

4th International Joint Conference on Civil and Marine Engineering (JCCME 2025)

IET Conference Publications 966

Qingdao, China
8-10 October 2025

ISBN: 979-8-3313-3732-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2025) by the Institution of Engineering and Technology
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

For permission requests, please contact the Institution of Engineering and Technology
at the address below.

Institution of Engineering and Technology
Futures Place, Kings Way
Stevenage, Hertfordshire
U.K. SG1 2UA
United Kingdom

Phone: +44 (0)1438 313311

www.theiet.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Numerical Investigation of Nonlinear Shallow Water Waves Climbing Over Homma-Type Artificial Islands.....	1
<i>Zifeng Sun, Yuxiang Niu, Haowen Yang, Feng Zhang</i>	
Numerical Analysis of Bearing Performance of Steel Cylinder Foundations for Offshore Wind Turbines Under Different Load Conditions.....	7
<i>YanJun Guan, Yuxiang Niu, Chunyang Yu, Ao Qiu, Zifeng Sun</i>	
Research on Active Wave Compensation Based on Ship-Borne Stewart Platform	13
<i>Qi Fu, Liang Li</i>	
Real-Time Causal Control of a Point Absorber Wave Energy for Power Maximization.....	18
<i>Qinli Chen, Liang Li</i>	
Numerical Investigation on the Ascent Performance of Underwater Structures	23
<i>Ying Liu, Jianglong Sun, Jianfeng Qi</i>	
Hybrid-Energy Powered Mobile Platform Design and Hydrodynamic Analysis	30
<i>Aolong Li, Dewang Zhang, Sunqi Liu, Yan Gao</i>	
Simulations of Coastal Hydrodynamics and Sediment Transport Before and After the Implementation of an Artificial Reef Protection.....	35
<i>Zhuo Fang, Chen Shen, Enbang Chen</i>	
Enhancing Navigation Efficiency and Cargo Transportation Assurance in Port Clusters: A Multi-Agent Simulation Approach for Complex Waters	40
<i>Chen Shen, Dachuan Wang, Zhuo Fang, Wentao Ding</i>	
Direct Numerical Simulation of Flow Past a Twisted Circular Cylinder at $Re=500$	45
<i>Ming Zhao, Qin Zhang, Heath Palmer, Vatsal Dhamelia, Adnan Munir</i>	
Research on Local Structure Optimization of Ships Based on Multi-Island Genetic Algorithm.....	50
<i>Zhengxun Yang, Jinju Cui, Deyu Wang</i>	
Effect of Initial Imperfections on the Ultimate Load-Carrying Capacity of CFRP Hat-Stiffened Plate Under Longitudinal Compression.....	56
<i>Lingge Zhang, Hongyang Ma, Shili Sun, Huilong Ren</i>	
Numerical Research on High Temperature Scouring Characteristics of Maritime Thermal Launch.....	61
<i>Hongyu Zhou, Hongyang Ma</i>	
Conceptual Design and Rapid Strength Assessment of an Ultra-Large Scale Steel-Concrete Composite Semi-Submersible Floating Wind Turbine Foundation.....	70
<i>Yihou Wang, Yingfang Liu, Jiayang Sun, Ziyuan Cheng, Jiancheng Zhang, Pu Wang, Zhiyu Li</i>	
Study on Model Test of Bulbous Bow Structure Collapse Process Under Extreme Ice Loads	76
<i>Nan Zhao, Fei Li, Yuwen Xu, Yitao Wang, Xuekang Gu</i>	
Study of the Effect of IACS New Wave Environment on Linear Wave Loads on 158000DWT Crude Oil Tanker	83
<i>Yuhuan Ding, Zhiyong Sun, Hui Li</i>	

Penetration Behaviors and Pullout Capacity of a Novel Suction Anchor with Inverted Peripheral Spikes: An Experimental Study	91
<i>Zhiyuan Sang, Dayong Li</i>	
Hydrodynamic Assessment of Debris-Blocking Net Panel Subjected to Biofouling Accumulation	96
<i>Yue Song, Yunjia Sun, Yuchen Zhang, Zhenxiang Sun</i>	
Research on Axial Force Prediction of Deepwater Jacket Platforms Based on Measured Data.....	101
<i>Lei Zhou, Shizhuo Wu, Xianqiang Qu, Wei Chen, Xuan Shi, Hao Xu, Weiwei Wang</i>	
Study on Model Tests and Numerical Simulations of Ultimate Strength for Large-Span Ship Hull Girders	107
<i>Fei Li, Nan Zhao, Caixia Jiang, Shuai Chen, Weizhen Kong</i>	
Numerical Simulation of Low-Speed Vertical Water Entry Impact for Offset Centroid Hemispherical Shell.....	114
<i>Yibo Wu, Peng Li, Zhuo Wang, Hongde Qin, Haoyu Yin, Zhanhong Yang</i>	
Design and Experimental Study on a Compact Passive Wave-Absorbing Beach using Combined Perforated Plates.....	120
<i>Jinzi Wei, Jie Zhang, Xuhui Li, Zhen Liu, Gang Chen, Bin Tang</i>	
Electrochemical Characterization of Steel Corrosion Evolution and Chloride Transport in Cracked Concrete Under Accelerated Testing	125
<i>Yi Wang, Wang Yao, Yongzhi Guo, Kunmiao Xu, Yunlong Zhang, Yue Liu, Hao Chen</i>	
Research on Fatigue Strength of a VLOC Under Springing in the New Wave Environment.....	130
<i>Yi Hu, Zhiyong Sun, Hui Li</i>	
Underwater Integrated Propulsion System Noise Cause Analysis and Experimental Verification.....	136
<i>Yanan Wang, Yong Xiong, Yang Xiao, Zhenhua Huang, Heng Kuang, Wen Zhang, Shuang Song</i>	
Numerical Investigation of the Flow Field Within a Curved Pipe using a SEM-IDDES/SEM-IDDES-CC Model	141
<i>Guo Wang, Junbo Ge, Linxin Lan, Yunxiang You</i>	
Research on BIM Parametric Assembly Technology for Rail Transit Bridges Driven by Dynamo+Python.....	148
<i>Zheyuan Zhang</i>	
Research on Propulsive Performance of Ordinary Propeller and Ducted Propeller Near Free Surface	153
<i>Youxin Tang, Peng Li, Hongde Qin, Yu Guo, Shuyi Li</i>	
An Optimization Strategy for the Control System of Remotely Operated Vehicles	158
<i>Yuchen Wu, Qiyi Zhang, Xiaowu Li</i>	
Design of Concrete Foundations for Floating Wind Turbines Based on an Equivalent Method	164
<i>Shiming Yang, Shuo Zhao, Qiang Wang, Yanbo Liu</i>	
Intelligent Vision Control System for Underwater Robots Based on Coupled Optical Models	169
<i>An Zhang, Qiyi Zhang</i>	
Ultra-Short-Term Prediction of Ship Roll Motion Based on LSTM	175
<i>Mengyu Kong, Lifan Hu, Xinyu Mu, Ming Zhang, Jie Liu, Chengtao Liu</i>	

Fluid-Structure Interaction of Composite Hull Structure	182
<i>Javid Iqbal, Xueqian Zhou</i>	
Experimental Study on the Drop Slamming Load Characteristics of a Rotating Body Structure	187
<i>Yuyang Cai, Hongfei Gao, Jianxuan Nong, C. Guedes Soares, Xueqian Zhou</i>	
A Method for the Prediction of Motion Response of Hovercraft Slamming on Rigid Surfaces.....	193
<i>Yu Ding, Ao Zhang, Zhihua Zuo, Yunchao Shi, Ning Liu, Xueqian Zhou</i>	
A Review of Digital Twin Models in Hull Structure Damage Identification.....	200
<i>Shiyu Li, Xudong Yang, Lei Li, Yan Wei, Xueqian Zhou, Yu Yang</i>	
Efficiency Study of Megawatt-Hour Scale Ultra-Deep Water Gravity Energy Storage System in Far-Offshore Environment.....	211
<i>Ning Hu, Jie Zhang, Yongao Lv</i>	
A Decision-Making Method for Ship Liquid Tank Transfer Based on Local Optimization Algorithms.....	217
<i>Zhihua Zuo, Ping Xin, Xudong Yang, Shiyu Li, Xueqian Zhou</i>	
Research on Dynamic Characteristics Analysis and Configuration Optimisation of Underwater Umbilical Cable Based on OrcaFlex	223
<i>Yanhang Shao, Qiyi Zhang, Xiaowu Li</i>	
Investigation on the Influence of Sea Ice Modeling Dimensions on Finite Element Analysis of Ice-Breaking During Submarine Sail Structure Surfacing.....	227
<i>Qian Zhang, Guoqing Feng, Yishi Xu, Yunchao Shi</i>	
Application of Numerical Simulation Method in Deep-Sea Mining	234
<i>Zhangle Xie, Junjie Liu, Ziyi Wang, Renjie Shen, Lixin Xu</i>	
Hydrodynamics Research of Oil Booms Based on the Multi-Body Coupling Method	240
<i>Jingya Dai</i>	
Study on Wave Loads of Large Multi-Body Floating Offshore Platform by Model Test.....	245
<i>Nan Gu, Xueqian Zhou, Huilong Ren, Kurniawan T. Waskito</i>	
A Digital-Twin Model-Pattern Matching-Based Structural Health Monitoring System for Gravity-Based Aquaculture Platforms	251
<i>Yan Wei, Xudong Yang, Lei Li, Yu Yang, Xueqian Zhou</i>	
Shipboard Management of Ballast Water Under Challenging Water Quality Conditions	256
<i>Xin Li, Jian Liu</i>	
Analysis of Ship Motion Response Under Different Hull Parameters in Sea Launch.....	261
<i>Xin Li, Yao Teng, Yufan Gao, Hao Liu</i>	
Design and Performance Evaluation of an Electrically Actuated Scissor-Like Extendable Imaging Mechanism for Deep-Sea Ecological Sampling	267
<i>Fanyong Yu, Weijun Xu, Yanli Lei, Baosheng Li, Xueqian Zhou</i>	
Optimization Design of Pressure Hull Structure Based on MIGA Algorithm	274
<i>Weijun Xu, Yiyang Chu, Kunhao Liu, Changjin Liu, Shihang Liu, Guoqing Feng</i>	
Study on Dynamic Characteristics of Thermal-Fluid-Solid Coupling in Propeller End-Face Seal for Pod Propulsion in Polar Ice Regions	280
<i>Lian Chen, Yifan Yang, Yang Xiao</i>	

Marine Ecosystem Assessment and Prediction System Based on LiDAR	287
<i>Yian Zhao, Ben Zhang, Hao Zhao, Chunyong Wang</i>	
The Response Mechanism of Suction Piles During Installation Process in Clayey Seabed of South China Sea.....	295
<i>Xiaoyu Dong, Niantao Zhang, Bo Yang, Yan Dong, Fei Zhang, Wei Li, Xuemei Sun</i>	
The Optimization Study of Side Hull Layout for a High-Speed Trimaran	301
<i>Qiwen Zheng, Cheng Zhang, Dongrui Jiang, Zhouyang Liu, Guanghua He, Ting Cui</i>	
Research on the Design of Ice-Class Propellers	306
<i>Yifan Yang, Lian Chen, Yang Xiao, Wei He</i>	
Real-Time Structural Response Prediction of Subsea Storage Tanks using Reduced-Order Model	311
<i>Weixiang Duan, Chunhao Jiang, Zhenzhong Hu, Yihong Li</i>	
Numerical Simulation of the Impact on Elastic Panels by a Compressible Liquid Jet.....	317
<i>Shengyong Huang, Xiaorui Bai, Songjunduo Yu, Pindeng Li, Li Zhang, Zhiping Wan, Zibin Wang</i>	
On the Hydrodynamic Interference Between Two Foils	322
<i>Shengyong Huang, Xiaorui Bai, Zipan Deng, Xiangzhi Zhu, Li Zhang, Zhiping Wan, Zibin Wang</i>	
AUV Path Tracking Control for Subsea Pipeline Inspection.....	327
<i>Yu Yan, Qinyang Li, Bokun Yang, Guocheng Zhang, Ming Zhang</i>	
Optimization of Integrated Energy System for Deep-Sea Mining Ship with Physical-Assisted Safe Reinforcement Learning.....	335
<i>Lihao Wang, Zongchao Jia, Can Cui</i>	
Research on the Control Strategy for the Ice-Breaking Conditions of High Polar Class Pod Propulsor	340
<i>Zhenhua Huang, Heng Kuang, Bing Fang, Yang Xiao, Zhiwen Tan, Jinjun Ying</i>	
Study and Analysis of Floor Response Spectrum of Nuclear Safety Grade Steel Stack-Type Exhaust Tower Considering Soil-Structure Interaction.....	345
<i>Zhenxiao Xue, Minghai Zhou, Zhi Li, Jianhui Liu</i>	
Operational Fuel Efficiency and Productivity Analysis of Coastal Fishing Vessels in the Tropical Region	351
<i>Samsul Ma'Arif, Sunaryo, Muhammad A. Budiyo</i>	
Hydrodynamic Analysis of a Built-In Oscillating Buoy-Type Wave Energy Device	357
<i>Jia Wang, Lixiao Jing, Yao Zhou, Lidong Zhang, Zhigao Wang, Xuanlie Zhao</i>	
A Risk Matrix Based on the Performance of Ship Manoeuvrability Under Wind Force.....	361
<i>Islam M. Sherif, Ping Xin, Zhongjun Ding, Xueqian Zhou</i>	
Feasibility and Comparative Study for a Conceptual Design of Offshore Floating Photovoltaic Platform	367
<i>Yu Lin, Shuzhou Jiang, Weicheng Lei, Jing Dong, Pengfei Chen, Yan Nie, Xinyi Wu</i>	
Study on the Floor Response Spectrum of the Nuclear Safety Grade Steel Stack-Type Exhaust Tower Based on Viscoelasticity Boundary	373
<i>Zhenxiao Xue, Minghai Zhou, Jianhui Liu</i>	

Numerical Simulations of Grouted Connections of Offshore Wind Turbines using a Damage-Plasticity Model for Grout Material	379
<i>Zhipeng Wang, Yanhong Wang, Zhiyang Wu, Xiaojing Zhang, Jun Liu, Taozhi Xu</i>	
Review of Seismic Analysis Methodologies for Offshore Shallow Foundations	388
<i>Fanrong Sun, Xiaoyu Dong, Niantao Zhang, Fei Zhang, Wei Li, Yang Ge</i>	
The Hydrodynamic Performance of an Underwater Vehicle with Fillet-Shaped Control Surfaces.....	394
<i>Guozhi Bao, Ruitao Yang, Bolong Liu, Xiaodong Si</i>	
A New Method for Feature Extraction of Ship-Radiated Noise Based on Successive Variational Mode Decomposition and Dispersion Entropy.....	401
<i>Rui Zhang, Yuxing Li, Xiaojun Chang</i>	
A Novel Feature Extraction Method for Ship-Radiated Noise Based on Complete Ensemble Empirical Mode Decomposition with Adaptive Noise and Dispersion Entropy-Based Lempel-Ziv Complexity	406
<i>Qingxu Wang, Yuxing Li, Xiaojun Chang</i>	
Design and Practice of Navigation Watchkeeping Simulation Training.....	412
<i>Jianjun Hou, Kaibo Yu, Hang Sun, Dawei Li</i>	
Numerical Simulation of Stall Characteristics of Two-Elements Wingsail Airfoil on Reynolds Number.....	417
<i>Junfu Yuan, Chen Li</i>	
Combustor Efficiency for Burning Ammonia and Hydrogen in Marine Gas Turbine Systems.....	421
<i>Serhiy I. Serbin, Bohdan M. Lychko, Kateryna S. Burunsuz, Xianrui Zhao, Hongquan Zhao</i>	
Calculation of Hydrodynamic Forces on a Bulk Carrier in Yaw Motion with Steering Angle.....	427
<i>Hao Hao, Weimin Chen, Minmin Zheng</i>	

Author Index