japan

**Numerical Estimation of Torsional Deformation of a Ship Longitudinal Frame Produced by Line Heating**
Osawa, N, Osaka Univ; Onoe, M, Universal Shipbuilding; Tani, K, Hitachi Zosen; Kaminaga, H, Mitsui Engineering & Shipbuilding; Murakawa, H, Osaka Univ, Japan

## 80. PIPELINES/RISERS/MOORING V (V. 2)

Thursday May 27 10:40 Raimu 2

**Chair**: Huang, T, Univ of Texas at Arlington, USA
**Co-Chair**: Vogel, H, Seaflex, Norway

**Defect Acceptance Criteria of Reeled SCR**
Hsu, T M, ChevronTexaco Energy Technology, USA

**SLOR Vs SCR for Deepwater Applications: Technical Appraisal**
McGrail, J, Lim, F, 2H Offshore Engineering, UK

**Allowable Tension and Bending Induced SAF Calculation for Riser System Fatigue Design**
Huang, K, Zhang, M, Jin, J, ABB Lummus Global, USA

**In-service Monitoring of Fatigue Risers**
Vogel, H, Seaflex; Nyhus, K A, Subsea 7; Schouw-Hansen, D K, Fugro, Norway

**A System Approach to Marine Terminal Design**
Van Driel, M, Meijer, A, Liu, P, INTEC Engineering, The Netherlands

**Validation of Methods for Assessment of Mooring Line Damping in Deep Water**
Hamilton, J, Kitney, N, Kellogg Brown and Root (UK), UK

## 81. OCEAN & WIND ENERGY IV (V. 1)

Thursday May 27 10:40 Dumont

**Chair**: Sarmento, AJNA, Instituto Superior Tecnico, Portugal

**Performance of Wave Power Generating System Installed in Breakwater at Sakata Port in Japan**
Suzuki, M, Arakawa, C, Univ of Tokyo ; Takahashi, S, Port and Airport Research Inst, Japan

**Overtopping Measurements on the Wave Dragon Nissum Bredning Prototype**
Frigaard, P, Kofoed, J P, Rasmussen, M R, Aalborg Univ, Denmark

**Non-linear Numerical Simulation of Regular Waves Interaction with Overtopping Wave Energy Converters**
Alves, M, Lara, J, Sarmento, A J N A, Losada, I J, Instituto Superior Tecnico, Portugal

**Experimental Study of a Compliant Mooring System for a Floating OWC Device**
Hong, S W, Kim, J H, Hong, S Y, Hong, S, KRISO/KORDI, Korea

**Wave Energy Absorption by a Submerged Sphere of Variable Radius with a Swinging Single Point Moored Tension Line**
Cruz, J M B P, Sarmento, A J N A, Instituto Superior Tecnico, Portugal

**Numerical Performance Investigation of an Array of Heaving Wave Power Converters in Front of a Vertical Breakwater**
Mavrakos, S A, Katsaounis, G, National Technical Univ of Athens, Greece ; Nielsen, K, RAMBOLL, Denmark

**Evaluation of Energy Obtained by Float-type Wave Generation System**
Hadano, K, Taneura, K, Nakano, K, Saito, T, Yamaguchi Univ, Japan

## 82. COMPOSITES & SMART STRUCTURES I (V. 4)

Thursday May 27 10:40 Puget

**Chair**: Dutta, P K, USACRREL, USA
**Co-Chair**: Mouring, S E, US Naval Acadmy, USA

**Polymer and Composite Fracture under Deep Sea Pressure Conditions**
Davies, P, IFREMER, France; Cartii, D D, Cranfield Univ, UK; Peleau, M, IFREMER, France; Partridge, I K, Cranfield Univ, UK

**Composite Pressure Vessel Performance at Cryogenic Temperatures, Creating a "Building Block" Database**
DeLay, T K, NASA/Marshall Space Flight Center; Patterson, J, HyPerComp Engineering, USA

**Shock Loading Effects on the Residual Strength and Stiffness of Composite Panels**
Mouring, S E, US Naval Academy, USA; Louca, L A, Imperial College, UK

**Response of Polymer Composite Helicopter Blades to Thermal De-icing**
Ryerson, C C, Dutta, P K, US Army Cold Regions R&E Lab; Pergantis, G, US Army Research Lab, USA

**Evaluation and Use of CFRP in Full-scale Structure**
Grace, N F, Lawrence Technological Univ, USA

**Development of Composite Prototype Module for the Improved Navy Lighterage System (INLS)**
Garala, H J, Naval Surface Warfare Center, USA

**Hydroscopic and Low Temperature Effects on Hopkinson-bar Notch Toughness in Glass FRP's**
Kellogg, K G, Patil, P E R, Kallmeyer, A R, North Dakota State Univ; Dutta, P K, US Army Cold Regions R&D Lab, USA

**Microstructure and Wear Behaviour of Squeeze Cast 7075 Al-A1203 Particle Composites**
Daoud, A A Y, Abou El-Khair, M, Central Metallurgical R&D Inst, Egypt

# THURSDAY 13:00

## 83. OFFSHORE X: Offshore Engineering 2 (V. 1)

Thursday May 27 13:00 Vauban

**Chair**: Choo, Y S, National Univ of Singapore, Singapore

**Introduction of Detailed Structural Design for Prototype Floating Drilling and Production Project**
Kim, Y M, Kim, M S, Kim, M S, Daewoo Shipbuilding & Marine Engineering, Korea

**MCS Evaluations on Dynamic Responses of an Offshore Structure with Uncertainties**
Kawano, K, Kimura, Y, Fukusako, H, Kagoshima Univ; Takeshi, I, Osaka Sangho Univ, Japan

**Lifting of Large Ship Hull Block Using 4 Cranes**
Choi, K S, Korea Maritime Univ; Kim, D J, Pukyong National Univ, Korea

**Sensitivity Analysis on the Governing Constraints for a Conventional Moderate Sized Offshore Float-over Deck Installation**
O'Neill, L A, Fakas, M, Univ of Western Australia, Australia

**Research of Oil-water Separation Compound Hydrocyclone**
Li, F, Zhao, L X, Wang, Z, Jiang, M H, Zhu, J, Daqing Petroleum Inst, China

**Experimental Investigation of Resistance and Trim of LiftBoat at 5-9 kts**
Latorre, R G, Univ of New Orleans, USA

## 84. HYDRO Nonlinear Waves III (V. 3)

Thursday May 27 13:00 Colbert

**Chair**: Fraunie, P, Univ Toulon et du Var, France,

**Jet-wall Interaction in Shallow Waters**
Lalli, F, APAT; Romano, G P, Univ degli Studi di Roma "La Sapienza", Italy

**Comparative Analysis of Numerical Wave Models for Wave Propagation over Varying Sloping Bottoms**
Fil, L, UNL; Fortes, J, LNEC; Didier, E, UNL; Santos, J A, LNEC, Portugal; Clement, A H, Ecole Centrale de Nantes, France

**Linear Stability Analysis of Strongly Nonlinear, Periodic Gravity Waves in Shallow Water**
Francius, M, Kharif, C, IRPHE-CNRS, France

**Experimental Validation of Prediction Methods for Wave Kinematics in the Coastal Zone**
Chevalier, C, Centre Francais du Littoral; Luck, M, Benoit, M, EDF R&D, France

**Unsteady Interaction of the Surface Gravity Waves with the Nonuniform Current**
Lee, K J, Shugan, I, Kim, K H, Chosun Univ, Korea

**Statistical Behaviour of Bound Long Waves in Coastal Regions**
Gentile, R, Rebaudengo Lando, L, Scarsi, G, Univ of Genova, Italy

**Modelling and Experimental Validation for Tsunami Generated by Submarine Mass**
Enet, F, Grilli, S T, Univ of Rhode Island, USA

## 85. COASTAL ENG VII: Shoreline Ship Operations (V. 3)

Thursday May 27 13:00 Bonaparte

**Chair**: Aoki, S, Toyohashi Univ of Technology, Japan
**Co-Chair**: Hiraishi, T, Port and Airport Research Inst., Japan

**Time-domain Simulation of Floating Pier and Ship Interaction Induced by Harbor Resonance**
Chen, H C, Texas A&M Univ; Huang, E T, Naval Facilities Engineering Service Center, USA

**Research on Relations between Wave Growth and Atmospheric Depressions from Viewpoint of Ship Operations**
Sasa, K, Mizui, S, Hiroshima Nat'l College of Maritime Tech: Nagai, T, Port and Airport Research Inst, Japan

**Measurement of Wave Direction of Ship Waves Generated by a Small Real Vessel**
Shiotani, S, Kobe Univ of Mercantile Marine; Fujii, H, Oshima National College of Maritime Technology; Kouguchi, N, Ishida, H, Kobe Univ of Mercantile Marine, Japan

**CFD Simulation of a Drifting Ship in Shallow Water**
Huang, E T, Naval Facilities Engineering Service Center; Chen, H C, Texas A&M Univ, USA

**Velocity and Temperature Factor on the Performance of Solid Type Rubber Fender**
Yamase, S, Bridgestone Corp; Ueda, S, Tottori Univ, Japan

**An Application of Boussinesq Equations to Bragg Reflection of Water Waves**
Yang, B D, Hsu, T W, Chou, S E, Ou, S H, National Cheng Kung Univ, Taiwan, China

## 86. GEOTECH X : Soil & Stability 3 (V. 2)

Thursday May 27 13:00 Port cros, Hotel

**Chair**: Nabeshima, Y, Osaka Univ, Japan

**Wave-induced Flow Failure of Anisotropic Ground Bearing Coastal Structure and Its Countermeasure Method**
Kawamura, S, Muroran Inst of Technology; Miura, S, Hokkaido Univ; Hayashi, H, North Japan Port and Harbor Consultants, Japan

**The Research on the Seawall Enclosing Operation of Huge Reclamation Project**
Chiu, C C, Taichung Harbor Bureau; Shyu, J, James Shyu & Associates, Taiwan, China

**Predict the Reasonable Pumpage by Quasi 3-dimensional Analysis in Basin Area**
Ehi, T, Chuo Fukken Consultants; Matsui, T, Osaka Univ; Hachiya, M, Adachi, T, Chuo Fukken Consultants, Japan

**Experimental Investigation of a Novel Perforation Technique in Petroleum Wells – Perforation by Drilling**
Rahman, M A, Koksa, M, Islam, R, Dalhousie Univ, Canada

**Prediction of Wooden House Damages due to Settlement Induced by Excavation Work and Deformation Characteristics of Braced Walls**
Shimizu, M, Aoi Engineering; Hayakawa, K, Ritsumeikan Univ; Kani, Y, Nippon Concrete Industries; Nabeshima, Y, Osaka Univ, Japan

## 87. OPTICAL & ACOUSTICAL MAPPING (V. 2)

Thursday May 27 13:00 Porquerolles, Hotel

**Chair**: Cadiou, J F, IFREMER, France
**Co-Chair**: Nakamura, M, Kyushu Univ., Japan

**High Resolution Swath Bathymetric Seabed Mapping with the ROV Victor 6000**
Opderbecke, J, Simeoni, P, Allais, A-G, Edy, C, Bisquay, H, IFREMER, France

**A Laser-assisted Vision Sensor for AUV Navigation**
Dalgleish, F R, Tetlow, S, Allwood, R L, Cranfield Univ, UK

**Benthic Contour Mapping with a Profiler Sonar**
Barat, C, Univ of Nice; Rendas, M-J d, CNRS, France

**Seabed Video Mosaicking with MATISSE: A Technical Overview and Cruise Results**
Allais, A-G, Borgetto, M, Opderbecke, J, Pessel, N, Rigaud, V, IFREMER, France

**250 W Experimental Underwater LD Light**
Dacaudin, J M, Light Technologies; Normand, M, Chable, B, DYNASUB; Cadiou, J F, IFREMER, France

**Underwater Image Mosaic Correction**
Borgetto, M, Jauffret, C, Univ Toulon et du Var; Rigaud, V, IFREMER, France

**Multiparametric In-situ Spectroscopic Measuring System for Coastal Monitoring Employed under Field Conditions in the Baltic Sea**
Kronfeldt, H-D, Schmidt, H, Maiwald, M, Gallasch, L-H, Konat-Stepowicz, J, TU-Berlin, Germany; Lahaître, M, LeNoac'h, A, IFREMER, France; Pfannkuche, J, Amann, H, TU-Berling, Germany; Szymczak-zyla, M, Filipkowska, A, Lubecki, L, Kowalewska, G, Polish Academy of Sciences, Poland; Esteban-Martinez, O, Navarrete, M-C, Diaz-Herrera, N, Univ Complutense Madrid, Spain; Gibson, C, Mac Craith, B, Dublin City Univ, Ireland; Leclercq, M, Jobin Yvon, France

**Comparison of Several Methods for *In-situ* Size Measurements of Moving Animals**
Cadiou, J F, Trenkel, V M, Rochet, J-M, IFREMER, France

## 88. MATERIALS/WELDING/FATIGUE V (V. 4)

Thursday May 27 13:00 Raimu 1

**Chair**: Kern, A, ThyssenKrupp Stahl, Germany
**Co-Chair**: Jang, C D, Seoul National Univ, Korea

**Effects of Cutting and Welding on Hardness Values of Duplex and Superduplex Stainless Steel Weldments**
Heo, H Y, Sun, H S, Jang, K B, Cho, S H, Jang, T W, Samsung Heavy Industries, Korea

**Prediction and Control of Welding Distortions in Stiffened Hull Blocks Using Inherent Strain Approach**
Jang, C D, Rhyu, H S, Seoul National Univ; Lee, C H, Samsung Heavy Industries, Korea

**Development of Welding Deformation Control Method for Thin Panel Block Structure Using Mechanical Tensioning Method**
Kim, S I, Lloyd's Register Asia; Heo, J H, Daewoo Shipbuilding & Marine Engineering, Korea

**Management of Weld-induced Deformation for Panel Blocks**
Lee, J S, Univ of Ulsan, Ulsan, Korea

**Effect of Ambient Pressure on Arc-electrode Behavior**
Ogawa, Y, Matsuda, J, Morita, T, National Inst. of AIST, Japan

**Seam Tracking in Underwater Welding**
Zhong, J, Wang, G R, Liao, X, South China Univ of Technology, China

**Effect of Welding Technique on the Weld Morphology and Hardness of Supermartensitic 13% Cr Steels**
Neubert, V, DN GmbH, Germany; El-Mahallawy, N, Ain Shams Univ, Egypt; Hoffmeister, H, ISSV; Hoffmann, R, H. Butting Edelstahlrohre, Germany

## 89. PIPELINES/RISERS/MOORING VI (V. 2)

Thursday May 27 13:00 Raimu 2

**Chair**: Park, H I, Korea Maritime Univ, Korea

**An Experimental Investigation on the Snap Loading of Marine Cables**
Huang, S, Vassalos, D, Univ of Glasgow and Strathclyde; Kourouklis, A, Univ of Paisley, UK

**Dynamic Tension on Mooring Lines: Comparison of Numerical and Experimental Results**
Simos, A N, Fujarra, A L C, Univ of Sao Paulo, Brazil

**Investigation of the Damage-dependence Response of Mooring Ropes**
Beltran, J F, Williamson, E B, Univ of Texas at Austin, USA

**Assessment of Cable Models for Synthetic Mooring Lines**
Ghoreishi, S R, Messager, T, Cartraud, P, Ecole Centrale de Nantes; Davies, P, IFREMER, France

**The Calculation and Analysis for the 3-D Non-linear Mooring Lines in the Time Domain**
Xiao, Y, Wang, Y Y, Dalian Univ of Technology, China

## 90. OCEAN & WIND ENERGY V (V. 1)

Thursday May 27 13:00 Dumont

**Chair**: Setoguchi, T, Saga Univ, Japan
**Co-Chair**: Curran, R, Queen's Univ of Belfast, UK

**Practical Parametric Study on the Analysis and Design of Impulse Turbine for OWC-type Wave Energy Conversion**
Hyun, B S, Korea Maritime Univ ; Lee, Y Y, Hong, S W, KRISO, Korea

**A Study of a Wave Energy Conversion System Using Four Ball Screw Type Turbine**
Matsuoka, T, Nakazaki, H, Omata, K, Meiji Univ, Japan

**The Pelamis Wave Energy Converter: Numerical and Experimental Hydrodynamic Modelling**
Retzler, C, Pizer, D, Ocean Power Delivery, UK

**Wave Energy Converter with a Linear Generator Subjected to Different Simulated Ocean Waves**
Danielsson, O, Thorburn, K, Eriksson, M, Bernhoff, H, Leijon, M, Uppsala Univ, Sweden

**Unsteady Flow Phenomena of Wells Turbine in Deep Stall Condition**
Setoguchi, T, Kinoue, Y, Mohammad, M, Kaneko, K, Saga Univ ; Takao, M, Matsue National College of Technology, Japan

**Effect of Blade Profile on the Performance of Large-scale Wells Turbine**
Takao, M, Matsue National College of Technology, Japan ; Thakker, A, Abdulhadi, R, Univ of Limerick, Ireland ; Setoguchi, T, Saga Univ, Japan

## 91. COMPOSITES & SMART STRUCTURES II (V. 4)

Thursday May 27 13:00 Puget

**Chair**: Wheat, H G, Univ of Texas at Austin, USA
**Co-Chair**: Knapp, R H, Univ of Hawaii, USA

**Effect of CFRP Repair on the Flexural Behaviour of Corroded RC Beams**
Badawi, M, Soudki, K, Univ of Waterloo, Canada

**Predicting the Life of Reinforced Concrete Structures in Marine Areas**
Yokota, H, Port and Airport Research Inst, Japan; Buenfeld, N R, Imperial College, UK

**Effect of Cold Regions Climate on the Repair and Rehabilitation of Concrete with FRP Composites**
Dutta, P K, US Army Cold Regions R&E Laboratory, USA

**Laboratory Testing of Composite Wrapping Systems**
Wheat, H G, Jirsa, J O, Fowler, D W, Univ of Texas at Austin, USA

**Performance-based Design of Reinforced Concrete Panels on the WWW**
Hoogenboom, P C J, Coskamp, W, Blaauwendraad, J, Delft Univ of Technology, The Netherlands

**Research on Concrete Fatigue Strength under Multi-axial Compressive Cyclic Loading**
Song, Y P, Caowei, Dalian Univ of Technology, China

**Improving Weight Sensitive Composite Pressure Vessel Resistance to Impact Damage**
Patterson, J E, HyPerComp Engineering; DeLay, T K, NASA/Marshall Space Flight Center, USA

**Tension and Bending Fatigue Modeling of Cables**
Knapp, R H, Univ of Hawaii, USA

**FRIDAY MAY 28**

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