

ISROMAC 19

PROGRAM

19th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery

ISROMAC19

5-7 July 2026

Tokyo

WASEDA University

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General Schedule

【Presentation】15 min for talk, 5 min for Q&A 【Invited, Keynote lecture】30/35 min for talk, 5/10min for Q&A

Day0: Saturday, July 4th	
18:30-19:30	Early Registration @ RIHGA Royal Hotel Tokyo
18:30-20:30	Welcome Reception

Day1: Sunday, July 5th						
Room	Room A (Ibuka Hall)	Room B	Room C	Room D	Room E	Room F
Capacity	400	50	50	100	50	50
10:00-10:30	Opening Ceremony @Room A					
10:30-10:50	Plenary lecture Ⅰ: Prof. Masahiro Furuya (Waseda University) @Room A					
10:50-11:10						
11:10-11:30						
11:30-11:50	Coffee break					
11:50-12:10	Invited Lecture Ⅰ (OS1, 3, 9)	OS11 | IOP90		OS8 | IOP44	OS12 | IOP93	OS5| IOP25
12:10-12:30		IOP103		IOP19	IOP96	IOP52
12:30-12:50	EA1092	IOP69		EA1087	EA1015	IOP68
12:50-13:10	IOP78	EA1003		EA1081		IOP71
13:10-14:30	Lunch break					
14:30-14:50	Plenary lecture Ⅱ: Prof. Makoto Yamamoto (Waseda University) @Room A					
14:50-15:10						
15:10-15:30						
15:30-15:50	Coffee break					
15:50-16:10	Invited Lecture Ⅱ (OS1,6,11)	OS9 | IOP9	OS3 | EA1002	Keynote Lecture (OS8) | EA1063	OS12|EA1068	OS5 | IOP22
16:10-16:30		EA1054	EA1012		EA1058	IOP30
16:30-16:50	OS11 | EA1062	EA1096	EA1041	IOP74	EA1088	IOP59
16:50-17:10	EA1089	IOP40	IOP55	EA1008		IOP73
17:10-17:30	EA1086	EA1024		EA1095		EA1027
	End of Day1					

OS1	Pumping Machinery	OS8	Experimental and Flow Visualization Techniques
OS2	Hydraulic Machines and Systems	OS9	Numerical Simulation and Modeling of Fluid Machinery Flows
OS3	Performance and Noise of Fans/ Compressors	OS10	AI and Machine Learning in Fluid Machinery
OS4	Gas Turbine	OS11	Cavitation & Multiphase Flows
OS5	Wind and Ocean Energy Technologies	OS12	Rotordynamics & Multidisciplinary Challenges
OS6	Fluid Machinery in Propulsion Systems	OS13	Fluid-Structure Interactions in Fluid Machinery and Systems
OS7	Fluids Machinery for Low-Carbon Society (Cryo. Fluids)		

Day2: Monday, July 6th						
Room	**Room A (Ibuka Hall)**	**Room B**	**Room C**	**Room D**	**Room E**	**Room F**
Capacity	**400**	**50**	**50**	**100**	**50**	**50**
9:30-9:50	**Plenary lecture III : Prof. Wontae Hwang (Seoul National University) @Room A**					
9:50-10:10						
10:10-10:30						
10:30-10:50	**Coffee break**					
10:50-11:10	**Keynote Lecture (OS6) | EA1014**	**OS9 | IOP65**	**OS8 | IOP35**	**Keynote Lecture (OS3) | EA1067**	**OS2 | EA1039**	**OS5|EA1050**
11:10-11:30		**IOP64**	**EA1055**		**EA1045**	**IOP54**
11:30-11:50	**EA1091**	**IOP10**	**EA1075**	**EA1020**	**EA1074**	**IOP81**
11:50-12:10	**IOP56**	**EA1057**	**EA1076**	**EA1072**	**IOP31**	**EA1080**
12:10-12:30	**IOP27**			**IOP76**		**EA1032**
12:30-14:00	**Lunch break**					
14:00-14:20	**Plenary lecture IV : Prof. Mehrdad Zangeneh (University college London) @Room A**					
14:20-14:40						
14:40-15:00						
15:00-15:20	**Coffee break**					
15:20-15:40	**Invited Lecture III (OS2,5)**	**OS9 | EA1029**	**OS1 | EA1028**	**Keynote Lecture (OS7) | IOP91**		**OS13|IOP26**
15:40-16:00		**EA1022**	**IOP99**			**EA1005**
16:00-16:20	**OS5 | EA1009**	**EA1023**	**IOP87**	**IOP36**		**IOP79**
16:20-16:40	**EA1001**	**EA1042**	**EA1085**	**IOP66**		**EA1033**
16:40-17:00		**EA1019**	**EA1025**	**IOP84**		
18:30-20:30	**End of Day2 (Banquet) @ RIHGA Royal Hotel Tokyo**					

OS1	Pumping Machinery	**OS8**	Experimental and Flow Visualization Techniques
OS2	Hydraulic Machines and Systems	**OS9**	Numerical Simulation and Modeling of Fluid Machinery Flows
OS3	Performance and Noise of Fans/ Compressors	**OS10**	AI and Machine Learning in Fluid Machinery
OS4	Gas Turbine	**OS11**	Cavitation & Multiphase Flows
OS5	Wind and Ocean Energy Technologies	**OS12**	Rotordynamics & Multidisciplinary Challenges
OS6	Fluid Machinery in Propulsion Systems	**OS13**	Fluid-Structure Interactions in Fluid Machinery and Systems
OS7	Fluids Machinery for Low-Carbon Society (Cryo. Fluids)		

Day3: Tuesday, July 7th						
Room	Room A (Ibuka Hall)	Room B	Room C	Room D	Room E	Room F
Capacity	400	50	50	100	50	50
9:30-9:50	Plenary lecture Ⅴ: Mr. Kenichiro SAITOH (Japan Hydrogen Association) @Room A					
9:50-10:10						
10:10-10:30						
10:30-10:50	Coffee break					
10:50-11:10	Invited Lecture Ⅳ (OS3,4)	OS11 | EA1083	OS6 | IOP80	Keynote Lecture (OS10) | EA1016	OS13|EA1078	OS2|EA1069
11:10-11:30		IOP70	EA1079		IOP8	EA1053
11:30-11:50	OS4 | IOP13	IOP92	EA1103	EA1044	EA1073	IOP46
11:50-12:10	IOP77	IOP39	EA1082	EA1060	IOP88	IOP48
12:10-12:30	EA1017	IOP33	IOP82		EA1046	
12:30-14:00	Lunch break					
14:00-14:20	Keynote Lecture (OS13) | IOP58	OS7 | EA1004	OS10 | IOP95	OS1 | EA1059		OS2|EA1094
14:20-14:40		EA1084	IOP97	EA1037		IOP102
14:40-15:00	EA1070		IOP4	IOP18		EA1097
15:00-15:20	EA1052			IOP75		EA1200
15:20-15:40						
15:40-16:00	Break					
16:00-16:30	Closing ceremony @Room A					
	End of Day3					

OS1	Pumping Machinery	OS8	Experimental and Flow Visualization Techniques
OS2	Hydraulic Machines and Systems	OS9	Numerical Simulation and Modeling of Fluid Machinery Flows
OS3	Performance and Noise of Fans/ Compressors	OS10	AI and Machine Learning in Fluid Machinery
OS4	Gas Turbine	OS11	Cavitation & Multiphase Flows
OS5	Wind and Ocean Energy Technologies	OS12	Rotordynamics & Multidisciplinary Challenges
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OS7	Fluids Machinery for Low-Carbon Society (Cryo. Fluids)		

Opening Ceremony

July 5th (Sunday) – Room A

10:00−10:30	**Opening Ceremony** Chair: Prof. Yoichi Kinoue (Saga University, Japan)
	Greeting from ISROMAC19 Symposium Chair Prof. Kazuyoshi Miyagawa (Waseda University), Chair of ISROMAC19
	Address by Pacific Center of Thermal-Fluids Engineering (PCTFE) Prof. Yasuyuki Yokono (The University of Tokyo), President of PCTFE
	Address by Turbomachinery Society of Japan (TSJ) Dr. Hiroyoshi Watanabe (EBARA Corporation), President of TSJ
	Conference Program & Notes Dr. Kento Sakai (Waseda University)

Closing Ceremony

July 7th (Tuesday) – Room A

16:00−16:30	**Closing Ceremony** Chair: Prof. Yoichi Kinoue (Saga University, Japan)
	Conference statistics Dr. Kento Sakai (Waseda University)
	Address by Turbomachinery Society of Japan (TSJ) Dr. Hiroyoshi Watanabe (EBARA Corporation), President of TSJ
	Announcement of Future Related International Conferences Prof. Yuka Iga (Tohoku University)
	Introduction of ISROMAC20 & Closing Remarks Prof. Kazuyoshi Miyagawa (Waseda University), Chair of ISROMAC19

Banquet

July 6th (Monday) – RIHGA Royal Hotel Tokyo

18:30−20:30	**Banquet (Doors Open 18:10)**
	Opening
	Speech by TSJ Dr. Hiroyoshi Watanabe (EBARA Corporation), President of TSJ
	Speech by PCTFE Prof. Yasuyuki Yokono (The University of Tokyo), President of PCTFE
	Speech and Toast by Symposium Chair Prof. Kazuyoshi Miyagawa (Waseda University), Chair of ISROMAC19
	Exhibitions 1: ISROMAC19 Brass Quintet 2: Yosakoi dance performance
	Closing Remarks

Technical Sessions

OS1 Pumping Machinery

July 5th (Sunday) – Room A

11:50−13:10	**OS1 Pumping Machinery (Part 1)** Chair: Prof. Satoshi Watanabe (Kyushu University, Japan) Prof. Jin-Hyuk KIM (University of Science & Technology, Republic of Korea)
11:50−12:30	**Jointly held with OS3 and OS9** **Invited Lecture I – Dr. Oliver Velde** Pump Design Method Enhancement Based on a Combination of Detailed 3D Geometry, High-Fidelity CFD, and Design Space Exploration
12:30−12:50	**EA1092** **Shutaro Nakazawa**, P. Li, K. Miyagawa, S. Tomimatsu, K. Katayama Investigation of Internal Flow in a Mixed-Flow Pump Impeller Using Unsteady Total Pressure Measurements and CFD
12:50−13:10	**IOP78** **Juri Graupner**, P. U. Thamsen Experimental Validation of Ventricular assist devices (VAD) Pump Characteristics Using a Modular 3D-Printed Test Rig

July 6th (Monday) – Room C

15:20−17:00	**OS1 Pumping Machinery (Part 2)** Chair: Prof. Jin-Hyuk KIM (University of Science & Technology, Republic of Korea) Prof. Masahiro Miyabe (Osaka Institute of Technology, Japan)
15:20−15:40	**EA1028** **Ze Chen**, Y. Gu, W. Lu Study of Solid-Liquid Two-Phase Unsteady Flow and Erosion Characteristics in Coolant Pumps Based on the Eulerian-Lagrangian Method
15:40−16:00	**IOP99** **Naoki Ogai**, T. Arai, K. Katayama, S. Tomimatsu, K. Miyagawa Cavitation Characteristics and Analysis of Mixed-Flow Pumps at High Flow Rates
16:00−16:20	**IOP87** **Eitetsu Oda**, W. Ikeda, S. Watanabe, Y. Tanaka, K. Murafuji Observation and Analysis of Two-Phase Flow Behaviour at Exit of Turbopump Inducer with Co2-Dissolved Water
16:20−16:40	**EA1085** **Wataru Ikeda**, S. Watanabe An Experimental Study on Evaluation of Low Frequency Dynamic Characteristics of Turbopump Using Fluidic Exciter with Variable Flow Resistance
16:40−17:00	**EA1025** **Seung-Ju Ryu**, H.-S. Shim Comparison of Hydraulic Performance and Axial Thrust for Different Types of Impeller in Ultra-Low-Specific-Speed Centrifugal Pumps

July 7th (Tuesday) – Room D

14:00−15:20	**OS1 Pumping Machinery (Part 3)** Chair: Prof. Masahiro Miyabe (Osaka Institute of Technology, Japan) Prof. Satoshi Watanabe (Kyushu University, Japan)
14:00−14:20	**EA1059** **Kento Sakai**, M. Mori, M. Motoe, K. Miyagawa Flow Network Model for Axial Thrust Prediction and Dynamic Response Analysis in Centrifugal Impellers
14:20−14:40	**EA1037** **Xiaolong Fu**, Y. Chen, D. Li, H. Wang Multi-Objective Optimization Design of the Runner Seal Clearance Structure for a Pump-Turbine
14:40−15:00	**IOP18** **Koki Ikawa**, A. Hirata, T. Shigemitsu Research on Disk Friction Loss in Mini Centrifugal Pumps
15:00−15:20	**IOP75** A. P.-Vigil, A. Pandal, **Dana Rodriguez-Garcia, Laura Suarez Fernandez**, J. G. Pérez The Role of Turbulence in the Impeller-Volute Interaction in a Centrifugal Pump

OS2 Hydraulic Machines and Systems

July 6th (Monday) – Room E

10:50−12:10	**OS2 Hydraulic Machines and Systems (Part 1)** Chair: Prof. Shoichiro Iio (Shinshu University, Japan) Prof. Eduard Doujak (TU Wien, Austria)
10:50−11:10	**EA1039** **Jihyeon Park**, D.-J. Sung, J.-H. Kim Unsteady Flow Characteristics of a Single-Channel Pump-As-Turbine for Non-Clog Drainage Applications
11:10−11:30	**EA1045** **Sergey Skrikin**, D. Suslov Influence of the Conical Diffuser Opening Angle on the Vortex Flow Structure in a Simplified Hydro Turbine Model
11:30−11:50	**EA1074** **Yeongchae Kim**, J. Lee, S.-J. Kim, J. Park, K.-H. Ko, H. Ha Hydro-Acoustic Instability Assessment of a Model Francis Turbine under Part-Load Operation
11:50−12:10	**IOP31** **Takahiro Nakashima**, Y. Enomoto, K. Kodama, M. Hamaguchi, K. Miyagawa Co-simulation between 1D and 3D CFD of Cavitation Surge in Hydro Turbine Draft Tube

July 7th (Tuesday) – Room F

10:50−12:10	**OS2 Hydraulic Machines and Systems (Part 2)** Chair: Prof. Shoichiro Iio (Shinshu University, Japan) Prof. Eduard Doujak (TU Wien, Austria)
10:50−11:10	**EA1069** **Jinhan Lee**, Y. Kim, S.-J. Kim, J. Park, K.-H. Ko, H. Ha Development of an Instability Assessment Method for a Model Francis Turbine under Flexible Hydropower Operation
11:10−11:30	**EA1053** **Ujjwal Shrestha**, S.-J. Kim, J. Park, K.-H. Ko, Y.-D. Choi Performance Analysis of Francis Turbine During Start-Up under Various Guide Vane Openings
11:30−11:50	**IOP46** M. Krottendorfer, D. Patauner, C. Königswieser, **Eduard Doujak** Multilevel Lifetime Assessment of a Prototype Pump-Turbine Runner
11:50−12:10	**IOP48** **Takero Mukai**, T. Yamanaka, Y. Yamashita, S. Iio, T. Takao, K. Tezuka Numerical Investigation of Kármán Vortex–Induced Acoustic Behavior in Francis Turbine Runners

July 7th (Tuesday) – Room F

14:00−15:20	**OS2 Hydraulic Machines and Systems (Part 3)** Chair: Prof. Shoichiro Iio (Shinshu University, Japan) Prof. Eduard Doujak (TU Wien, Austria)
14:00−14:20	**EA1094** **Yuki Furutani**, T. Yamanaka, Y. Tamura, K. Miyagawa Passive and Active Control of Vortex Rope Dynamics in Francis Turbines
14:20−14:40	**IOP102** **Chikara Muramatsu, G. Katagiri, Y. Suetsugu, Y. Noda, S. Iio** Performance of a Horizontal-Axis Two-Jet Micro-Pelton Turbine under Unequal Jet Pressures
14:40−15:00	**EA1097** **Gai Yoshida**, T. Irie, T. Sugimoto, K. Miyagawa Development and Operation of a New Type of Turbine with a Volute for Large Variations in Head and Flow Rate
15:00−15:20	**EA1200** **Shinsei Yamada**, M. Ogahara, G. Yoshida, T. Arai, K. Miyagawa, K. Okude Demonstration of Metal Additive Manufacturing for a Hydraulic Turbine at the Yomuragawa Hydropower Plant

OS3 Performance and Noise of Fans and Compressors

July 5th (Sunday) – Room C

15:50−17:30	**OS3 Performance and Noise of Fans and Compressors (Part 1)** Chair: Prof. Nobumichi Fujisawa (Waseda University, Japan)
15:50−16:10	**EA1002** **Takahiro Nishioka**, T. Kuribara Influence of Tip-Leakage Flow on Performance of an Axial-Flow Fan
16:10−16:30	**EA1012** **Ryunosuke Nakanishi,** K. Yamada D. Kanzaki T. Andriantsiferana W. Sato Detailed Loss Decomposition and Evaluation Method for Transonic Centrifugal Compressors Based on Flow Phenomena
16:30−16:50	**EA1041** **Deok-Ju Sung**, J. Park, J.-H. Kim Numerical Design Shape Optimization of a 3Kw-Class Plenum Electronically Commutated Fan Impeller
16:50−17:10	**IOP55** **W. J. Zhuang**, X. M. Liu, W. K. Ma, Y. T. Cao, W. X. Ye, H. Wang, X. W. Luo Design Methodology and Internal Flow Characteristics of a 20MWe Supercritical Carbon Dioxide Centrifugal Compressor

July 6th (Monday) – Room D

10:50−12:30	**OS3 Performance and Noise of Fans and Compressors (Part 2)** Chair: Prof. Kazutoyo Yamada (Fukuoka University, Japan)
10:50−11:30	**EA1067** **Keynote Lecture - Kuzuya Kusano**, C. Fujita, S. Gunjishima Acoustic-Signal-Based Estimation of Unsteady Forces on an Axial Compressor Rotor Using a Temporal Convolutional Network
11:30−11:50	**EA1020** **Je-Eun Lee**, K. Kusano, J.-H. Jeong Lattice Boltzmann method Analysis of Unsteady Vortical Structures and Tonal Sound Induced by Vortex Generators on Megawatt-class
11:50−12:10	**EA1072** **Mohamad Isamuddin Majunit**, N. Nasu, A. Kiyama, D. Kang Experimental Investigation of Dynamic Response of a Centrifugal Impeller
12:10−12:30	**IOP76** **Yoshiyuki Dohi,** H. Kiyohara, T. Kuraishi, H. Yokoyama Investigation of Control Methodology for Noise Reduction of an Axial Fan with Plasma Actuators

OS4 Gas Turbine

July 7th (Tuesday) – Room A

10:50−12:30	**OS4 Gas Turbine** Chair: Prof. Makoto Yamamoto (Waseda University, Japan) Prof. Katsuya Hirata (Doshisha University, Japan)
10:50−11:30	**Jointly held with OS3** **Invited Lecture IV – Mr. Yoshinori Oba** Aerodynamic Technology Investigations for Aircraft Engines
11:30−11:50	**IOP13** **Ruohan Zhang**, W. Ma, C. Yang, Q. Sun, W. Xu, W. Ye, Y. Zeng, X. Yang Thermodynamic Performance Analysis of an Underwater Propulsion Power System Using Supercritical CO_2 Brayton Cycle with Gas-Cooled Microreactor
11:50−12:10	**IOP77** **Koichi Yonezawa,** S. Umezawa, K. Sugiyama, T. Yamada, H. Miyagaki, M. Hayashi Numerical Investigation of a Gas Turbine Utilizing Various Non-Fossil Fuels
12:10−12:30	**EA1017** **Duy Linh Doi**, N. M. Hoang, M. D. Ha, D. H. Ngo, D. L. Chu, P. M. Nguyen Structural Design Considerations for Bolted Connections in Small Turbojet Compressor Assemblies

OS5 Wind and Ocean Energy Technologies

July 5th (Sunday) – Room F

11:50−13:10	**OS5 Wind and Ocean Energy Technologies (Part 1)** Chair: Prof. Yutaka Hara (Tottori University, Japan)
11:50−12:10	**IOP25** **Dana Rodríguez-García**, L. Santamaría, S. V.-Suarez, M. Galdo, K. M. A. Díaz Coupled Aerodynamic and Aeroacoustic Effects of Trailing-Edge Serrations in a Low Reynolds-Number Vertical-Axis Wind Turbine (VAWT)
12:10−12:30	**IOP52** **Laura Suarez Fernandez**, L. Santamaría, J. M. F. Oro Minimizing Parasitic Losses in H-Rotors: A Multidisciplinary Approach to Strut Design
12:30−12:50	**IOP68** **Kotaro Sakamoto**, S. Sasaki Prediction of Broadband Noise by A Vertical-axis Wind Turbine Based on the Similarity Law of Amiet's Model
12:50−13:10	**IOP71** **Emanuele Luzzati**, A. Mariotti, M. V. Salvetti Experimental Investigation on Dynamic Stall of Cross-Flow Turbine Airfoils in Harmonic Motion

15:50−17:30	**OS5 Wind and Ocean Energy Technologies (Part 2)** Chair: Prof. Min Yoon (Korea Maritime & Ocean University, Republic of Korea)
15:50−16:10	**IOP22** **Yoichi Kinoue**, W. Tsuru, T. Murakami, N. Shiomi, M. Takao Effects of Length and Maximum Area of Duct on the Performance of Bidirectional Duct and Turbine System for Tidal Energy Conversion
16:10−16:30	**IOP30** **Wakana Tsuru**, T. Murakami, K. Furuno, H. Takeda, K. Hozogai Development of a Bidirectional Horizontal-Axis Tidal Stream Tip-Connected Turbine
16:30−16:50	**IOP59** **Bruno Pereiras**, A. V.-Valladares, M. G.-Diaz Optimization of Camberline and Thickness Distribution in an Outflow Radial Turbine for Twin OWC Applications
16:50−17:10	**IOP73** **Hongzhong Zhu** A Multi-Element Modeling Approach for a Floating Wind-Wave System Using Simscape Multibody
17:10−17:30	**EA1027** **Itsuki Yamamoto**, J. Nishimura, S. Okuhara, M. Takao, M. M. A. Alam Effect of Guide Vane Blade Cascade on the Performance of a Counter-Rotating Sail-Wing Turbine for Wave Energy Conversion

July 6th (Monday) – Room F

10:50−12:30	**OS5 Wind and Ocean Energy Technologies (Part 3)** Chair: Prof. Yoichi Kinoue (Saga University, Japan)
10:50−11:10	**EA1050** **Md. Shameem Moral**, H. Inai, Y. Hara, Y. Jodai, H. Zhu Optimal Layout of Vertical-Axis Wind Farms under Uni- and Multidirectional Winds Using a Genetic Algorithm with Condensed 2D Flow Field Data
11:10−11:30	**IOP54** **Ryoichi S. Amano**, A. Benelmadjat Closed-Loop AI-Driven Optimization of Wind Turbine Blades
11:30−11:50	**IOP81** **Yasunari Kamada**, K. Hibi, T. Maeda Experimental Study of the Flow around a Low Tip Speed Ratio VAWT Blade
11:50−12:10	**EA1080** **Satabda Chaudhuri**, S. Kapse, A. Karuppaswamy B, T. Santhanakrishnan, A. Chaudhuri, A. Samad Dynamic Modelling of Wave - to -Wire Energy Conversion of Point Absorber Wave Energy Converter (PAWEC)
12:10−12:30	**EA1032** **Taketomo Fukuda**, S. Sasaki, S. Okuhara, M. Takao, M. Yoon An Impulse Turbine for Wave Energy Conversion -Its Performance Improvement by Means of Intermediate Vanes-

July 6th (Monday) – Room A

15:20−16:40	**OS5 Wind and Ocean Energy Technologies (Part 4)** Chair: Prof. Manabu Takao (National Institute of Technology, Matsue College, Japan)
15:20−16:00	**Jointly held with OS2** **Invited Lecture III - Prof. Abdus Samad** Technology Development and Sea Trials of an Ocean Wave Energy Converter: Challenges, Lessons Learned, and Future Opportunities
16:00−16:20	**EA1009** **Seong Jong Bae**, B.H.B.P.D. Baddegamage, M. Yoon Vortex Dynamics and Performance Optimization of Biradial Turbines for Oscillating Water Column Wave Energy Converter
16:20−16:40	**EA1001** **B. H. B. P. D. Baddegamage**, S. J. Bae, M. Yoon Transient Performance and Design Optimization of Cross-Flow Air Turbines for Oscillating Water Column Systems

OS6 Fluid Machinery in Propulsion Systems

July 6th (Monday) – Room A

10:50−12:30	**OS6 Fluid Machinery in Propulsion Systems (Part 1)** Chair: Dr. Tobias Traudt (German Aerospace Center (DLR), Germany) Dr. Hideyo Negishi (Japan Aerospace Exploration Agency (JAXA), Japan)
10:50−11:30	**EA1014** **Keynote Lecture – Keita Yamamoto,** M. Shimagaki, H. Negishi, S. Kawasaki Establishment of Prediction Method for Cavitation Instabilities in Rocket Engine Turbopumps
11:30−11:50	**EA1091** **Hideyo Negishi**, K. Yamamoto T. Fukuda M. Shimagaki S. Kawasaki Unsteady PIV Measurements and LES Analysis of Backflow Vortex Structures Upstream of a Rocket Engine Inducer
11:50−12:10	**IOP56** **Daiki Kita**, K. Yamamoto, K. Tamura, S. Kawasaki, Y. Iga Experimental Consideration of Dynamic Characteristics of Cavitation and Cavitation Instabilities in Liquid Rocket Inducer
12:10−12:30	**IOP27** **Koki Tamura**, K. Yamamoto, S. Kawasaki, Y. Iga Experimental Investigation of Effect of the Forced Perturbation on Cavitation Instability in Liquid Rocket Inducer

July 7th (Tuesday) – Room C

10:50−12:30	**OS6 Fluid Machinery in Propulsion Systems (Part 2)** Chair: Dr. Hideyo Negishi (Japan Aerospace Exploration Agency (JAXA), Japan) Dr. Tobias Traudt (German Aerospace Center (DLR), Germany)
10:50−11:10	**IOP80** **Ryuki Tsuchida**, S. Kawasaki, Y. Iga Visualization and Spatiotemporal Evaluation of Circumferential Structures in Higher-Order Rotating Cavitation and Its Interaction Components in a Liquid-Rocket Turbopump Inducer
11:10−11:30	**EA1079** **Daejin Kim**, B. Y. Kang, C.-H. Choi, J. Kim Cavitation Instability of Kerosene Pump for Liquid Rocket Engine
11:30−11:50	**EA1103** **Shota Tamaki**, K. Sakai, Y. Shibata, K. Miyagawa Balance Piston Dynamics in Rocket Turbopumps: 1D Model with Swirl Correction and Orifice Inertance
11:50−12:10	**EA1082** **Takuji Ikeda**, T. Kimura, T. Onuma, M. Nohmi, B. An, D. Kang Turbopump Response Characteristics under Unsteady Pulsating Flow
12:10−12:30	**IOP82** **Kento Sakai**, K. Miyagawa, A. Mariotti, A. Pasini Numerical Evaluation of Dynamic Load Response of Cryogenic Hybrid Journal Bearings for Rocket Engine Turbopumps

OS7 Fluids Machinery for Low-Carbon Society (Cryogenic Fluids)

July 6th (Monday) – Room D

15:20−17:00	**OS7 Fluids Machinery for Low-Carbon Society (Cryogenic Fluids) (Part 1)** Chair: Dr. Takeshi Sano (Mitsubishi Heavy Industries, Ltd., Japan) Prof. Teiichi Tanaka (National Institute of Technology, Kumamoto College, Japan)
15:20−16:00	**IOP91** **Keynote Lecture - Davide Giampietro**, M. Stefanizzi, M. Torresi, T. Capurso Applications and Challenges of Centrifugal Pumps for Liquid Hydrogen in the Maritime Transport Sector
16:00−16:20	**IOP36** **Kazuki Niiyama**, T. Kimura, T. Yoden, Y. Nagata, H. Minami Experimental Evaluation of Thermodynamic Effects on Cavitating Inducer Performance with Liquid Hydrogen
16:20−16:40	**IOP66** **Hirokazu Yakushijin**, K. Yun, K. Nomakuchi, T. Nakamura Development and Demonstration of a Liquid Hydrogen Centrifugal Pump Driven by a High-Temperature Superconducting Motor
16:40−17:00	**IOP84** **Tsuyoshi Komatsu,** S. Gobara, C. Komori, K. Ochi, Y. Kubota Experimental Demonstration of High-Speed Centrifugal Pump Operation under Saturated Liquid Hydrogen Conditions (NPSH ≈ 0)

July 7th (Tuesday) – Room B

14:00−14:40	**OS7 Fluids Machinery for Low-Carbon Society (Cryogenic Fluids) (Part 2)** Chair: Dr. Keita Yamamoto (Japan Aerospace Exploration Agency, Japan) Dr. Kazuki Niiyama (IHI Corporation, Japan)
14:00−14:20	**EA1004** **Naoki Takegawa**, R. Doihara Experimental Study on a High-Accuracy Test Facility for the Evaluation of Cryogenic Equipment
14:20−14:40	**EA1084** **Yuto Kobayashi**, K. Sakai, R. Konishi, I. Kawashima, S. Kamei, K. Miyagawa Development and Evaluation of a Liquid-Nitrogen Closed-Loop Test Facility for Cryogenic Centrifugal Pumps with Inducer Cavitation Visualization

OS8 Experimental and Flow Visualization Techniques

July 5th (Sunday) – Room D

11:50−13:10	**OS8 Experimental and Flow Visualization Techniques (Part 1)** Chair: Prof. Koichi Nishibe (Tokyo City University, Japan) Prof. Hyoung-Ho Kim (Gyeongsang National University, Republic of Korea)
11:50−12:10	**IOP44** **Nattawat Nilamann**, M. Ochiai Effect of Oil Supply Angle on Bush Rotation Speed: X-Ray CT Visualization In Floating Bush Bearings
12:10−12:30	**IOP19** **Ayumu Hirata**, K. Ikawa, A. Mizobuchi, T. Shigemitsu PIV Measurement of Flow near the Casing Tongue in Mini Centrifugal Pumps Having Different Blade Outlet Angles
12:30−12:50	**EA1087** **Shu Ueda**, R. Inoue, A. Kiyama, D. Kang, K. Sato Dynamics of a Two-Dimensional Cavitation Bubble Generated in A Rectangular Cavity
12:50−13:10	**EA1081** **Toru Shigemitsu**, T. Nishio T. Soda Influence of Cavitation Number on Thrust and internal Flow of Small Side Thruster for Ship

July 5th (Sunday) – Room D

15:50−17:30	**OS8 Experimental and Flow Visualization Techniques (Part 2)** Chair: Prof. Toru Shigemitsu (Tokushima University, Japan) Prof. Koichi Nishibe (Tokyo City University, Japan)
15:50−16:30	**EA1063** **Keynote Lecture - Md. Didarul Islam**, Chang-Je Lee, Hyoung-Ho Kim CFD-PIV Study of Trailing-Edge Duct Optimization for Hubless Rim-Driven Propellers
16:30−16:50	**IOP74** **Kazuki Ikeda**, K. Tamura, S. Kawasaki, Y. Iga An Experimental Prediction of Time Variation of Tip Leakage Flow Rate in a Liquid Rocket Inducer by Multiple-pressure Measurement Method
16:50−17:10	**EA1008** **Naoto Wada**, D. Hashiba, K. Kanazawa, D. Inoue, Y. Hada, K. Sekiguchi, K. Nishibe Aerodynamic Characteristics of Ceiling-Attachingtype Multi-Copter Equipped With Duct
17:10−17:30	**EA1095** **Mizuki Hamaguchi**, K. Kodama T. Nakashima Y. Enomoto K. Miyagawa Flow Rate Fluctuation Measurement Induced By Cavitation Flow Instabilities In Hydro Turbine Draft Tube

July 6th (Monday) – Room C

10:50−12:10	**OS8 Experimental and Flow Visualization Techniques (Part 3)** Chair: Prof. Hyoung-Ho Kim (Gyeongsang National University, Republic of Korea) Prof. Toru Shigemitsu (Tokushima University, Japan)
10:50−11:10	**IOP35** **Rion Yokota**, M. Monobe, M. Koga, K. Nishibe, D. Kang, K. Sato Fundamental Study on Fluid Machinery Using Excited Jets
11:10−11:30	**EA1055** **Mohammed Ali Kareem Shukur Alhatab**, A. Kiyama, M. Asahara, D. Kang Flow Characteristics through Perforated Plates
11:30−11:50	**EA1075** **Chihiro Nishikata**, R. Yokota, D. Iwaya, K. Nishibe, D. Kang, K. Sato Flow Visualization of Planar Synthetic Jets
11:50−12:10	**EA1076** **Chihiro Izawa**, D. Iwaya, A. Kiyama, D. Kang, K. Nishibe, K. Sato Behavior of Vortex Pair near a Rigid Boundary

OS9 Numerical Simulation and Modeling of Fluid Machinery Flows

July 5th (Sunday) – Room B

15:50−17:30	**OS9 Numerical Simulation and Modeling of Fluid Machinery Flows (Part 1)** Chair: Prof. Shin-ichi Tsuda (Kyushu University, Japan)
15:50−16:10	**IOP9** **Mingkun Fang**, K. Sakai, R. Tao, K. Miyagawa, R. Xiao Numerical Analysis of Flow Structure and Entropy Production in a Rotor-Stator Cavity under Different Leakage Flow Rates
16:10−16:30	**EA1054** **Junyoung Lim**, S. J. Song Numerical Analysis of Unsteady Loss Mechanisms in an Axial Flow Pump
16:30−16:50	**EA1096** **Shintaro Kobayashi**, S. Tsurusaki, T. Sano, A. Shibata, K. Miyagawa Unsteady CFD Analysis of Wake-Passing Frequency Effects on Static Pressure Recovery in a Centrifugal-Pump Diffuser
16:50−17:10	**IOP40** **YuanTang**, M. Fang, R. Tao, R. Xiao Research on the Spatiotemporal Evolution of Pressure Pulsations during Part-Load Operation of Pump-Turbine under Power Generation Conditions
17:10−17:30	**EA1024** **Min-Seok Kim**, H.-S. Shim Effects of Impeller Inlet Angle and Volute Cross-Sectional Area on Hydraulic Performance of a Pump-as-Turbine in Both Pump and Turbine Modes

July 6th (Monday) – Room B

10:50−12:10	**OS9 Numerical Simulation and Modeling of Fluid Machinery Flows (Part 2)** Chair: Prof. Hyeon-Seok Shim (Changwon National University, Republic of Korea)
10:50−11:10	**IOP65** **Ruihua Liu**, X. Li, S. Bai, J. Wang Prediction and Evaluation Method of Hump Region for Pump-Turbines in Pump Mode
11:10−11:30	**IOP64** **Pengli Zhang**, J. Xin, J. Li, Z. Hao Research on the Formation Mechanism and Energy Loss Characteristics of Double-Hump Phenomena of Pump-Turbine in Pump Mode
11:30−11:50	**IOP10** **Binghan Liu**, D. Liu, X. Luo Kinematic Mechanism and Frequency Prediction of Free Surface Sloshing in Pump-Turbines during Synchronous Condenser Operation
11:50−12:10	**EA1057** **Taiki Takamine**, K. Nakashima, R. Mitsunaga, S. Tsuda, S. Watanabe Numerical Simulation of Backflow Vortex in Toroidal Pipe Model Imitating Inlet Section of a Centrifugal Pump

July 6th (Monday) – Room B

15:20−17:00	**OS9 Numerical Simulation and Modeling of Fluid Machinery Flows (Part 3)** Chair: Prof. Taiki Takamine (Kyushu University, Japan)
15:20−15:40	**EA1029** **Himeko Yamamoto**, K. Yamamaoto, O. Fukasawa, H. Negishi Coupled 1D-3D CFD Simulation for Prediction of Cavitation Surge in a Rocket Engine Inducer
15:40−16:00	**EA1022** **Seong-Bin Hwang**, H.-S. Shim Geometric Effects on Disk Friction in Rotating Disk-Cavities with Centripetal Through-flow
16:00−16:20	**EA1023** **Jaegyu Jeong**, H.-S. Shim Design and Analysis of a Novel Labyrinth Seal Featuring a Staggered Rib Arrangement
16:20−16:40	**EA1042** **Jeongjae Kim**, J.-H. Kim A Study on Enhancing Noise Prediction Accuracy for Ducted Propellers via Permeable FW-H Equation
16:40−17:00	**EA1019** **Doan-Hien NGO**, T.-G. Nguyen, N.-M. Hoang, Q.-H. Nghiem, M.-D. Ha, D.-L. Doi, T.-B. Dang, D.-L. Chu, P.-M. Nguyen Design Non-Contact Air Seal for Direct-Connect Altitude Test Facility (ATF)

OS10 AI and Machine Learning in Fluid Machinery

July 7th (Tuesday) – Room D

10:50−12:10	**OS10 AI and Machine Learning in Fluid Machinery (Part 1)** Chair: Prof. Donghyuk Kang (Saitama University, Japan)
10:50−11:30	**EA1016** **Keynote Lecture –** B. Jalaali, **Kie Okabayashi,** Neural-Network-Based Rotationally-Invariant LES Model Trained on Turbulent Channel Flow Field Data
11:30−11:50	**EA1044** **Takumi Kimura**, T. Ikeda, A. Kiyama, D. Kang Estimation of Three-Dimensional Unsteady Cavitating Flow in an Inducer under Disturbance using Dynamic Mode Decomposition with Control
11:50−12:10	**EA1060** **Hamze El Halabi**, Y. Takahashi SPHINX: Interface-Aware Sparse Data Placement for Extended Physics-Informed Neural Networks in CFD and Fluid–Structure Interaction

July 7th (Tuesday) – Room C

14:00−15:00	**OS10 AI and Machine Learning in Fluid Machinery (Part 2)** Chair: Prof. Kie Okabayashi (The University of Osaka, Japan)
14:00−14:20	**IOP95** **Tomoya Arai**, K. Miyagawa, N. Iwata, Y. Kikuchi Implementation and Validation of an Anomaly Detection System for Small-Scale Hydropower
14:20−14:40	**IOP97** **Taiki Yamanaka**, K. Miyagawa Anomaly Detection and Performance Monitoring of Francis Turbines Using Principal Component Analysis
14:40−15:00	**IOP4** **Lyu Zhuangyi**, C. Tairan, H. Biao A Data-Driven Approach for Reconstructing Cavitation Structures in an Axial Flow Pump Using Machine Learning and Dimensionless Pressure Fluctuation Features

OS11 Cavitation & Multiphase Flows

July 5th (Sunday) – Room B

11:50−13:10	**OS11 Cavitation & Multiphase Flows (Part 1)** Chair: Dr. Motohiko Nohmi (EBARA Corporation, Japan)
11:50−12:10	**IOP90** **Tsubasa Ando**, K. Miyagawa Effects of Numerical Evaluation Procedures on Cavitation Erosion Indicators in Cavitating Flow around a Hydrofoil
12:10−12:30	**IOP103** **Kota Eki**, J. Okajima, M. Nohmi, Y. Iga Relationship Between Vortex Structure and Thermodynamic Suppression Effect in Cavitation in Notch Flow
12:30−12:50	**IOP69** **Kazuto Okuma**, H. Kobayashi, S. Watanabe, S. Tsuda, T. Takamine, Y. Kurosawa, C. Youn Experimental Investigation of Cavitation Behavior and Erosion Patterns in Simplified Multi-hole Cage Control Valve
12:50−13:10	**EA1003** **Yang Jianfeng**, J. Okajima Influence of Heat Transfer on Partial Cavity Shedding Characteristics in Heated Nozzle

July 5th (Sunday) – Room A

15:50−17:30	**OS11 Cavitation & Multiphase Flows (Part 2)** Chair: Prof. Yuka Iga (Tohoku Univeristy, Japan)
15:50−16:30	**Jointly held with OS1 and OS6** **Invited Lecture II – Christopher Groll** Experimental Investigation of a Single-Stage Centrifugal Liquid Methane Pump
16:30−16:50	**EA1062** **Weiwei Cao**, W. Lu, L. Xu, H. Duan, B. Zhu Study on Shutdown Process of Agricultural Irrigation Pump Device
16:50−17:10	**EA1089** **Takuma Kawahara**, R. Konishi, I. Kawashima, K. Miyagawa The Effect of Flow Patterns on the Rotational Speed Variation of Gas-Liquid Two-Phase Flow in Centrifugal Pumps with Inducers
17:10−17:30	**EA1086** **Motohiko Nohmi**, T. Ikeda Numerical Analysis of Acoustic Cavitation Surge in the Piping System Upstream of a Pump

July 7th (Tuesday) – Room B

10:50−12:30	**OS11 Cavitation & Multiphase Flows (Part 3)** Chair: Dr. Mohamed Farhat (EFPL, Switzerland) Prof. Junnosuke Okajima (Tohoku University, Japan)
10:50−11:10	**EA1083** S. Haranaga, T. Otsuka, **Akihito Kiyama**, D. Kang, K. Sato On the Asperical Collapse of a Single Cavitation Bubble near Boundaries
11:10−11:30	**IOP70** **Muhammad Akmal Qaisar**, H. Monji Influence of Surfactants on the Rise Dynamics of a Single Gas Bubble
11:30−11:50	**IOP92** **Stefano Giuntini**, A. Tacchi, L. Ferrari, A. Pasini Comparison of Two-Phase Ammonia Heat-Transfer Correlations for Bimodal Nuclear Propulsion Thermal-Hydraulic Design
11:50−12:10	**IOP39** **Nitzsche Tim**, T. P. Uwe Impact of the Design of Ascending Inverted Siphon Branches on Susceptibility to Sedimentation
12:10−12:30	**IOP33** **Koichi Tsubogo** Numerical Analysis of Gas-Liquid Two-Phase Flows in Dambreak Scenarios via the Density Function Method

OS12 Rotordynamics and Multidisciplinary Challenges: Tribology, Design. Optimization, Digital Twins, and Systems Engineering in Turbomachines

July 5th (Sunday) – Room E

11:50−12:50	**OS12 Rotordynamics and Multidisciplinary Challenges: Tribology, Design. Optimization, Digital Twins, and Systems Engineering in Turbomachines (Part 1)** Chair: Prof. Tsuyoshi Inoue, (Nagoya University, Japan) Prof. Kazuhiko Adachi (Chubu University, Japan)
11:50−12:10	**IOP93** **Edwin Bone**, E. Cando, V. H. Hidalgo, F. Botero,K. Escobar, J. Pilliza, K. Palomo An Integrated Framework for PAT Micro-Hydropower: Experimental Characterization, NSGA-II Impeller-Volute Optimization, and Resin MSLA Manufacturing
12:10−12:30	**IOP96** **Peize Li**, O. Matsushita, K. Miyagawa Investigation into the Mitigation of Centrifugal Compressor Surging via Induction Motor Speed Control
12:30−12:50	**EA1015** **Shinsaku Nakamura**, T. Nara G. Fujiura, H. Takashima, M. Uchiumi Investigation of Fluid Damping Enhancement Mechanism for a Rotating Disk in Water

July 5th (Sunday) – Room E

15:50−16:50	**OS12 Rotordynamics and Multidisciplinary Challenges: Tribology, Design. Optimization, Digital Twins, and Systems Engineering in Turbomachines (Part 2)** Chair: Prof. Kazuhiko Adachi (Chubu University, Japan) Prof. Tsuyoshi Inoue, (Nagoya University, Japan)
15:50−16:10	**EA1068** **Bo Liu**, R. Ogawara, A. Heya, T. Inoue A Matrix-Free Automatic Differentiation Framework for Fully Coupled Gas Foil Bearing Transient Simulation
16:10−16:30	**EA1058** **Asuka Iwata**, M. Iwasaki, A. Heya, R. Ogawara, T. Inoue Improving the Accuracy of Bulk Flow Analysis for Grooved Seals: Detailed Comparison of Flow Velocity and Pressure Distribution with CFD Analysis and Examination of the Influence of Each Parameter
16:30−16:50	**EA1088** **Kazuhiko Adachi** Preliminary Study on the Feasibility of Ultra-High-Speeds Turbopumps from a Rotordynamics Perspective

OS13 Fluid-Structure Interactions in Fluid Machinery and Systems

July 6th (Monday) – Room F

15:20−16:40	**OS13 Fluid-Structure Interactions in Fluid Machinery and Systems (Part 1)** Chair: Mr. Kazuaki Yabe (TOYO Engineering Corporation, Japan) Dr. Koichi Yonezawa (Central Research Institute of Electric Power Industry, Japan)
15:20−15:40	**IOP26** **Hiromitsu Hamakawa**, K. Maeda, R. Odashiro, E. Kurihara, H. Otsubo Vortex Shedding from In-line Tube Banks During Acoustic Resonance in The Drag Direction
15:40−16:00	**EA1005** **Hiroaki Amakawa**, H. Negishi, H. Fujihara, S. Ohno, J. Kazawa Coupled Fluid-Structure Interaction Analysis for Flutter Prediction in a Low-Pressure Turbine Stationary Cascade
16:00−16:20	**IOP79** **Hideaki Sugawara**, Y. Tanabe Implementation and Validation of a Delta-Airload Method to Enhance Rotor Blade CFD/CSD Prediction Capability
16:20−16:40	**EA1033** **Yuepeng Yang**, S. Ishikawa, S. Kijimoto, Y. Koba Research on the Lock-in Phenomenon of Spring-Supported Cross Cylinders

July 7th (Tuesday) – Room E

10:50−12:30	**OS13 Fluid-Structure Interactions in Fluid Machinery and Systems (Part 2)** Chair: Prof. Hiromitsu Hamakawa (Oita University, Japan) Mr. Kazuaki Yabe (TOYO Engineering Corporation, Japan)
10:50−11:10	**EA1078** **Tomas Valldeperas**, T. Yin, M. Renzi Transient CFD and FSI Analysis of a Centrifugal Pump Operating as Turbine Using OpenFOAM and Solids4foam
11:10−11:30	**IOP8** **Shinji Narukawa**, E. Kurihara, Y. Ogimoto, H. Hamakawa Large-Eddy Simulation of Serration Effects on a Rotating Wells Turbine in Transient Inflow
11:30−11:50	**EA1073** **Njuki Mureithi** Bearing Fault Detection via Convolution Neural Network and SVM Based on TSA Envelop Spectra and Spectral Kurtosis Derived Features
11:50−12:10	**IOP88** **Soichi Sasaki**, K. Okumura, K. Shinozaki Assessment of interaction noise sources generated by inline cylinders based on Ffowcs Williams-Hawkings analogy
12:10−12:30	**EA1046** **Jialan Dai**, R. Miyashita, Y. Takahashi Aerodynamic Simulation for a Full-Scale Inflatable Reentry Aeroshell Based on Fluid-Structure Interaction

July 7th (Tuesday) – Room A

14:00−15:20	**OS13 Fluid-Structure Interactions in Fluid Machinery and Systems (Part 3)** Chair: Prof. **Njuki Mureithi** (Polytechnique Montreal, Canada) Dr. Koichi Yonezawa (Central Research Institute of Electric Power Industry, Japan)
14:00−14:40	**IOP58** **Keynote Lecture - Dr. Fumio Inada** Modelling and Mechanisms of Leakage Flow Induced Self-Excited Vibrations
14:40−15:00	**EA1070** **Jinsun Park**, U. Shrestha, S.-J. Kim, J. Park, K.-H. Ko, Y.-D. Choi Comparison of Flow−Induced Stress in the Scale−Down and Prototype Models of the Francis Hydro Turbine
15:00−15:20	**EA1052** **Igor Naumov**, S. Skripkin, M. Tintulova, B. Sharifullin Energy−Efficient Intensification of Heat and Mass Transfer in Vortex Reactors