

Conference Agenda

SMP'19 Sixth International Symposium on Marine Propulsors

Monday, 27 May 2019

8:00am - 8:30am	Welcome coffee and registration	
8:30am - 9:00am	Welcome	
9:00am - 10:15am	Numerical Methods in Propulsion 1	Unconventional propulsors 1
9:00am - 9:25am	Potential Flow Modelling of Ducted Propellers With Blunt Trailing Edge Duct Using a Panel Method Joao Baltazar, Jose Falcao de Campos	A computational analysis of a marine propeller with tubercle and its contribution in reducing sheet cavitation. Nicolao Charalambous, Ian Eames
9:25am - 9:50am	A 3D Flow Separation Model for Open Propellers with Blunt Trailing Edges Weikang Du, <u>Spyros A. Kinnas</u>	Tip Geometry Effects on Performance and Erosion for Tip Rake Propellers Luis Felipe Sánchez Castro, Heinrich von Zadow, Florian Vesting
9:50am - 10:15am	Large Eddy Simulation of flow over a confined elliptic hydrofoil Praveen Kumar, Krishnan Mahesh	Design of Biomimetic propulsors; advances and considerations on practical issues. <u>Vasileios Tsarsitalidis</u> , Gerasimos Politis
10:15am - 10:35am	Coffee break	
10:35am - 12:15pm	Propeller design, optimization and manufacturing 1	Unconventional propulsors 2
10:35am - 11:00am	The importance of a non-deterministic design optimization for predicting real-life propeller performances <u>Kevin Vidal</u> , Leo Poppelier, Benoit Mallol, Charles Hirsch	Review of Cyclic Varying Pitch Propeller for Commercial Vessels Uffe Sjølund Freiberg, <u>Torben Ole Andersen</u> , Jens Ring Nielsen
11:00am - 11:25am	Remodeling the B-series geometry in a CAD environment Evert-Jan Foeth, Menno Deij-van Rijswijk	Experimental Study of Six-Component Forces on Surface Piercing Propeller in Uniform Flow Jian ZHOU, Lin-zhang LU, Wei RUI, Shu-cheng ZHAI
11:25am - 11:50am	Marine Propeller Optimization Design KANG HAN, Chao Wang	On the development and verification of diffused endplate propeller Young-Zehr Kehr, <u>Huan-Jia Xu</u> , Jui-Hsiang Kao
11:50am - 12:15pm	Surprising behaviour of the Wageningen B-screw Series polynomials <u>Stephan Helma</u>	Coupled Numerical Simulation and Modal analysis of Composite Ducted Propeller <u>Xiaoyi An</u> , Baowei Song, Hui Xia, Yongle Ding, Zhihui Jin, Larry Lessard
12:15pm - 1:15pm	Lunch	
1:15pm - 2:55pm	Cavitation 1	Propulsion Efficiency 1
1:15pm - 1:40pm	Tip vortex cavitation inception estimation at an industrial level <u>Urban Svennberg</u> , Daniel Ahl, Abolfazl Asnaghi	Numerical Study of Hull Pressure Fluctuation with Energy Saving Device PSV Shucheng Zhai, Dengcheng Liu, Yongbo Hang
1:40pm - 2:05pm	CFD Analysis of Ship Propeller Thrust Breakdown Keun Woo Shin, <u>Poul Andersen</u>	Energy Balance Analysis using RANS-BEM coupling David Hally
2:05pm - 2:30pm	A Lagrangian analysis of scale effects on sheet cavitation inception Martijn van Rijsbergen	

	<p>2:30pm - 2:55pm</p> <p>Investigation of propeller cavitation using compressible large eddy simulations</p> <p><u>Krishnan Mahesh</u>, Mrugank Bhatt</p>	<p>Experimental determination of Hydrodynamic loads on Wartsila preswirl stator EnergoFlow and validation of a prediction methodology for design loads</p> <p><u>Anton Voermans</u></p>
		<p>2:30pm - 2:55pm</p> <p>The Dynamics Performance of a Rotating Frustum of a cone</p> <p><u>Jiangping Hu</u>, Yanxia Wang, Jinfang Wei, Jingpu Chen</p>
<p>2:55pm -</p>	<p style="text-align: center;">Coffee break</p>	
<p>3:15pm</p>	<p>Propeller Wake Hydrodynamics</p>	<p>Propulsion in Seaways and Off-Design 1</p>
<p>3:15pm -</p>		
<p>4:30pm</p>	<p>3:15pm - 3:40pm</p> <p>Experiments and CFD for DARPA Suboff Appended with Propeller E1658 Operating Near the Surface</p> <p><u>Lianzhou Wang</u>, <u>J. Ezequiel Martin</u>, Pablo M. Carrica, Mario Felli, Massimo Falchi</p>	<p>3:15pm - 3:40pm</p> <p>The impact of propulsion factors on vessel performance in waves</p> <p><u>Bhushan Taskar</u>, Pelle Bo Regener, Poul Andersen</p>
	<p>3:40pm - 4:05pm</p> <p>Comparison between LDA measurements and CFD predictions of a wake behind a frigate hull form and propeller</p> <p><u>William Batten</u>, James Alderton, Kim Lake, Richard Pattenden</p>	<p>3:40pm - 4:05pm</p> <p>Thrust Losses and Dynamic Loads on a Ducted Pushing Thruster in Regular Waves</p> <p><u>Vladimir Krasilnikov</u>, Nabila Berchiche, Kouros Koushan</p>
	<p>4:05pm - 4:30pm</p> <p>Instability identification within ship propeller wakes</p> <p><u>Shakeel Ahmed</u>, Paul Croaker, Con Doolan</p>	<p>4:05pm - 4:30pm</p> <p>Simulation of propeller flow during stopping and crashback maneuvers using hybrid RANS-LES methods</p> <p><u>Markus Pergande</u>, Moustafa Abdel-Maksoud</p>

Tuesday, 28 May 2019

8:00am - 8:30am	Welcome coffee and registration	
8:30am - 10:10am	Cavitation 2	Propulsion 1
8:30am - 8:55am	The necessity of accurate prediction of cavitation behaviour for fuel efficient propellers Themistoklis Melissaris, Norbert Bulten, Iulia Oprea	8:30am - 8:55am Numerical investigation of pressure pulse predictions for propellers mounted on an inclined shaft <u>Muye Ge</u> , Urban Svennberg, Rickard E. Bensow
8:55am - 9:20am	Development of Supercavitation over a Body in a Duct Flow Lotan Arad-Ludar, Alon Gany	8:55am - 9:20am Development of Tunnel Thruster Series Propellers for Low Noise and Vibration <u>Jie Dang</u> , Do Ligtelijn
9:20am - 9:45am	On the Relation between the Potential Cavity Energy and the Acoustic Power Signature caused by Periodic Vapor Cavity Collapses <u>Sören Schenke</u> , Themistoklis Melissaris, Tom Van Terwisga	9:20am - 9:45am Prediction of the Propeller Performance at Different Reynolds Number Regimes with RANS Joao Baltazar, Douwe Rijpkema, José Falcão de Campos
9:45am - 10:10am	Prediction of Unsteady Developed Tip Vortex Cavitation and its Effect on the Induced Hull Pressures <u>Seungnam Kim</u> , Spyros A. Kinnas	9:45am - 10:10am Effect of Gap Flow Model on Hydrodynamic Performance of Pump jet Propulsor Kaiqiang Weng, Chao wang
10:10am - 10:30am	Coffee break	
10:30am - 12:10pm	Hydroacoustics 1	Propulsion 2
10:30am - 10:55am	Acoustic modelling of a propeller subject to non-uniform inflow <u>Artur K Lidtke</u> , Thomas Lloyd, Guilherme Vaz	10:30am - 10:55am Reynolds Stress Transition Modeling for Marine Propellers at Low Reynolds Number <u>John Webster</u> , Wayne Neu, Stefano Brizzolara
10:55am - 11:20am	Acoustic Characteristics of Cavitating Flow around a Twisted Hydrofoil <u>Yantao Cao</u>	10:55am - 11:20am Evaluation of performance and acoustic signature of flexible marine propellers under consideration of fluid-structure interaction by means of partitioned simulation Tobias Lampe, Lars Radtke, Ulf Göttsche, Alexander Düster, Moustafa Abdel-Maksoud
11:20am - 11:45am	Hydroacoustical Calculations on a Generic Underwater Vehicle Using Lighthill-Curle Formulations <u>Emre Güngör</u>	11:20am - 11:45am Propulsive Performance Analysis of Waterjet Propulsion System for an Amphibious Vehicle Jeonghwa Seo, Hoe-Seong Jeong, Kyogun Chang, Jongyeol Park, Shin Hyung Rhee
11:45am - 12:10pm	Generation and propagation of noise from cavitating marine propellers Kostas Belibassakis, Gerasimos Politis	11:45am - 12:10pm Mutual Interference Research on Propeller Bearing Force Caused by Propellers Distribution <u>Shuai Sun</u> , Jiangbo Zhu, Chunyu Guo, Chao Wang, Yuan Zhang
12:10pm - 1:10pm	Lunch	
1:10pm - 2:50pm	Hydroacoustics 2	Unconventional propulsors 3
1:10pm - 1:35pm	Pattern Recognition in Hydroacoustic Cavitation Measurements <u>Christian Krueger</u> , Sascha Spors, Andreas Wolter	1:10pm - 1:35pm Study on Propulsion Performance according to Variation of Rake Distribution at Propeller Tip <u>Jin Gu Kang</u> , Moon Chan Kim, Hyeon Ung Kim, I Rok Shin
1:35pm - 2:00pm	Data driven models for propeller cavitation noise in model scale <u>Fabiana Miglianti</u> , Giorgio Tani, Michele Viviani, Francesca Cipollini, Luca Oneto	1:35pm - 2:00pm Aileron Induced Unbalanced Torque Compensation Using Contra-rotating Dynamic Motor Control for an AUV CRP <u>İlkay ÖZYİĞİT</u> , Emre GÜNGÖR
2:00pm - 2:25pm	Mechanism of low-frequency broadband noise by cavitating tip-vortices on marine propellers <u>Johan Bosschers</u>	2:00pm - 2:25pm VORTEX MODEL OF IDEAL GUIDE VANE AND ITS APPLICATION TO THE REAL GUIDE VANE <u>Przemysław Król</u>
2:25pm - 2:50pm		2:25pm - 2:50pm

Evaluation of Underwater Sound Propagation of a Catamaran with Cavitating Propellers
Ulf Götttsche, Tobias Lampe, Martin Scharf, Moustafa Abdel-Maksoud

Critical values of R_n defining transitional flow to be applied in the extrapolation of Open Water Test (OWT) of unconventional tip shaped propellers.
Ramon Quereda

2:50pm

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3:10pm

3:10pm

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4:25pm

Coffee break

Unconventional propulsors 4

Experimental Methods in Propulsion

3:10pm - 3:35pm

Morphing Hydrofoil Model Driven by Compliant Composite Structure and Cavity Pressure

Fatiha Mohammed Arab, Benoit Augier, Francois Deniset, Pascal Casari, Jacques Andre Astolfi

3:10pm - 3:35pm

Full Scale Measurement of The Flow Field at The Stern by Using Multi-Layered Doppler Sonar(MLDS)

Yasuhiko Inukai

3:35pm - 4:00pm

Coupled Modal Simulation of a Composite Propeller Blade Subjected to Steady and Dynamic Loading

Ramona B Barber, Antoine Ducoin, Stuart J Wildy, John D Codrington, Alban Leroyer

3:35pm - 4:00pm

Experimental investigation of propeller performance in straight and steady drift motion by single blade load measurements and boroscope-based SPIV

Alessandro Capone, Dubbioso Giulio, Francisco Pereira, Fabrizio Ortolani, Alessandro Maiocchi, Roberto Camussi, Fabio Di Felice

4:00pm - 4:25pm

Investigation of a Marine Water-Breathing Ramjet Propulsor
Nachum E. Eisen, Alon Gany

4:00pm - 4:25pm

Synchronized Multi-camera and LED-illumination system for multi perspective cavitation observation and 3D reconstruction
Eric Ebert, Nils Damaschke

Wednesday, 29 May 2019

8:00am - 8:30am	Welcome coffee and registration	
8:30am - 10:10am	Propeller/Hull/Rudder Interaction 1	Hydroelasticity 1
8:30am - 8:55am	Numerical Analysis of Hull-Propeller and Free Surface Interaction at Model- and Full-Scale Wenyu Sun, Shiliang Hu, Jia Su, Jinfang Wei, Guofu Huang	8:30am - 8:55am Hydroelastic Analysis of 3D Printed Marine Propeller Working at Low Reynolds Number Suraj A Pawar, Stefano Brizzolara
8:55am - 9:20am	Application of Control Volume Energy Balance for Analysing Propeller-Hull Interaction in Presence of Free-surface <u>Arash Eslamdoost</u> , Jennie Andersson, Rickard Bensow, Marko Vikström	8:55am - 9:20am The Coupling of Blade Element Momentum Theory and a Transient Timoshenko Beam Model To Predict Propeller Blade Vibration Response <u>Nicholas McCaw</u> , Steven Turnock, William Batten
9:20am - 9:45am	The Effect of Rudder Existence on the Propeller Eccentric Forces Gi-Su Song, Tae-Goo Lee, Hyoung-Gil Park	9:20am - 9:45am Parametric analysis of the dynamic elastic response of composite hydrofoils and airfoils Deniz Tolga Akcabay, <u>Yin Lu Young</u>
9:45am - 10:10am	Scale Effect of Gate Rudder <u>Noriyuki Sasaki</u> , Mehmet Atlar	9:45am - 10:10am Direct Numerical Simulation of Transition Induced Vibration over Flexible Marine Propeller Sections <u>Sijo GEORGE</u> , Antoine DUCOIN, Jacques Andre ASTOLFI
10:10am - 10:30am	Coffee break	
10:30am - 12:10pm	Cavitation 3	Propulsion 3
10:30am - 10:55am	Numerical Viscous Flow Simulations of Cavitating Propeller Flows at Different Reynolds Numbers Ville Viitanen, Timo Siikonen, Antonio Sanchez-Caja	10:30am - 10:55am Construction and Analysis of Response Surface between Blade Shape and Propeller Characteristics using Multivariate Chebyshev Approximation Daijiro Arakawa, Koichiro Shiraishi, Jun Ando
10:55am - 11:20am	Hydrodynamic Performance and Hysteresis Response of Hydrofoils in Ventilated Flows <u>Alexandra Damley-Strnad</u> , Casey M. Harwood, Yin Lu Young	10:55am - 11:20am Influence of the Reynolds Number on the Open Water Characteristics of Propellers with Short Chord Length <u>Lars Ole Lübke</u> , Katrin Hellwig-Rieck, Hans-Jürgen Heinke
11:20am - 11:45am	RANS/LES computations of a ducted propeller in the context of cavitation inception prediction <u>MEHEDI BAPPY, J. EZEQUIEL MARTIN, JIAJIA LI, GUSTAVO C BUSCAGLIA, PABLO M CARRICA</u>	11:20am - 11:45am Transitional flow on model scale propellers and their likely influence on performance prediction <u>Da-Qing Li</u> , Per Lindell, Sofia Werner
11:45am - 12:10pm	Cavitation Effects on Blade Spindle Torque of Controllable Pitch Propellers in Open Water Isao Funeno	11:45am - 12:10pm Validation studies of a boundary element method for ducted propellers <u>Joost Mouljin</u> , Johan Bosschers, Simon Tornros, Carlo Schreiber, Davide Grassi, Izak Goedbloed, Maarten Bijlard
12:10pm - 1:10pm	Lunch	
1:10pm - 2:25pm	Numerical Methods in Propulsion 2	Hydroacoustics 3
1:10pm - 1:35pm	Automated self-propulsion point search algorithm for ship performance CFD simulations Mika Antero Nuutinen	1:10pm - 1:35pm Suppression of Tip Vortex Cavitation noise using PressurePores™ technology: A numerical and experimental investigation Batuhan Aktas, Naz Yilmaz, Mehmet Atlar, Noriyuki Sasaki, Patrick Fitzsimmons, David Taylor
1:35pm - 2:00pm	Computational Modeling of Turbulent Flows on the Tip Vortex of a Marine Propeller's Blade <u>Liad Paskin</u> , Michel Visonneau, Emmanuel Guilmineau, Jeroen Wackers	1:35pm - 2:00pm Round Robin Test on Radiated Noise of a Cavitating Propeller <u>Giorgio Tani</u> , Michele Viviani, Mario Felli, Frans Hendrik Lafeber, Thomas Lloyd, Batuhan Aktas, Mehmet Atlar, Hanshin Seol, Jan Hallander, Nobuaki Sakamoto, Hikaru Kamiirisa
2:00pm - 2:25pm	A High-order Sliding-Mesh Spectral Difference Method with Application to Simulation of Flows around Open Propellers Bin Zhang, <u>Roland Yu</u> , Chunlei Liang	2:00pm - 2:25pm Numerical prediction of ship propeller noise through acoustic analogy Marta Cianferra, Andrea Petronio, Vincenzo Armenio

2:25pm
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Coffee break

2:45pm

2:45pm

Cavitation 4

4:00pm

2:45pm - 3:10pm

3D Simulations of Cavitation Bubble Breakup over a Lifting Surface
Chao-Tsung Hsiao

3:10pm - 3:35pm

THE NUMERICAL SIMULATION OF PROPELLER CAVITATION BENCHMARK TESTS OF YUPENG SHIP MODEL
Chaosheng Zheng, Dengcheng Liu, Hongbo Huang

3:35pm - 4:00pm

A Practical Calculation Method of Pressure Fluctuation Induced by Cavitating Propeller Using a Simple Surface Panel Method "SQCM"
Takashi Kanemaru, Daijiro Arakawa, Yuki Sawada, Koichiro Shiraishi, Jun Ando

2:45pm

Numerical Methods in Propulsion 3

4:25pm

2:45pm - 3:10pm

A hybrid calculation concept for single and multi-component propulsors
Stefan Krüger, Youjiang Wang, Martin Scharf, Moustafa Abdel-Maksoud

3:10pm - 3:35pm

A 3-D VIScous Vorticity Equation (VISVE) Method Applied to Flow Past a Hydrofoil of Elliptical Planform and a Propeller
Chunlin Wu, Spyros A. Kinnas

3:35pm - 4:00pm

Hydrodynamic Performance Prediction Method for the Ducted Contra-Rotating Propeller
Haopeng CAI, Chengpeng HAO, He ZHANG

4:00pm - 4:25pm

A Data-Driven Multi-Degree of Freedom Body Force Propeller Model for Maneuvering
Bradford G. Knight, Kevin J. Maki

7:30pm

Conference Dinner, "Terrazza Caffarelli", Rome

Thursday, 30 May 2019

8:00am - 8:30am	Welcome coffee and registration	
8:30am - 10:10am	Cavitation 5	Propulsion Efficiency 2
	<p>8:30am - 8:55am</p> <p>Roughness Effects on the Tip Vortex Strength and Cavitation Inception <u>Abolfazl Asnaghi</u>, Urban Svennberg, Robert Gustafsson, Rickard E. Bensow</p> <hr/> <p>8:55am - 9:20am</p> <p>Cavitation Erosion Resistance Evaluation of Anti-erosion Coatings in Cavitation Tunnel Hyongsuk Lee, Sunghoon Kim, Heeyoung Choi, Sukjeong Lee, Bugeun Paik</p> <hr/> <p>9:20am - 9:45am</p> <p>Erosion Control for Highly Efficient Propellers Using a Boundary Element Method Coupled With a Bubble Dynamics Model Stephan Berger, Yasaman Mirsadraee, Shin Keun Woo, Rasmus Møller Bering</p> <hr/> <p>9:45am - 10:10am</p> <p>An Experimental Study to Investigate Cavitation Noise Characteristics and Cavitation Erosion, Using Water Jet Test Technique Onur Usta, Çağatay Sabri Köksal, <u>Emin Korkut</u></p>	<p>8:30am - 8:55am</p> <p>Duct-type ESD: a design application using RANSE-based SBDO Francesco Furcas, <u>Stefano Gaggero</u>, Diego Villa</p> <hr/> <p>8:55am - 9:20am</p> <p>Design and Numerical and Experimental Investigation of Pre-Swirl Stators PSS Vladimir <u>Krasilnikov</u>, Kourosh Koushan, Marco Nataletti, Lucia Sileo, Silas Spence</p> <hr/> <p>9:20am - 9:45am</p> <p>Pre-Swirl Fins Adapted to Different Operation Conditions <u>Jens Ring Nielsen</u>, Wei Jin</p> <hr/> <p>9:45am - 10:10am</p> <p>A Method to Predict Full Scale Performance of the Propeller Boss Cap Fins (PBCF) Koyu Kimura, Satoko Ando, Shirou Ono, Yoshikazu Tanaka</p>
10:10am - 10:30am	Coffee break	
10:30am - 12:10pm	Propulsion 4	Propeller/Hull/Rudder Interaction 2
	<p>10:30am - 10:55am</p> <p>CFD-DEM-MBD Coupling to Study Ice Impacts on Propellers in Arctic Regions Morteza Heydari, Hamid Sadat, Seifollah Nasrazadani</p> <hr/> <p>10:55am - 11:20am</p> <p>The Numerical Analysis of Influence of the Hull Heave Motion on the Propeller Exciting Force Characteristics Liang Li, Bin Zhou, Dengcheng Liu, Chaosheng Zheng</p> <hr/> <p>11:20am - 11:45am</p> <p>Particular Model Propeller Behavior in EFD & CFD <u>Thomas Lücke</u></p> <hr/> <p>11:45am - 12:10pm</p> <p>A comparison of physical and numerical modeling of homogenous isotropic propeller blades Luca Savio, Lucia Sileo, Sigmund Kyrre Aas</p>	<p>10:30am - 10:55am</p> <p>A Method for Rudder Force Calculation in the Design Process Considering Rudder-Propeller-Interaction <u>Björn Carstensen</u></p> <hr/> <p>10:55am - 11:20am</p> <p>Analysis of the influence of an upstream rudder over the wake features of a submarine propeller <u>Antonio Posa</u>, Riccardo Brogna, Elias Balaras</p> <hr/> <p>11:20am - 11:45am</p> <p>A generalised hybrid RANSE/BEM approach for unsteady flow effects in hull/propeller interaction. <u>Danilo Calcagni</u>, Alessandro Capone, Fabrizio Ortolani, Riccardo Brogna, Giulio Dubbioso, Francisco Pereira, Francesco Salvatore, Fabio Di Felice</p> <hr/> <p>11:45am - 12:10pm</p> <p>Numerical Investigations of Propeller-Rudder-Hull Interaction in the Presence of Tip Vortex Cavitation Naz Yilmaz, Batuhan Aktas, Savas Sezen, Mehmet Atlar, Patrick Fitzsimmons, Mario Felli</p>
12:10pm - 1:10pm	Lunch	
1:10pm - 2:50pm	Hydroelasticity 2	Propeller design, optimization and manufacturing 2
	<p>1:10pm - 1:35pm</p> <p>Experimental investigation of the hydro-elastic behaviour of flexible composite propellers in non-uniform flow at model and full scale <u>Nicola Grasso</u>, Rink Hallmann, Thomas Scholcz, Gert-Jan Zondervan, Pieter Maljaars, Rogier Schouten</p> <hr/> <p>1:35pm - 2:00pm</p> <p>An Experimental Study on Hydrodynamic Performance of Flexible Composite Model Propellers Chiharu Kawakita</p> <hr/> <p>2:00pm - 2:25pm</p>	<p>1:10pm - 1:35pm</p> <p>Developing the high efficiency propeller with optimization of skeg profile for twin-screw LNG carrier <u>Yasuhiro Tendo</u>, Yoshihisa Okada, Akinori Okazaki</p> <hr/> <p>1:35pm - 2:00pm</p> <p>On the benefits of metallic additive manufacturing for propellers <u>Pol Muller</u>, Guillaume Rückert, Patrice Vinot</p> <hr/> <p>2:00pm - 2:25pm</p> <p>Propeller Optimization for a single screw ship using BEM supported by cavitating CFD <u>Simon Törnros</u>, Olof Klerebrant, Emrah Korkmaz, Tobias Huuva</p>

	<p>A Study on Deformation Measurements and Hydrodynamic Investigation of the Flexible Composite Marine Propeller Koichiro Shiraishi, Yuki Sawada, Daijiro Arakawa, Koyu Kimura</p>	<p>2:25pm - 2:50pm A New Design Method for Ship Propellers with Prescribed Circulation Distributions Based on the Vortex Lattice Lifting-Surface Model <u>Chen-Jun Yang</u>, Qi Wang, Xiao-Qian Dong, Wei Li, Francis Noblesse</p>
	<p>2:25pm - 2:50pm Study on Method to Predict Performance of Composite Propeller Using FSI Analysis Nozomi Suyama, Satoshi Fujita, Koyu Kimura, Koichiro Shiraishi, Yuki Sawada, Chiharu Kawakita</p>	
2:50pm - 3:10pm	Coffee break	
3:10pm - 4:25pm	<p>Propulsion in Seaways and Off-Design 2</p> <p>3:10pm - 3:35pm Investigation of single propeller blade loads during turning motion by free running maneuvering model tests <u>Fabrizio Ortolani</u>, Giulio Dubbioso</p> <p>3:35pm - 4:00pm A Numerical Study on the Propeller Performance by the Ship Motion in Regular Head Waves Yoon-Ho Jang, <u>Myeong-Jin Eom</u>, Hyun-Woo Shin, Kwang-Jun Paik</p> <p>4:00pm - 4:25pm Propeller Roughness and its Effects on Required Freight Rate <u>John C Daidola</u></p>	<p>Unconventional propulsors 5</p> <p>3:10pm - 3:35pm Numerical Design of the Forces Generated by a Collective and Cyclic Pitch Propeller - Force Magnitude and Phase Shift Arno Dubois, Zhi Q Leong, Hung D Nguyen, Jonathan R Binns</p> <p>3:35pm - 4:00pm Hydrodynamic Performance of a New Type of Ducted Propeller Operating in Oblique Flow Hui Xia, Peng Wang, Xiaoyi An, Yongle Ding, Zhihui Jin, Shiyu Han</p> <p>4:00pm - 4:25pm CRP propulsion system for merchant ships. Past, present and future. Ramon Quereda</p>
4:25pm - 5:00pm	Closing	