Conference Program (Tentative. As of Sep. 05, 2026)

Day	Time	Room 5	Room 6	Room 1	Room 2	Room 3+4
Sep. 27 (Sun.)	17:00 - 19:00	Welcome Reception				
Sep. 28 (Mon.)	08:40 - 09:00	Opening				
	09:00 - 11:30	Plenary Session 1 Plenary Session 2 Plenary Session 3				
	11:30 - 13:00	Lunch				
	13:00 - 13:40	Keynote Lecture 1	Keynote Lecture 2	Keynote Lecture 3		
	13:40 - 13:50	Cofee Break				
	13:50 - 15:50	1-1A Boiling Fundamentals and Bubble Dynamics	1-5A Thermal-Hydraulics in Heat Pipe Reactor	1-4A Fukushima Daiichi Accident and Hydrogen Combustion	1-6A AI for Two-Phase Flow and Drift-Flux Modeling	1-2A CFD Method and Application in Nuclear Engineering
	15:50 - 16:00	Cofee Break				
	16:00 - 18:00	2-1B CHF, DNB and Post-CHF	2-5B SMR - Design and SG Simulation	2-4B Severe Accident Analysis in PWR	2-6B AI Applications in Severe Accident Analysis and Decommissioning	2-2B Measurements and Experiments
Sep. 29 (Tue.)	09:00 - 09:40	Keynote Lecture 4	Keynote Lecture 5	Keynote Lecture 6		
	09:40 - 09:50	Cofee Break				
	09:50 - 11:30	3-1C Condensation and Critical Flow	3-5C SFR Safety	3-4C DEC-A Analysis	3-3A Reactor Operation and Control	3-2C Model Assessment and Benchmarking
	11:30 - 13:00	Lunch				
	13:00 - 15:00	4-1D Reflood, Rewetting and Quench Heat Transfer	Poster 1 Thermal-Hydraulic Phenomena and Validation Poster 2 Modeling, Simulation and Reactor Analysis	4-4D Source Term and Atmospheric Dispersion	4-5D SMR - Safety Simulation	4-2D Thermal-Hydraulic Scaling and System Analysis
	15:00 - 15:20	Cofee Break				
	15:20 - 17:00	Special 1 GOTHIC: Developments and Applications	Special 2 ATRIUM: Uncertainty Quantification			
	17:00 - 18:30					
	18:30 - 20:30	Banquet				
Sep. 30 (Wed.)	09:00 - 09:40	Keynote Lecture 7	Keynote Lecture 8	Keynote Lecture 9		
	09:40 - 09:50	Cofee Break				
	09:50 - 11:30	5-1E Turbulence, Mixing and Subchannel Analysis	5-5E Thermal-Hydraulics in LFR	5-4E Severe Accident Analysis in BWR and Spent Fuel Pool	5-3B Nuclear Monitoring and Decommissioning	5-2E Multi-Scale and Multi-Physics Coupling Simulation 1
	11:30 - 13:00	Lunch				
	13:00 - 15:00	6-1F Fundamental Heat Transfer and Flow Phenomena	6-5F Thermal-Hydraulics in HTGR and GEN-IV Reactor	6-1G Severe Accident, Debris and Molten-Material Behavior	6-5G Research Reactor and Cooling System	6-2F Advances in Numerical Methods 1
	15:00 - 15:10	Cofee Break				
	15:10 - 16:50	7-1H Natural, Mixed and Marangoni Convection	7-5H Thermal-Hydraulics in SFR	7-1I Two-Phase Flow Instabilities and Interfacial Dynamics	7-6C AI for Reactor Design, Optimization and Intelligent Control	7-4F Severe Accident Phenomena and Analysis
	16:50 - 17:00	Cofee Break				
	17:00 - 18:20	(Panel Session 1) Emerging Thermal Hydraulic Challenges in Reactor Operation and Safety	(Panel Session 2) AI and Digital Transformation for the Future of Nuclear Engineering	(Panel Session 3) SMR/ AMR/ MMR: Global Progress, Deployment, and Future Prospects		
Oct. 1 (Thu.)	09:00 - 09:40	Keynote Lecture 10	Keynote Lecture 11	Keynote Lecture 12		
	09:40 - 09:50	Cofee Break				
	09:50 - 11:30	8-1J Safety Analysis, Code Development and V&V 1	8-5I Thermal-Hydraulics in Fusion Reactor	8-4G Thermal Hydraulic Experiments and Simulation	8-6D AI for CHF and Boiling Heat Transfer	8-2G Multi-Scale and Multi-Physics Coupling Simulation 2
	11:30 - 13:00	Lunch				
	13:00 - 15:00	9-1K SMR and Reactor System Thermal-Hydraulics	9-5J Thermal-Hydraulics in MSR	9-4H Aerosol Behavior	9-6E AI for Reactor Monitoring, Diagnostics and Digital Twins	9-5K Safety Analysis and Code Validation
	15:00 - 15:10	Cofee Break				
	15:10 - 17:10	10-1L Safety Analysis, Code Development and V&V 2	10-5L Thermal-Hydraulics in Advanced LWR	10-2H Advances in Numerical Methods 2	10-6F Physics-Informed AI and Surrogate Modeling for Thermal-Hydraulics	10-5M MSR - Molten Salt Drain and Transfer
	17:10 - 17:30	Closing				

Sep. 28 (Mon.)

Plenary Session 1

Sep. 28 (Mon.), 09:00 - 09:50, Room 5+6

Chair: **Bao-Wen Yang** (Delta Energy Group, United States)

NUTHOS-15-PL01	**Innovating and Applying Advanced Technologies to Meet Energy and Societal Needs** Yuki Ishiwatari (Hitachi, Ltd., Japan)

Plenary Session 2

Sep. 28 (Mon.), 09:50 - 10:40, Room 5

NUTHOS-15-PL02	**Aerosol behavior and mitigation strategies for safety assessment in the context of Fukushima Daiichi fuel debris removal** Emmanuel Porcheron (ASNR Saclay, France)

Plenary Session 3

Sep. 28 (Mon.), 10:40 - 11:30, Room 5+6

Chair: **Jeong Ik Lee** (KAIST, Korea)

NUTHOS-15-PL03	**Accelerating advanced nuclear through the Illinois microreactor demonstration project** Caleb Brooks (University of Illinois, United States)

Keynote Lecture 1

Sep. 28 (Mon.), 13:00 - 13:40, Room 5

Chair: **Hyun Sun Park** (Seoul National University, Korea)

NUTHOS-15-KL01	**High resolution investigations of boiling heat transfer, from cryogenic fluids in space systems to high-pressure water in nuclear reactors** Matteo Bucci (MIT, United States)

Keynote Lecture 2

Sep. 28 (Mon.), 13:00 - 13:40, Room 6

Chair: **Wei Liu** (Kyushu University, Japan)

NUTHOS-15-KL02	**INVESTIGATION ON AEROSOL BEHAVIOR IN NUCLEAR POWER PLANT CONTAINMENT** Xuewu Cao, Lili Tong (Shanghai Jiao Tong University, China)

Keynote Lecture 3

Sep. 28 (Mon.), 13:00 - 13:40, Room 1+2

Chair: **Igor Bolotnov** (North Carolina State University, United States)

NUTHOS-15-KL04	**Study on gas entrainment -future in the past-** Kei Ito (Kyoto University, Japan)

1-1A. Boiling Fundamentals and Bubble Dynamics

Sep. 28 (Mon.), 13:50 - 15:50, Room 5

Chair: **Stephan Leyer** (Universtiy of Luxembourg, Luxembourg)

Jean-Marie Le Corre (Westinghouse, Sweden)

NUTHOS-15-1064	**Interface Capturing Simulation of Subcooled Boiling at High Heat Flux** Nicholas Jay Mecham, Om Jagtap, Igor Bolotnov (North Carolina State University, United States)
NUTHOS-15-1071	**Combined Effect of Buoyancy and Pressure on Inclined Downward-Facing Surface under Saturated Pool Boiling Conditions** Young Hee Kim, Dong-Hun Shin, Yong Hoon Jeong (Korea Advanced Institute of Science and Technology , Korea), Min Suk Lee (Texas A&M University, Korea), Dong Hoon Kam (Argonne National Laboratory, United States)
NUTHOS-15-1217	**Diffusion-Based Contact Angle Modeling for Interface-Capturing Boiling Simulations with Conjugate Heat Transfer** Om Jagtap, Taylor Grubbs, Igor A. Bolotnov (North Carolina State University, United States)
NUTHOS-15-1259	**ESTIMATION OF INTERFACIAL FORCES IN WALL BOUNDED BUBBLY FLOWS AND HIGH GAS VOLUME FRACTION BUBBLE CLUSTERS** Magnus Herman Bentham, Marco Colombo, Elena Marensi (The University of Sheffield, United Kingdom), Igor Bolotnov (North Carolina State University, United States)
NUTHOS-15-1285	**A Mixture Relaxation Model for Thermal Nonequilibrium in Convective Flow Boiling** Jean-Marie Le Corre (Westinghouse, Sweden), Fabrice Francois (CEA, France), Henryk Anglart (Royal Institute of Technology, Sweden)
NUTHOS-15-1317	**Experimental study on swirl flow effects on large bubble formation and departure from nucleate boiling** Yudai Tsutsui, Yue Wang, Tomio Okawa (The University of Electro-Communications, Japan)

1-5A. Thermal-Hydraulics in Heat Pipe Reactor

Sep. 28 (Mon.), 13:50 - 15:50, Room 6

Chair: **Masaaki Satake** (Central Research Institute of Electric Power Industry, Japan)

Riccardo Boccelli (Politecnico di Milano, Italy)

NUTHOS-15-1326	**On the Simulation of the Startup Transient in a Heat Pipe Reactor for Space Applications** Lorenzo Tutolo, Riccardo Boccelli, Luca Coita, Stefano Lorenzi (Politecnico di Milano, Italy)
NUTHOS-15-1331	**Thermal Analysis of a 200 kWt Heat Pipe Reactor for Space Applications Using a Python-Based Open-Source Multiphysics Environment** Riccardo Boccelli, Lorenzo Tutolo, Stefano Lorenzi (Politecnico di Milano, Italy)
NUTHOS-15-1451	**Experimental Study on the Thermal Performance on 2m Annular Wick Sodium Heat Pipe Depending on Filling Amount** Jisung Oh (Ulsan National Institute of Science and Technology, Korea), Dong Hun Lee (Paul Scherrer Institute, Eidgenössische Technische Hochschule Zürich, Switzerland), Ik Jae Jin, Doyeong Lim, In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)
NUTHOS-15-1455	**Experimental Performance Evaluation of Self-Venting Annular Wick Sodium Heat Pipe** Faruk Celik, In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)
NUTHOS-15-1046	**Multi-fidelity Analysis of the KRUSTY Microreactor Experiment** Mario A. Ponce Tovar, Ivor D. Clifford, Hakim Ferroukhi (Paul Scherrer Institut, Switzerland), Annalisa Manera (Eidgenössische Technische Hochschule Zürich, Switzerland)
NUTHOS-15-1423	**Visualization of Condenser Liquid Pooling in Overfilled Sodium Heat Pipe under Horizontal Operation Using OpenFOAM** Almanzo Arjuna (Ulsan National Institute of Science and Technology, Korea), Dong Hun Lee (ETH Zürich, Switzerland), In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)

1-4A. Fukushima Daiichi Accident and Hydrogen Combustion

Sep. 28 (Mon.), 13:50 - 15:50, Room 1

Chair: **Zhe Liang** (Canadian Nuclear Laboratories, Canada)

Akitoshi Hotta (Tokyo Electric Power Company Holdings, Inc., Japan)

NUTHOS-15-1023	**Accident Progression Analysis of Unit 1 at Fukushima Daiichi using the MAAP code: Focus on Long-Term Containment Pressure Behavior** Jo Mizuhara, Chiaki Kino (Hitachi-GE Vernova Nuclear Energy, Ltd., Japan), Shinya Mizokami (Tokyo Electric Power Company Holdings, Inc., Japan), Takuya Yamashita, Kenta Shimomura (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1348	**Accident Progression Analysis of Fukushima Daiichi Unit 3 Using MAAP** Yoshiro Nishioka, Yoshihiro Kojima (Toshiba Energy Systems & Solutions Corporation, Japan), Takuya Yamashita, Kenta Shimomura (Japan Atomic Energy and Agency, Japan), Shinya Mizokami (Tokyo Electric Power Company Holdings, Japan)
NUTHOS-15-1089	**Investigation of Concrete Failure Mechanism in the Inner Surface of the Pedestal Wall at 1F1 -- Part 1: Concept of the whole evaluation methodology** Akitoshi Hotta, Penghui Chai, Masato Mizokami, Noriaki Nakashima, Shinya Mizokami (Tokyo Electric Power Company Holdings, Inc., Japan)
NUTHOS-15-1092	**Investigation of Concrete Failure Mechanism in the Inner Surface of the Pedestal Wall at 1F1 -- Part2：Assessment of CORQUENCH Model Validity in Simulating MCCI Behavior at 1F1** Penghui Chai, Masato Mizokami, Noriaki Nakashima, Shinya Mizokami (Tokyo Electric Power Company Holdings, Inc., Japan)
NUTHOS-15-1213	**Assessment of SMR Containment Hydrogen Flammability Using Calculated Adiabatic Flame Temperature Analysis** Sihyeong Yu (Pohang University of Science and Technology, Korea), Dosu Park (Jeonbuk National University, Korea), Joongoo Jeon (Pohang University of Science and Technology, Korea)
NUTHOS-15-1261	**PAR-INDUCED HYDROGEN GAS MIXING AND COMBUSTION BEHAVIOUR IN SEVERE ACCIDENTS** Zhe Liang, Lee Gardner, Tony Clouthier (Canadian Nuclear Laboratories, Canada)

1-6A. AI for Two-Phase Flow and Drift-Flux Modeling

Sep. 28 (Mon.), 13:50 - 15:50, Room 2

Chair: **Tomio Okawa** (The University of Electro-Communcations, Japan)

Wei Liu (Kyushu University, Japan)

NUTHOS-15-1033	**Symbolic Regression for Two-Phase Drift Flux Modeling: Enhancing Interpretability and Extrapolation** Davide Rotilio, Xingang Zhao (University of Tennessee Knoxville, United States), Robert Jr Salko (Oak Ridge National Laboratory, United States)
NUTHOS-15-1177	**SPATIOTEMPORAL PREDICTION OF VOID FRACTION IN VERTICAL STEAM–WATER FLOW USING MULTI-POINT FIBER PROBES AND DEEP LEARNING MODELS** Jinze Yang, Meng Zhao, Zheng Li, Haopeng Shi, Yanhua Yang (Shanghai Jiao Tong University, China)
NUTHOS-15-1246	**Development of a Void Fraction Signal Generative Adversarial Network for Two-phase Flow Induced Vibration Modeling** Hanyu Wang, Shuichiro Miwa, Koji Okamoto (The University of Tokyo, Japan)
NUTHOS-15-1375	**STUDY OF FLOW BOILING IN ROD-BUNDLE GEOMETRY USING HIGH-SPEED IMAGING AND AI-BASED BUBBLE DETECTION** Hanxing Sun (Virginia Tech, United States), Muyue Li, Xiaodong Sun (University of Michigan, United States), Yang Liu (Virginia Tech, United States)
NUTHOS-15-1429	**Machine Learning-Enhanced Drift-Flux Modeling for Molten Salt-Gas Flow** Tristan Reynaldo Villarreal, Ethan Rozak, Cole Gentry, Kevin Clarno (University of Texas at Austin, United States)
NUTHOS-15-1257	**A CNN-based Approach for Bubble Segmentation in Pool Scrubbing** Yihui Wu (Forschungszentrum Jülich GmbH, Germany), Rui Li (Helmholtz-Zentrum Dresden-Rossendorf e.V., Germany), Michael Klauck (Forschungszentrum Jülich GmbH, Germany)

1-2A. CFD Method and Application in Nuclear Engineering

Sep. 28 (Mon.), 13:50 - 15:50, Room 3+4

Chair: **Masahiro Ishigaki** (University of Fukui, Japan)

Co-Chair: **Josef Hasslberger** (University of the Bundeswehr Munich, Germany)

NUTHOS-15-1040	**Dynamic Mode Decomposition of Penetration Flow in the Branch Pipe of a T-junction** Koji Miyoshi (Institute of Nuclear Safety System,Inc., Japan)
NUTHOS-15-1271	**QUANTIFYING THE STABILITY OF THERMAL STRATIFICATION WITH TANGENTIAL OSCILLATION AT A HORIZONTAL 90° PIPE-ELBOW** Jianyu Zhao, Mi Zhou, Naiqiang Zhang (North China Electric Power University, China)
NUTHOS-15-1170	**CFD of tornado-like vortices applied to a building sensitivity to the turbulence model** Ariele Defossez, Sofiane Benhamadouche, Antoine Mathieu, Virginie Le Roux (Electricity of France, France)
NUTHOS-15-1198	**Numerical simulation of steam-to-water heat transfer in compact plate heat exchangers using a porous medium approach** Zichao Han, Yuchuan Zhang, Kailun Guo, Mingjun Wang, Hanrui Qiu, Wenxi Tian (Xi'an Jiaotong University, China)
NUTHOS-15-1359	**Design Optimization and Thermal-Hydraulic Performance Analysis of a PCHE-based Intermediate Heat Exchanger for a 100 kWth Heat Pipe Reactor** Jeong Hyeon Oh, Yongnam Lee, Sungkun Chung (Pohang University of Science and Technology, Korea), Byung Ha Park (Korea Atomic Energy Research Institute, Korea), Hang Jin Jo (Pohang University of Science and Technology, Korea)
NUTHOS-15-1437	**CFD ANALYSIS OF THERMAL MARGIN IMPROVEMENT USING HELIUM COOLANT IN RE-FABRICATED DAMAGED SPENT NUCLEAR FUEL CASK** Doyeong Lee, Insik Ra, Haeyong Jeong, Jeonghyun Kim, Seongho Lee, Chunghyeong Park (Sejong University, Korea), Juho Lee, Yung-Zun Cho (Korea Atomic Energy Research Institute, Korea)

2-1B. CHF, DNB and Post-CHF

Sep. 28 (Mon.), 16:00 - 18:00, Room 5

Chair: **Euijae Kim** (KEPCO NF, Korea)

Angel Papukchiev (Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany)

NUTHOS-15-1016	**Qualification of Critical Heat Flux Test Facility under Small Modular Reactor Operating Conditions** Euijae Kim, Jaeho Lee, Chongkuk Chun, Jongseon Lim (KEPCO NF, Korea), Byeongil Jang (bijang@knfc.co.kr, Korea)
NUTHOS-15-1120	**The Relationship between OSV and DNB in Nanolayer surface** Yue Wang, Yudai Tsutsui, Tomio Okawa (The University of Electronic-Communications, Japan)
NUTHOS-15-1169	**Extension of the OpenFOAM Modelling Capabilities for the Simulation of Critical Heat Flux in Light Water Reactors** Zhi Yang, Angel Papukchiev (Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany)
NUTHOS-15-1284	**Mechanistic Prediction of Westinghouse TRITON11 BWR Fuel Dryout with MEFISTO-T Subchannel Analysis Code** Jean-Marie Le Corre, Yann Le Moigne (Westinghouse, Sweden)
NUTHOS-15-1329	**EFFECT OF SURFACE CHARACTERISTICS OF OXIDIZED ZIRCALOY-4 ON POOL BOILING CHF AND HEAT TRANSFER COEFFICIENT** Sangmin Song, Sungjin Kim, Ilwoong Park (Inha University, Korea), Hyun Sun Park (Seoul National Univeristy, Korea)
NUTHOS-15-1356	**A Pilot-Scale Investigation of Post-CHF Thermal Transients and Surface Modification in ATF-Relevant Claddings** Nicolas Wefers (Karlsruhe Institute of Technology, Germany), Tereza Kinkorova (Czech Technical University in Prague, Czech Republic), Wilson Heiler (Karlsruhe Institute of Technology, Germany), Martin Ševeček (Czech Technical University in Prague, Czech Republic), Stephan Gabriel (Karlsruhe Institute of Technology, Germany)

2-5B. SMR - Design and SG Simulation

Sep. 28 (Mon.), 16:00 - 18:00, Room 6

Chair: **Bao-Wen Yang** (Delta Energy Group, United States)

Nejdet Erkan (United Kingdom Atomic Energy Authority, United Kingdom)

NUTHOS-15-1068	**Assessment of pressure drop predictability of TRACE and MARS-KS in helically coiled tubes** Yunseok Lee, Taewan Kim (Incheon National University, Korea)
NUTHOS-15-1095	**Predictability Assessment of Heat Transfer Model for Helically Coiled Tubes in MARS-KS and TRACE.** Seongman Jeong, Yunseok Lee, Taewan Kim (Incheon National University, Korea)
NUTHOS-15-1141	**Validation of ATHLET-Capability for the Simulation of Helical Coil Heat Exchanger Using the MOTEL Experimental Data** Irem Karaaslan, Victor Hugo Sanchez-Espinoza (Karlsruhe Institute of Technology, Germany)
NUTHOS-15-1117	**Evaluation of Heat Removal Performance of i-SMR PAFS under Multiple SGTR using SPACE Code** Hyunjoon Jeong (Korea Hydro & Nuclear Power Co., LTD. Central Research Institute, Korea)
NUTHOS-15-1230	**Validation of OpenFOAM for Different Two-Phase Flow Regimes in a Helical Coil Experiment** Angel Papukchiev, Zhi Yang (Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany), Victor Petrov (PSI Center for Nuclear Engineering and Science, Switzerland), Annalisa Manera (ETH Zurich, Switzerland)
NUTHOS-15-1486	**PREDICTION OF DENSITY WAVE OSCILLATION ONSET IN HELICOIDAL BOILING CHANNEL USING MOVING BOUNDARY MODEL** Haeram Jeong, Eunhee Jang, Hyungdae Kim (Kyung Hee University, Korea)

2-4B. Severe Accident Analysis in PWR

Sep. 28 (Mon.), 16:00 - 18:00, Room 1

Chair: **Yoshiharu Tobita** (Karlsruhe Institute of Technology, Germany)

Jeremy Bittan (Electricité de France, France)

NUTHOS-15-1021	**COMPARISON BETWEEN EDF MAAP5.04 AND ASTEC CODES ON SEVERE ACCIDENTS IN AN INTEGRAL PWR** Jeremy Bittan, Nikolai Bakouta (Electricité de France, France), Mirco Di Giuli (Tractebel , Belgium)
NUTHOS-15-1022	**IN-VESSEL MELT RETENTION ASSESSMENT FOR A GENERIC IPWR: SENSITIVITY AND PROBABILISTIC ANALYSIS USING MAAP5.04 EDF LOWER PLENUM MODEL** Nikolai Bakouta, Jeremy Bittan (Electricité de France, France)
NUTHOS-15-1216	**Uncertainty and sensitivity study on iPWR severe accident scenario using MELCOR code** Mateusz Malicki, Terttaliisa Lind (Paul Scherrer Institut, Switzerland)
NUTHOS-15-1088	**HIGH-TEMPERATURE OXIDATION OF STAINLESS STEEL, ZIRCALOY AND ACCIDENT TOLERANT FUEL CLADDING AT BOTH SOLID AND LIQUID STATE UNDER STEAM** Jules Delacroix, Mehdi Nasselahsen, Pascal Piluso (French Atomic Energy Commission, France), Emmanuel De Bilbao, Sawsen Youssef (National Centre for Scientific Research, France)
NUTHOS-15-1362	**DEVELOPMENT OF SEVERE ACCIDENT ANALYSIS TECHNOLOGY FOR ASSESSMENT OF ACCIDENT MITIGATION CAPABILITY OF INNOVATIVE SMALL MODULAR REACTOR** Sang Ho Kim, Seokgyu Jeong, Jaehyun Ham, Donggun Son, Jun Ho Bae, Seong-Wan Hong, Rae-Joon Park (Korea Atomic Energy Research Institute, Korea), Kwang-Hyun Bang (TETRAS, Korea)

2-6B. AI Applications in Severe Accident Analysis and Decommissioning

Sep. 28 (Mon.), 16:00 - 18:00, Room 2

Chair: **Doyeong Lim** (Chosun University, Korea)

Wen Zhou (The University of Tokyo - Hongo Campus, Japan)

NUTHOS-15-1070	**Data-Informed Prediction of Containment Wall Condensation in the Presence of Non-Condensable Gases** Rainer Kelk, Terttaliisa Lind, Mateusz Michal Malicki (Paul Scherrer Institute, Switzerland), Annalisa Manera (ETH Zürich, Switzerland)
NUTHOS-15-1225	**Extension of system codes with machine learning models to predict the long-term cooling of debris beds** Juliane Neuhaus, Nicole Richter, Jan Peschel, Marco Koch (Ruhr University Bochum, Germany)
NUTHOS-15-1244	**Physics-Constrained Digital Twin for Aerosol Scavenging in Fukushima Daiichi Decommissioning: A Transformer-based Neural Ordinary Differential Equations Approach** Wen Zhou (The University of Tokyo - Hongo Campus, Japan), Ruicong Xu, Shuichiro Miwa, Hanyu Wang, Avadhesh Kumar Sharma, Koji Okamoto (University of Tokyo, Japan)
NUTHOS-15-1180	**Development of a Machine Learning Model for Quenching Time and Temperature Sequence Prediction of Debris Bed** Nazia Rahim Ananya, Rudi Kulenovic, Jörg Starflinger (Institute of Nuclear Technology and Energy Systems, University of Stuttgart, Germany)
NUTHOS-15-1090	**From Manual Interpretation to AI-Driven Support: An LLM-Agentic Framework for Intelligent Nuclear Emergency Procedures** Yun-Chieh Kang, Chia-Ying Kuo, Yun-Shuan Li, Liang-Yu Chen, You-Xun Chang (National Tsing Hua University, Taiwan), Te-Chuan Wang (National Atomic Research Institute, Taiwan), Shun-Chi Wu (National Tsing Hua University, Taiwan)
NUTHOS-15-1220	**TESTING DEEP NEURAL NETWORK BASED SURROGATE MODELS FOR SEVERE ACCIDENT ANALYSIS IN NORDIC BWRS** Govatsa Acharya, Xicheng Wang, Dmitry Grishchenko, Pavel Kudinov (KTH Royal Institute of Technology, Sweden)

2-2B. Measurements and Experiments

Sep. 28 (Mon.), 16:00 - 18:00, Room 3+4

Chair: **Ayako Ono** (Hitachi, Ltd, Japan)

Co-Chair: **Yago Rivera** (Paul Scherrer Institut, Switzerland)

NUTHOS-15-1183	**Resolving Gas–Liquid Flow Hydrodynamics in Mini-Channels Using a Time-of-Flight Optical Probe Method** Jimmy Kevin Martin, Romuald Mallet, Yann Kervegant, Sylvain Chareyre (Commissariat à l'Energie Atomique et aux énergies alternatives, France)
NUTHOS-15-1430	**EXPERIMENTAL STUDY ON TWO-PHASE FLOW CHARACTERISTICS OF INTERMITTENT FLOW IN HELICAL TUBES UNDER ROLLING MOTION** Guitao Yang, Jing Wang, Junsen Fu, Yao Xiao, Hanyang Gu (Shanghai Jiao Tong University, China)
NUTHOS-15-1044	**Transport Behavior of Solid Particles in Lead–Bismuth Eutectic (LBE) Circulation Loops** Enpei Wang, Meng Zhao, Haopeng Shi, Yuyi Li, Hao Zhang, Yanhua Yang (Shanghai Jiaotong University, China)
NUTHOS-15-1072	**EFFECTIVE THERMAL CONDUCTIVITY MEASUREMENT OF PEBBLE BED IN MOLTEN SALT** Minho Lee, Seth Langford, Seth Cadell (Kairos power, United States)
NUTHOS-15-1341	**Experimental Study on Borated Water Mixing in a Scaled Model of BWR Lower Plenum Under Low-Flow Conditions** Tsugumasa Iiyama, Takahiro Arai, Riichiro Okawa, Masahiro Furuya, Atsushi Ui (Central Research Institute of Electric Power Industry, Japan)
NUTHOS-15-1491	**Experiments on helium-rich layer erosion by a spray installed below the layer in the CIGMA facility** Haomin Sun, Satoshi Abe, Shu Soma, Yasuteru Sibamoto (Japan Atomic Energy Agency, Japan)

Sep. 29 (Tue.)

Keynote Lecture 4

Sep. 29 (Tue.), 09:00 - 09:40, Room 5

Chair: **Jinzhao Zhang** (Tractebel Engineering (ENGIE), Belgium)

NUTHOS-15-KL08	**Challenge for uncertainties in severe accident phenomena and source term to develop practical Level 2 PRA** Koichi Nakamura (Central Research Institute of Electric Power Industry, Japan)

Keynote Lecture 5

Sep. 29 (Tue.), 09:00 - 09:40, Room 6

Chair: **Tomio Okawa** (The University of Electro-Communcations, Japan)

NUTHOS-15-KL09	**Development of Sensor Technologies for Measurement of High-Speed Accelerating Liquid-Vapour Interface Phenomena** David Novog (McMaster University, Canada)

Keynote Lecture 6

Sep. 29 (Tue.), 09:00 - 09:40, Room 1+2

Chair: **Koji Morita** (Kyushu University, Japan)

NUTHOS-15-KL03	**Development Status of the Multiphysics and Multiscale MSMP Simulation Platform: V-SMR** Yunje Cho (Korea Atomic Energy Research Institute, Korea)

3-1C. Condensation and Critical Flow

Sep. 29 (Tue.), 09:50 - 11:30, Room 5

Chair: **Michio Murase** (Institute of Nuclear Safety System, Inc., Japan, Japan)
Shujun Wang (Canadian Nuclear Laboratories, Canada)

NUTHOS-15-1019	**MIXED CONVECTION CONDENSATION ON A VERTICAL FLAT PLATE FROM STEAM-AIR MIXTURES** Michio Murase, Toshiya Takaki, Koji Miyoshi (Institute of Nuclear Safety System, Inc., Japan, Japan)
NUTHOS-15-1346	**MEASUREMENT OF TEMPERATURE DISTRIBUTION OF STEAM-AIR MIXTURE WITH CONDENSATION ON A VERTICAL FLAT PLATE** Taketo Kimura, Ryota Shimoji, Ryo Kurimoto (Kobe University, Japan), Koji Miyoshi, Toshiya Takaki (Institute of Nuclear Safety System, Japan), Kosuke Hayashi (Kobe University, Japan)
NUTHOS-15-1042	**Abstract (ARIANT Assessment against the Marviken Critical Flow Experiments)** Shujun Wang, Geoffrey Waddington, John Cui (Canadian Nuclear Laboratories, Canada)
NUTHOS-15-1175	**INFLUENCE OF NON-CONDENSABLE GAS DISSOLUTION ON TWO-PHASE CRITICAL FLOW UNDER HIGH SUBCOOLING CONDITIONS** Lauri Pyy (LUT University, Finland)
NUTHOS-15-1472	**Influence of Non-Condensable Gas on Thermal Stratification in a Large Water Pool** Nabil Ghendour, Ralf Kappula, Yago Rivera, Simon Suter, Christoph Hug, Myeonseon Chae, Domenico Paladino (Paul Scherrer Institute, Switzerland)

3-5C. SFR Safety

Sep. 29 (Tue.), 09:50 - 11:30, Room 6

Chair: **Norihiro Doda** (Japan Atomic Energy Agency, Japan)
Walter Villanueva (Bangor University, United Kingdom)

NUTHOS-15-1335	**Eutectic Interaction during Melt Relocation in a Core-Subchannel Surrogate: Experiments and a Seamless Melting–Dissolution Model** Shota Ueda (Central Research Institute of Electric Power Industry, Japan)
NUTHOS-15-1014	**Metal Fuel Steel Penetration Tests in CAFÉ Facility** Taeil Kim, Darius Lisowski, Nathan Bremer, Manny Mendez, Kun Mo, Peter Mouche (Argonne National Laboratory, United States), Yoshitaka Fukano, Masateru Sonehara, Takanari Ogata, Hidemasa Yamano (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1082	**MODEL IMPROVEMENT FOR TRANSIENT HEAT TRANSFER TO STRUCTURE IN SFR SAFETY ANALYSIS** Shinya Kato, Shinya Ishida, Ken-Ichi Matsuba (Japan Atomic Energy Agency, Japan), Seigo Hosono (NESI Inc., Japan)
NUTHOS-15-1267	**UTOP STUDIES FOR SMALL SFR AND LFR** Xue-Nong Chen (Karlsruhe Institute of Technology , Germany)
NUTHOS-15-1268	**Validation of a coupled SIMMER-DEM framework for particle sedimentation using QUEOS experiments** Yao Yao, Wei Liu, Koji Morita (Kyushu University, Japan), Yuki Emura, Yuya Imaizumi, Kenichi Matsuba (JAEA, Japan)

3-4C. DEC-A Analysis

Sep. 29 (Tue.), 09:50 - 11:30, Room 1

Chair: **Martina Adorni** (OECD Nuclear Energy Agency, France)
Jinzhao Zhang (Tractebel Engineering (ENGIE), Belgium)

NUTHOS-15-1275	**CURRENT STATUS OF KNOWLEDGE ON DEC-A THERMAL HYDRAULIC PHENOMENA AND CODE VALIDATION** Anis Bousbia (BEL V, Belgium), Jinzhao Zhang (TRACTEBEL (ENGIE), Belgium), Pavel Kral (UJV, Czech Republic), Andrea Bersano (SIET, Italy), Fulvio Mascari (ENEA, Italy), Cesar Queral (CSN, Spain), Marco Cherubini (NINE, Italy), Martina Adorni (NEA, France)
NUTHOS-15-1397	**Fuel Safety Criteria for DEC-A: Status and a New Proposal Based on the Fuel Failure Ratio** Jinzhao Zhang (Tractebel Engineering (ENGIE), Belgium), Cesar Queral (Universidad Politécnica de Madrid, Spain), Martin Sevecek (Czech Technical University in Prague , Czech Republic), Zoltan Hózer (HUN-REN Centre for Energy Research, Hungary)
NUTHOS-15-1399	**SAFETY ANALYSIS METHODS AND APPLICATIONS TO DEC-A: STATUS AND PERSPECTIVES** Jinzhao Zhang (Tractebel Engineering (ENGIE), Belgium), Maxime Havet (Tractebel (engie), Belgium), A. Bousbia Salah (Bel V, Belgium), P. Král (ÚJV Rez , Czech Republic), F. Mascari (ENEA, Italy), M. Sánchez, R. Mendizábal (CSN, Spain), C. Queral (UPM, Spain), M. Adorni (NEA, France)
NUTHOS-15-1390	**Analysis of the TLOFW Accident with Multiple Failures in a Korean PWR-Type SMR Using the CINEMA Code** Seokgyu Jeong, Sang Ho Kim, Jaehyun Ham, Jun Ho Bae, Donggun Son (Korea Atomic Energy Research Institute, Korea)
NUTHOS-15-1314	**BLIND BENCHMARK ANALYSIS OF THE NEA ISP-52 MSGTR TEST: CODE PREDICTIVE CAPABILITY ASSESSMENT AGAINST THE PKL-III J5.1 RUN 2 EXPERIMENT** Alessandra Vannoni (Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile, Italy), Mongiardini Giorgio (Università di Roma "La Sapienza", Italy), Alessandro Del Nevo (Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile, Italy), Anis Bousbia Salah, Mohamed Salmaoui (Bel V, Belgium), Haidan Wang (State Power Investment Corporation , China), Xiangbin Li, Dechen Zhang (North China Electric Power University, China), Frantisek Lahovsky, Pavel Kral (UJV, Czech Republic), Sebastian Buchholz (GRS, Germany), Hegedus Aron, Attila Guba (HUN-REN, Hungary), Cristiano Ciurluini, Fabio Giannetti, Giangranco Caruso (Università di Roma "La Sapienza", Italy), Alessandro Petruzzi, Marco Cherubini, Hector Lopez (NINE, Italy), Masashi Sekine, Junichi Kaneko (NRA, Japan), Takeshi Takeda (JAEA, Japan), B.H. You (KAERI, Korea), Joakim Holmström (RAB, Sweden), Omar Alyahian (PSI, Switzerland), Kevin Martin, Luca Ammirabile (JRC, Netherlands), Jordi Freixa (UPC, Spain), Simon Schollenberger, Lars Dennhardt (Framatome, Germany), Martina Adorni (OECD NEA, France)

3-3A. Reactor Operation and Control

Sep. 29 (Tue.), 09:50 - 11:30, Room 2

Chair: **Junichi Takeuchi** (Mitsubishi Heavy Industries, Ltd., Japan)

Co-Chair: **Hideaki Ikeda** (Mitsubishi Heavy Industries, Ltd., Japan)

NUTHOS-15-1002	**Linear Control-Based Stability and Bifurcation Analysis of a Compact Once-Through Steam Generator highlighting a PWO: Insights for Flexible SMR Integration in the Energy Mix** Hugo Polge, Nicolas Alpy, Huynh-Duc Nguyen (French Alternative and Atomic Energies Commission, France), Julien Eynard (PROMES-CNRS (UPR 8521), Université de Perpignan Via Domitia, France), Marc Medale (Aix-Marseille University - IUSTI, UMR 7343 CNRS, France), Stéphane Grieu (PROMES-CNRS (UPR 8521), Université de Perpignan Via Domitia, France)
NUTHOS-15-1424	**Least-Cost Design and Dispatch Optimization for Nuclear-Renewable Hybrid Energy Systems Integrating Small Modular Reactors and Thermal Energy Storage** Zuokai Chen, Meiqi Song, Xiaojing Liu (Shanghai Jiaotong University, China)
NUTHOS-15-1461	**MODELING OF A LFR POWER PLANT AND CONTROL SYSTEM FOR THE ANALYSIS OF LOAD-FOLLOWING AND COGENERATION OPERATIONS** Luca Coita, Stefano Lorenzi (Politecnico di Milano, Italy), Michele Frignani (Ansaldo Nucleare, Italy)
NUTHOS-15-1353	**A Dynamic HRA Framework for Persistently Responding to Environmental Changes: Applying the Conceptual Proposal of the Concurrent Continuous Markov Chain Monte Carlo (Co-CMMC) Method for Sampling Competing Outcomes** Chun-Yen Li, Yukihiro Kirimoto (Central Research Institute of Electric Power Industry, Japan)
NUTHOS-15-1463	**Evaluation of Part-Load Control Strategies for a High-Temperature Gas-Cooled Reactor Process Heat System Based on Quasi-Steady-State Analysis** Nayoung Kim, Jeong Ik Lee (Korea Advanced Institute of Science and Technology, Korea)

3-2C. Model Assessment and Benchmarking

Sep. 29 (Tue.), 09:50 - 11:30, Room 3+4

Chair: **Hideo Nakamura** (None, Japan)

Co-Chair: **Konstantin Nikitin** (PSI, Switzerland)

NUTHOS-15-1062	**SHAPING THE FUTURE OF NUCLEAR ENERGY: INTERNATIONAL COOPERATION ON ACCIDENT ANALYSIS AND MANAGEMENT THROUGH WGAMA** Hideo Nakamura (Japan Atomic Energy Agency , Japan), Ahmed Bentaib (Autorité de sûreté nucléaire et de radioprotection , France), Fulvio Mascari (National Agency for New Technologies, Energy and Sustainable Economic Development, Italy), Martina Adorni (OECD Nuclear Energy Agency, France)
NUTHOS-15-1053	**Large-eddy simulation of thermal mixing in a T-junction for varying Prandtl numbers** Magnus Schweiger, Daniel Santos, Markus Klein, Josef Hasslberger (University of the Bundeswehr Munich, Germany)
NUTHOS-15-1118	**CFD Analysis of a Separate Effect Experiment Examining Standing-Start Natural Circulation Phenomena** Noah Kindler, David Novog (McMaster University, Canada)
NUTHOS-15-1283	**Hydraulic Development of an Axial Reactor Coolant Pump for a Small Modular Reactor: Instability, Four-Quadrant Characteristics, and Fluid-Structure Interaction** Joshua Joohyen Kim (HYOSUNG GOODSPRINGS, Korea), Johann Friedrich Guelich (Independent Technical Consultant, Switzerland), Jaewon Jung, Sunghee Han, Hyeonghoon Kim (HYOSUNG GOODSPRINGS, Korea)
NUTHOS-15-1318	**A SECTIONAL POPULATION BALANCE MODELING APPROACH FOR POLYDISPERSE MULTICOMPONENT AEROSOL GROWTH AND TRANSPORT IN NUCLEAR REACTOR CONTAINMENTS** Allen George, Stephan Kelm, Yihui Wu (Forschungszentrum Juelich, Germany)

4-1D. Reflood, Rewetting and Quench Heat Transfer

Sep. 29 (Tue.), 13:00 - 15:00, Room 5

Chair: **Omar Sharief Al-Yahia** (Paul Sherrer Institut, Switzerland)

Fabrice Francois (CEA Cadarache, France)

NUTHOS-15-1059	**THE EFFECT OF LIQUID SUBCOOLING TOWARD THE TRANSIENT HEAT FLUX IN THE CASE OF 1 (ONE) AND 2 (TWO) VERTICAL PLATES** Akbari -, Hiroyuki Umebayashi, Tomio Okawa (The University of Electro-Communications, Japan)
NUTHOS-15-1145	**Assessment of Trace Reflood Modeling Accuracy Against RBHT Data with Emphasis on User Effects** Omar Sharief Al-Yahia, Ivor Clifford, Hakim Ferroukhi (Paul Sherrer Institut, Switzerland)
NUTHOS-15-1148	**MEASUREMENT OF HEAT TRANSFER COEFFICIENT AND REWETTING TEMPERATURE IN HIGH PRESSURE BOILING FLOWS USING INVERSE METHODS** Fabrice Francois (CEA Cadarache, France)
NUTHOS-15-1189	**Simulation of Low-Flow-Rate, Low-Subcooling Rod Bundle Reflood Experiments from the RBHT-II Project with CATHARE 3** Germain Davy, Amandine Capogna (CEA, France)
NUTHOS-15-1357	**EXPERIMENTAL WORK ON RAPID COOLING OF HIGH-TEMPERATURE BODIES COATED WITH COPPER (II) OXID (CUO) NANOPARTICLE LAYERS** Som Onn Ouch, Tomio Okawa (The University of Electro-Communications, Japan)
NUTHOS-15-1450	**Preliminary Evaluation of Reflood Heat Transfer under High-Temperature Environments for Deposit Surface** Ju Hun Jung, In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)

Poster 1. Thermal-Hydraulic Phenomena and Validation

Sep. 29 (Tue.), 13:00 - 14:00, Room 6

Chair: **Daisuke Ito** (Kyoto University, Japan)

Co-Chair: **Taku Nagatake** (Japan Atomic Energy Agency, Japan)

NUTHOS-15-1052	**SIMULATION OF ANNULAR FLOW IN VERTICAL AND HELICAL GEOMETRIES WITH A MORPHOLOGY-ADAPTIVE EULERIAN MULTIPHASE MODEL** Elisabeth Walter (Swiss Federal Institute of Technology Zurich, Switzerland), Elena Riviera, Richard Meller (Helmholtz-Zentrum Dresden-Rossendorf, Germany), Matteo Grasso, Victor Petrov, Annalisa Manera (Swiss Federal Institute of Technology Zurich, Switzerland)
NUTHOS-15-1095	**Predictability Assessment of Heat Transfer Model for Helically Coiled Tubes in MARS-KS and TRACE.** Seongman Jeong, Yunseok Lee, Taewan Kim (Incheon National University, Korea)
NUTHOS-15-1138	**Effect of System Pressure on Flow instability in vertical annular channel on Subcooled Flow Boiling** Jihwan Mun (Jeju National University, Korea)
NUTHOS-15-1218	**Development of a Hot-Wire Anemometry Technique for Velocity Measurement in a Sleeveless Fuel Assembly Mock-Up for HTGR** Yusuke Yamazaki, Ryo Yokoyama, Yosuke Nishimura, Shuichiro Miwa, Koji Okamoto (The University of Tokyo, Japan)
NUTHOS-15-1262	**Scaling Analysis of Fuel Salt Natural Circulation in Liquid-Fuel Molten Salt Reactors** Xinyu Liu (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China), Hongguang Hu (ShanghaiTech University, China), Qiang Sun, Sheng Zhang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)
NUTHOS-15-1408	**Numerical investigation of Steam Generator Tube Rupture in the ALFRED reactor** Chiara Robazza, Andrea Pucciarelli, Francesco Galleni (University of Pisa, Italy), Marco Caramello (Ansaldo Nucleare S.p.A., Italy), Francesco Lodi (Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Italy), Nicola Forgione (University of Pisa, Italy)
NUTHOS-15-1437	**CFD ANALYSIS OF THERMAL MARGIN IMPROVEMENT USING HELIUM COOLANT IN RE-FABRICATED DAMAGED SPENT NUCLEAR FUEL CASK** Doyeong Lee, Insik Ra, Haeyong Jeong, Jeonghyun Kim, Seongho Lee, Chunghyeong Park (Sejong University, Korea), Juho Lee, Yung-Zun Cho (Korea Atomic Energy Research Institute, Korea)
NUTHOS-15-1486	**PREDICTION OF DENSITY WAVE OSCILLATION ONSET IN HELICOIDAL BOILING CHANNEL USING MOVING BOUNDARY MODEL** Haeram Jeong, Eunhee Jang, Hyungdae Kim (Kyung Hee University, Korea)

4-4D. Source Term and Atmospheric Dispersion

Sep. 29 (Tue.), 13:00 - 15:00, Room 1

Chair: **Daisuke Doi** (Japan Atomic Energy Agency, Japan)

Jaehyun Ham (Korea Atomic Energy Research Institute, Korea)

NUTHOS-15-1152	**VAPORIZATION KINETICS OF CESIUM IODIDE AND SODIUM IODIDE FOR SOURCE-TERM ASSESSMENT IN SFR SEVERE ACCIDENTS** Daisuke Doi, Rika Sato, Shin Kikuchi, Hiroshi Seino (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1234	**GPU-based Meshless Computational Fluid Dynamics Method for High-Fidelity Atmospheric Dispersion Analysis** Do Hyun Kim, Juryong Park, Eung Soo Kim (Seoul National University, Korea)
NUTHOS-15-1420	**Preliminary source term analysis of D-LOCA-1 in i-SMR using CINEMA code** Jaehyun Ham, Seokgyu Jeong, Sang Ho Kim (Korea Atomic Energy Research Institute, Korea)
NUTHOS-15-1266	**Diffusion simulation and sensitivity analysis using the weather data** Shunsuke Minoura, Masanori Katsube, Tsukasa Jinno, Yoshihiro Ogata, Katsura Morii, Masakatsu Suzuki (The japan atomic power company, Japan)
NUTHOS-15-1471	**Modelling of Fission Product Release from Molten Fuel under varying Atmospheric Conditions** Florian Krist, Marco K. Koch (Plant Simulation and Safety, Ruhr-Universität Bochum, Germany)

4-5D. SMR - Safety Simulation

Sep. 29 (Tue.), 13:00 - 15:00, Room 2

Chair: **Taewan Kim** (Incheon National University, Korea)

Nejdet Erkan (United Kingdom Atomic Energy Authority, United Kingdom)

NUTHOS-15-1108	**ARIANT MODEL AND APPLICATION FOR AN IPWR-TYPE SMALL MODULAR REACTOR (PWR-SMR)** John Cui, Nusret Aydemir, Tariq Jafri, Blair P. Bromley (Canadian Nuclear Laboratories, Canada)
NUTHOS-15-1128	**POSTULATED ACCIDENT SIMULATIONS OF AN INTEGRATED SMR DESIGN** Liancheng Guo, Sebastian Buchholz (Gesellschaft für Anlagen und Reaktorsicherheit GmbH, Germany), Andreas Wielenberg (Gesellschaft für Anlagen und Reaktorsicherheit (GRS) GmbH, Germany)
NUTHOS-15-1174	**PRE-TEST ANALYSIS OF THE PANDA PASSIVE CONTAINMENT COOLING SYSTEM EXPERIMENT: APROS-BASED MODELLING AND PARAMETRIC STUDY** Farah Alsafadi, Konstantin Nikitin, Myeong-Seon Chae, Domenico Paladino (PSI , Switzerland)
NUTHOS-15-1222	**Validation Study on Steady-State Thermal-Hydraulic Characteristics of Natural Circulation SMR Based on a 1:14 Scaled Model** Yu Ding, Bin Han, Xucheng He, Xiaoliang Zhu (Southeast University, China), Bao-Wen Yang (Delta Energy Group, United States)
NUTHOS-15-1187	**BENCHMARKING APROS, SPECTRA, AND MELCOR FOR A LOW-TEMPERATURE DISTRICT HEATING REACTOR UNDER STATION BLACKOUT CONDITIONS** Jan Grygar, Antonio Dambrosio (Research Centre Rez, Czech Republic), Bart Verdonschot, Paul Breijder (NRG PALLAS, Netherlands), Farah Alsafadi, Terttaliisa Lind, Konstantin Nikitin (PSI Center for Nuclear Engineering and Sciences, Switzerland), Jussi-Pekka Ikonen, Rebekka Komu, Joona Kurki (VTT Technical Research Centre of Finland, Finland)
NUTHOS-15-1167	**KIT THERMAL HYDRAULIC CODES FOR IMPROVED ANALYSIS OF SMR-CORES UNDER NORMAL AND TRANSIENT CONDITIONS** Alejandro Campos-Munoz, Kanglong Zhang, Julian Duran-Gonzales, Gianfranco Huaccho-Zavala, Uwe Imke (Karlsruhe Institute of Technology, Germany), Michael Boettcher (Karksruhe Institute of Technology, Germany), Victor Hugo Sanchez-Espinoza (Karlsruhe Institute of Technology, Germany)

4-2D. Thermal-Hydraulic Scaling and System Analysis

Sep. 29 (Tue.), 13:00 - 15:00, Room 3+4

Chair: **David Novog** (McMaster University, Canada)

Co-Chair: **Yuki Narushima** (Hitachi, Japan)

NUTHOS-15-1096	**APPLICATION OF THE CATHARE SYSTEM CODE FOR SCALING ANALTSIS OF 1-PHASE AND 2-PHASE NATURAL CIRCULATION IN NUCLEAR REACTORS** Marco Montanini (Commissariat à l'Energie Atomique et aux Energie Alternatives, France), Sofia Carnevali (Commissariat á l'énergie atomique et aux Energies Alternative, France), Dominique Bestion (Consultant, France), Valentin Cottarel (Commissariat á l'énergie atomique et aux Energies Alternative, France), Lionel Rossi (Autorité de Sûreté Nucléaire et de Radioprotection, France)
NUTHOS-15-1262	**Scaling Analysis of Fuel Salt Natural Circulation in Liquid-Fuel Molten Salt Reactors** Xinyu Liu (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China), Hongguang Hu (ShanghaiTech University, China), Qiang Sun, Sheng Zhang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)
NUTHOS-15-1191	**PRE-TEST MODELLING OF PANDA PCCS WITH TRACE CODE** Konstantin Nikitin (PSI, Switzerland)
NUTHOS-15-1298	**EXPERIMENTAL INVESTIGATION OF TRANSIENT IN-CONTAINMENT PASSIVE CONTAINMENT COOLING SYSTEM PERFORMANCE FOR SMALL MODULAR REACTORS IN THE PANDA FACILITY** Yago Rivera, Ralf Kapulla (Paul Scherrer Institut, Switzerland), Christopher Boyd (Nuclear Regulatory Commission, United States), Nabil Ghendour, Isabella Feagan, Myeongseon Chae, Domenico Paladino (Paul Scherrer Institut, Switzerland)
NUTHOS-15-1323	**The Adverse Effect of Nitrogen Intrusion on Accident Recovery Phenomena in a 4-Loop PWR during a RPV Bottom-Leak SBLOCA.** Mohamed Mira, Adrián González-Briones, Pablo Osés-Ezquerra, Jordi Freixa Terradas (Universitat Politècnica de Catalunya, Spain)
NUTHOS-15-1193	**Scaling Analysis of Coupled Transients in a Liquid-Fuel Molten Salt Reactor: Fuel Salt Draining, Tank Filling, and Passive Decay Heat Removal** Hongguang Hu, Xinyu Liu, Heng Lu, Qiang Sun, Sheng Zhang, Xiaohong Yang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)

Poster 2. Modeling, Simulation and Reactor Analysis

Sep. 29 (Tue.), 14:00 - 15:00, Room 6

Chair: **Taku Nagatake** (Japan Atomic Energy Agency, Japan)

Co-Chair: **Daisuke Ito** (Kyoto University, Japan)

NUTHOS-15-1130	**Transient Lumped Parameter Analysis of Space Nuclear Systems under Radiation-Induced Property Degradation** Sinyoung Park, Taeseok Kim (Jeju National University, Korea)
NUTHOS-15-1137	**NEURAL-NETWORKS PREDICTION OF XENON-INDUCED AXIAL POWER OSCILLATIONS IN VVER-1000 REACTORS** Jan Ullmann (Faculty of Electrical Engineering, University of West Bohemia, Pilsen, Czech republic, Czech Republic), Jiří Závorka, Jana Jiřičková (Faculty of Electrical Engineering, University of West Bohemia, Czech Republic), Radek Škoda (Czech Technical University in Prague, Czech Institute of Informatics, Robotics and Cybernetics, Czech Republic)
NUTHOS-15-1164	**CFD Study on the Thermal-Hydraulic Performance of a Internally Heated Fuel Salt in a Vertical Concentric Annulus** Zhiqi Yang, Sheng Zhang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)
NUTHOS-15-1180	**Development of a Machine Learning Model for Quenching Time and Temperature Sequence Prediction of Debris Bed** Nazia Rahim Ananya, Rudi Kulenovic, Jörg Starflinger (Institute of Nuclear Technology and Energy Systems, University of Stuttgart, Germany)
NUTHOS-15-1193	**Scaling Analysis of Coupled Transients in a Liquid-Fuel Molten Salt Reactor: Fuel Salt Draining, Tank Filling, and Passive Decay Heat Removal** Hongguang Hu, Xinyu Liu, Heng Lu, Qiang Sun, Sheng Zhang, Xiaohong Yang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)
NUTHOS-15-1201	**Thermal-Hydraulic Impact of Graphite Deformation in a Liquid-Fuel Molten Salt Reactor** Zheng Gong, Sheng Zhang, Yang Zou, Jian Tian, Hongjie Xu (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)
NUTHOS-15-1268	**Validation of a coupled SIMMER-DEM framework for particle sedimentation using QUEOS experiments** Yao Yao, Wei Liu, Koji Morita (Kyushu University, Japan), Yuki Emura, Yuya Imaizumi, Kenichi Matsuba (JAEA, Japan)
NUTHOS-15-1334	**A SEMI-IMPLICIT WEAKLY COMPRESSIBLE SOLVER FOR EFFICIENT GAS–LIQUID TWO-PHASE FLOW SIMULATIONS** Kenta Sugihara, Yasuhiro Idomura, Yos Panagaman Sitompul, Susumu Yamashita (Japan Atomic Energy Agency, Japan)

Special 1. GOTHIC: Developments and Applications

Sep. 29 (Tue.), 15:20 - 17:00, Room 5

Chair: **Igor Bolotnov** (North Carolina State University, United States)

Co-Chair: **Yoichi Utanohara** (Komatsu University, Japan)

NUTHOS-15-SS06	**APPLICATION GUIDE FOR THE GOTHIC SOFTWARE FOR NUCLEAR POWER PLANT DESIGN AND LICENSING ANALYSIS** Yong Joon Choi (Electric Power Research Institute, United States)
NUTHOS-15-SS07	**NEW FEATURES IN GOTHIC 8.5(QA) FOR MODELING HIGH TEMPERATURE GAS REACTORS AND APPLICATION TO THE HTR-10** Jeffrey William Lane, Jose Garcia, Thomas Moore, Alexander Mausolff (Numerical Advisory Solutions, United States)
NUTHOS-15-SS08	**Analysis of Aerosol Deposition Behavior in Straight and Curved Duct Sections using GOTHIC** Kenichiro Nozaki, Takeshi Nishimura, Shoichi Suehiro (TEPCO SYSTEMS CORPORATION, Japan), Penghui Chai, Masato Mizokami, Ryotaro Hagiwara, Shunsuke Sekita, Mutsumi Hirai, Kenji Owada, Noriaki Nakashima, Shinya Mizokami (Tokyo Electric Power Company Holdings, Inc. , Japan)
NUTHOS-15-SS09	**STABILITY ANALYSIS MODELING IN GOTHIC AND APPLICATION TO THE MSRE** Jeffrey Lane, Alexander Mausolff (Numerical Advisory Solutions, United States)
NUTHOS-15-SS10	**ANALYSIS OF MOLTEN SALT FREEZING EXPERIMENTS IN GOTHIC** Alexander Mausolff, Jeffrey Lane, Diego Ross, Thomas Moore (Numerical Advisory Solutions, United States), Quan Zhou, Brandon Haugh, Rémi Le Thai (Kairos Power, LLC, United States)

Special 2. ATRIUM: Uncertainty Quantification

Sep. 29 (Tue.), 15:20 - 17:00, Room 6

Chair: **Eung Soo Kim** (Seoul National University, Korea)

Co-Chair: **Jean-Marie Le Corre** (Westinghouse, Sweden)

NUTHOS-15-SS01	**Inverse Uncertainty Quantification of Post-CHF Heat Transfer Using RELAP5 and Deep Neural Network Surrogate Models** Miki Saito, Atsushi Ui (Central Research Institute of Electric Power Industry, Japan)
NUTHOS-15-SS02	**Hierarchical Bayesian Inverse Uncertainty Quantification for a Post-CHF Heat Transfer Model Using TRACE in the OECD/NEA ATRIUM Project** Hiroshi Eguchi (Nuclear Regulation Authority, Japan)
NUTHOS-15-SS03	**Main outcomes of the inverse uncertainty quantification exercise on post-CHF heat transfer within the OECD-NEA ATRIUM project** L. Sargentini, A. Ghione, G. Damblin (Université Paris-Saclay, France), J. Baccou (Autorité de sûreté nucléaire et de radioprotection, France), R. Sueur (EDF, France), Y. Hirose (Japan Atomic Energy Agency, Japan), Miki Saito, A. Ui (Central Research Institute of Electric Power Industry, Japan), C. Choi (Korean Atomic Energy Research Institute, Korea), H. Eguchi (Nuclear Regulation Authority, Japan), P. Osés, J. Freixa (Universitat Politècnica de Catalunya, Spain)
NUTHOS-15-SS04	**Uncertainty propagation analysis for an LSTF experiment using the TRACE code and investigation of the cliff-edge effect** Yoshiyasu Hirose, Yuki Wada, Satoshi Abe, Yasuteru Sibamoto (Japan Atomic Energy Agency, Japan)
NUTHOS-15-SS05	**Assessment of Forward Propagation of Uncertainties within the OECD/NEA ATRIUM Project** Jordi Freixa, G. Chiesa (Universitat Politècnica de Catalunya, Spain), J. Zhang, Y. Savas (Tractebel, Belgium), L. Sargentini, A. Ghione, G. Damblin (Université Paris-Saclay, France), G. Mianné (EDF Direction Technique, France), Y. Hirose (Japan Atomic Energy Agency, Japan), M. Saito, A. Ui (Central Research Institute of Electric Power Industry, Japan), C. Choi (Korean Atomic Energy Research Institute, Korea), G. Perret, I. Clifford (Paul Scherrer Institute, Switzerland), Z. Xie (Harbin Engineering University, China), X. Wu (North Carolina State University , United States)

Sep. 30 (Wed.)

Keynote Lecture 7

Sep. 30 (Wed.), 09:00 - 09:40, Room 5

Chair: **Xue-Nong Chen** (Karlsruhe Institute of Technology , Germany)

NUTHOS-15-KL10	**Development of CorTAF: A 3D Multi-Scale and Multi-Physics Coupled Analysis Code for Nuclear Reactor Cores** Wenxi Tian (Xi'an Jiaotong University, China)

Keynote Lecture 8

Sep. 30 (Wed.), 09:00 - 09:40, Room 6

Chair: **Yang Liu** (Virginia Tech, United States)

NUTHOS-15-KL11	**Erosion and corrosion behaviour in stagnant and flowing liquid lead: Insights from the BULLET lead loop facility** Walter Villanueva (Bangor University, United Kingdom)

Keynote Lecture 9

Sep. 30 (Wed.), 09:00 - 09:40, Room 1+2

Chair: **Ayako Ono** (Hitachi, Ltd, Japan)

NUTHOS-15-KL05	**Lessons Learned from Plant Engineering Experiences for Safe Plant Operations** Byung Chul Lee (FNC Technology Co., Ltd., Korea)

5-1E. Turbulence, Mixing and Subchannel Analysis

Sep. 30 (Wed.), 09:50 - 11:30, Room 5

Chair: **Raksmy Nop** (Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France)

Jaeho Lee (KEPCO NF, Korea)

NUTHOS-15-1047	**LARGE EDDY SIMULATION OF THE UNSTEADY FLOW MIXING IN A GAS-COOLED REACTOR** Raksmy Nop, Théo Lallemand, Christophe Bourcier (Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France)
NUTHOS-15-1097	**Multi-Objective Design Assessment of Mixing Vane Angle for Balancing Flow-Induced Vibration and Turbulent Mixing** Kangkang Jin, Xiaojing Liu, Jinbiao Xiong, Xiang Chai, Tengfei Zhang, Hui He (Shanghai Jiao Tong University, China)
NUTHOS-15-1159	**Implementation of Grid-directed Cross Flow Model in THALES Subchannel Analysis Code for Improvement of Lateral Flow Prediction near Mixing Vanes** Jaeho Lee, Euijae Kim, Jong Seon Lim, Chongkuk Chun (KEPCO Nuclear Fuel Co., Korea), Byeongil Jang (KEPCO Nuclear Fuel, Korea)
NUTHOS-15-1337	**EMERGENT VOID-DRIFT BEHAVIOUR FOR SUBCHANNEL ANALYSIS CODES VIA TRANVERSE DRIFT-VELOCITY CORRELATIONS** Daniel Vincent Mazzone, Omar Al-Yahia, Ivor Clifford (Paul Scherrer Institute, Switzerland), Annalisa Manera (ETH Zürich, Switzerland)

5-5E. Thermal-Hydraulics in LFR

Sep. 30 (Wed.), 09:50 - 11:30, Room 6

Chair: **Francesco Galleni** (University of Pisa, Italy)

Michio Murase (Institute of Nuclear Safety System, Inc., Japan, Japan)

NUTHOS-15-1073	**SURFACE STRUCTURE DRIVEN VARIATIONS IN WETTABILITY ON T91 AND 316L CLADDINGS** Shiwei Wang, Xiaojing Liu (Shanghai Jiao Tong University, China), Danhong Shen (Nuclear Power Institute of China, China), Tengfei Zhang, Xiang Chai, Hui He (Shanghai Jiao Tong University, China)
NUTHOS-15-1032	**MODELLING CONSIDERATIONS FOR DEFORMED GRID SPACED FUEL PIN BUNDLES: PRELIMINARY SENSITIVITY ANALYSIS IN SUPPORT OF ALFRED SAFETY ANALYSIS EXPERIMENTS** Mohammed Muaaz Mohamed Dilshad Hussain (NRG PALLAS, Netherlands), Vincent Moreau (Centro di Ricerca, Sviluppo e Studi Superiori in Sardegna, Italy)
NUTHOS-15-1422	**Conceptual Design of a Miniaturized Lead-Bismuth-Cooled SMR for Deep-Sea Robotic Applications** Xucheng He, Bin Han, Yu Ding, Xiaoliang Zhu, Junlin Huang (Southeast University, China), Aiguo Liu (DEQD Institute for Advanced Research in Multiphase Flow and Energy Transfer Qingdao 266300, China), Bao-Wen Yang (Delta Energy Group, United States)
NUTHOS-15-1408	**Numerical investigation of Steam Generator Tube Rupture in the ALFRED reactor** Chiara Robazza, Andrea Pucciarelli, Francesco Galleni (University of Pisa, Italy), Marco Caramello (Ansaldo Nucleare S.p.A., Italy), Francesco Lodi (Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Italy), Nicola Forgione (University of Pisa, Italy)
NUTHOS-15-1378	**STUDY ON HEAT-TRANSFER DETERIORATION IN A SIMULATED-LOOP SEVEN-ROD BUNDLE CHANNEL OF A LEAD–BISMUTH-COOLED FAST REACTOR** Zhiang Han, Tong Hao (Harbin Engineering University, China), Hui Liang (Harbin Engineering University; Nuclear Power Institute of China, China), Chao Tian, Huanwen Lv, Hongxing Yu, Chuan Lu (Nuclear Power Institute of China, China), Riqiang Duan (Tsinghua University, China), Ming Ding, Zhongning Sun (Harbin Engineering University, China)

5-4E. Severe Accident Analysis in BWR and Spent Fuel Pool

Sep. 30 (Wed.), 09:50 - 11:30, Room 1

Chair: **Shinya Mizokami** (Tokyo Electric Power Company, Japan)

Marco Pellegrini (Politecnico di Milano, Italy)

NUTHOS-15-1106	**Severe Accident Uncertainty and Sensitivity Analysis of a Generic Small Boiling Water Reactor** Garik Patterson, Marc Hanna, Javier Gonzalez Mantecon (Canadian Nuclear Laboratories, Canada)
NUTHOS-15-1219	**CLUSTERING ANALYSIS IN A SEVERE ACCIDENT DATABASE OF DELAYED RECOVERY OF SAFETY SYSTEMS IN NORDIC BWRS** Govatsa Acharya, Dmitry Grishchenko, Pavel Kudinov (KTH Royal Institute of Technology, Sweden)
NUTHOS-15-1069	**LONG TERM SPENT FUEL POOL COOLING WITH TOP SPRAY REFLOODING USING TRACE WITHIN THE POLCA PROJECT** Andreas Tatidis, Weimin Ma (Royal institute of technology, Sweden)
NUTHOS-15-1162	**DEVELOPMENT OF MACHINE LEARNING MODEL FOR HYDROGEN CONCENTRATION DISTRIBUTION IN BWR REACTOR BUILDING DURING SEVERE ACCIDENTS** Tomohisa Yuasa, Kimitoshi Yoneda (Central Research Institute of Electric Power Industry, Japan)
NUTHOS-15-1434	**MELCOR ANALYSIS OF ACCIDENT PROGRESSION AND RADIOLOGICAL CONSEQUENCES FOR LOSS OF POOL INVENTORY ACCIDENT IN AN OPR-1000 SPENT FUEL POOL** Doyeong Lee, Haeyong Jeong, Insik Ra, Giyoung Tak, Nihat Erdem Berber (Sejong University, Turkey)

5-3B. Nuclear Monitoring and Decommissioning

Sep. 30 (Wed.), 09:50 - 11:30, Room 2

Chair: **Kenichiro Nozaki** (TEPCO SYSTEMS CORPORATION, Japan)

Co-Chair: **Hideaki Ikeda** (Mitsubishi Heavy Industries, Ltd., Japan)

NUTHOS-15-1127	**microSPLIT: A Fully Disposable Virtual Impactor Toward Real-Time Radioactivity and Elemental Characterization by Particle Size** Youichi Tsubota, Hugo Laffolley, Ayame Kuroe, Takahiro Karino (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1269	**Towards Efficient Source Term Control in Fukushima Daiichi Decommissioning: Experimental Investigation on Enhanced Aerosol Removal by Water Spray from a High-Coverage Multi-hole Nozzle with Pre-Injection of Electrically Charged Water Mist** Ruicong Xu (The University of Tokyo, Japan), Avadhesh Kumar Sharma (Vellore Institute of Technology, India), Zeeshan Ahmed, Ravinder Kumar, Ryo Yokoyama, Shuichiro Miwa, Shunichi Suzuki, Koji Okamoto (The University of Tokyo, Japan)
NUTHOS-15-1309	**Assessment of laser residual energy and its impact on background structures during the laser-cutting process for nuclear dismantling application** Lucas Brizzi, Timothy Picard, Francois Simon, Laura Pereira, Ioana Doyen (French Alternative Energies and Atomic Energy Commission, France)
NUTHOS-15-1319	**Numerical Simulation and Performance Optimization of Self-Powered Neutron Detector in Nuclear Reactors** Mao Tang, Xiang Chai, Xiaojing Liu (Shanghai Jiao Tong University, China)
NUTHOS-15-1470	**DROPLET SIZE EFFECT ON CONTAINMENT SPRAY SYSTEM PERFORMANCE USING ATLAS-CUBE FACILITY** Jun Yeong Jung, Byoung-Uhn Bea, Jaebong Lee, Yusun Park, Seok Cho, Jongrok Kim, Jin-Hwa Yang, Kyoung-Ho Kang (Korea Atomic Energy Research Institute, Korea)

5-2E. Multi-Scale and Multi-Physics Coupling Simulation 1

Sep. 30 (Wed.), 09:50 - 11:30, Room 3+4

Chair: **Patrick Martin Lewis** (Rolls-Royce, United Kingdom)

Co-Chair: **Taku Nagatake** (Japan Atomic Energy Agency, Japan)

NUTHOS-15-1303	**High-Fidelity Multiphysics Coupling of SyTH and MPACT for Molten Salt Reactor Analysis** Braden Pecora, Benjamin S Collins, Caleb L Miller, Charles Owen, Nicholas Herring, Nicholas Luciano, Cole Gentry, Kevin Clarno (The University of Texas at Austin, Viet Nam)
NUTHOS-15-1076	**Advanced SMR Transient Modeling with ARCADIA** Olga Dutkiewicz, Veronica Jauregui Chavez, Sebastian Kuch, Romain Henry, Bettina Hartmann (Framatome GmbH, Germany)
NUTHOS-15-1150	**PRELIMINARY ANALYSIS OF FFTF INDIVIDUAL REACTIVITY FEEDBACK TEST FOR CORE BOWING REACTIVITY MODEL VALIDATION** Norihiro Doda, Shinya Kato, Tomoyuki Uwaba, Masaaki Tanaka, Hidemasa Yamano (Japan Atomic Energy Agency, Japan), Yoshiaki Nakamine (NDD Corporation, Japan), Kenichi Igawa, Masaki Iida (NESI Inc., Japan)
NUTHOS-15-1190	**Modelling the Thermo-Mechanical Feedback in the FRENETIC Code for the Full-core Multiphysics Analysis of Liquid Metal Fast Reactors** Matteo Bonomi, Giorgia Versino, Nicolò Abrate, Roberto Bonifetto (Politecnico di Torino, Italy)
NUTHOS-15-1291	**CERES: Tractebel's Multiphysics Coupling Platform for High-Fidelity Reactor Simulations and Asymmetric PWR Accident Analysis** Tom De Laet (Tractebel, Belgium)

6-1F. Fundamental Heat Transfer and Flow Phenomena

Sep. 30 (Wed.), 13:00 - 15:00, Room 5

Chair: **Yanrong Li** (Ibaraki University, Japan)
Il Woong Park (Inha University, Korea)

NUTHOS-15-1146	**Analysis of Flow Stratification within Horizontal and Inclined Pipes: the CRAFTY Facility** Francesco Occhiogrosso, Alberto Ghione, Constantin Ledier, Lucia Sargentini, Alessandro Coppa (Commissariat à l'énergie atomique et aux énergies alternatives, France), Luc Pastur (Institut Polytechnique de Paris, France)
NUTHOS-15-1214	**Heat Transfer Analysis of Droplet Impact on Heated Surface** Weishi Peng, Wei Zhang, Rongxuan Zhang, Jinbiao Xiong (Shanghai Jiao Tong University, China)
NUTHOS-15-1224	**Mass-Transfer-Extended Rayleigh-Plesset Model for Non-Condensable Gas Dynamics in Reactor Coolant** Sharandeet Singh, Giteshkumar Patel, Lauri Pyy, Juhani Hyvärinen (LUT University, Finland, Finland)
NUTHOS-15-1239	**HIGH-SPEED VISUALIZATION OF METAL SPATTER EJECTION BEHAVIOR IN LASER CUTTING** Yanrong Li, Kazuhiko Yamasaki, Takeki Yamamoto, Nobuatsu Tanaka (Ibaraki University, Japan), Tsuyoshi Kamiya, Tomonori Yamada (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1241	**CAVITATION INCEPTION BY JET INFLOW THROUGH A SLIT BETWEEN PARALLEL FLOW CHANNELS** Yoshiki Maeda (Ibaraki University, Japan), Hiroyuki Kogawa, Masatoshi Futakawa (Japan Atomic Energy Agency, Japan), Yanrong Li (Ibaraki University, Japan)
NUTHOS-15-1296	**Independent Pressure Loss Evaluation of PWR Fuel at Ringhals** Michael Johansson (Vattenfall Nuclear Fuel AB, Sweden), Antun Hroh (Ringhals AB, Sweden), Kristian Angele, Eric Lillberg (Vattenfall AB, Sweden)

6-5F. Thermal-Hydraulics in HTGR and GEN-IV Reactor

Sep. 30 (Wed.), 13:00 - 15:00, Room 6

Chair: **Kuniyoshi Takamatsu** (Japan Atomic Energy Agency, Japan)
Bao-Wen Yang (Delta Energy Group, United States)

NUTHOS-15-1084	**Improvement of Cooling Performance and Downsizing of a New Passive Radiation Cooling System for a Reactor Pressure Vessel of HTGRs** Xian Liu, Shumpei Funatani (University of Yamanashi, Japan), Kuniyoshi Takamatsu (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1305	**Depressurization Accident Analysis of the High-power-density HTGR (HTR60S-SiC)** Kuniyoshi Takamatsu, Yukio Tachibana, Soichiro Kawabuchi, Jun Aihara, Yuji Fukaya (Japan Atomic Energy Agency, Japan), Shoichiro Okita (University of Fukui, Japan), Koji Okamoto (The University of Tokyo, Japan)
NUTHOS-15-1094	**THERMAL-HYDRAULIC ASSESSMENT OF HYDROGEN PRODUCTION PERFORMANCE WITH LOW- AND HIGH-TEMPERATURE NUCLEAR REACTORS** Fajar Sri Lestari Pangukir, Bart Thaam Henricus Verdonschot, Paulus Alexander Breijder (NRG PALLAS, Netherlands)
NUTHOS-15-1218	**Development of a Hot-Wire Anemometry Technique for Velocity Measurement in a Sleeveless Fuel Assembly Mock-Up for HTGR** Yusuke Yamazaki, Ryo Yokoyama, Yosuke Nishimura, Shuichiro Miwa, Koji Okamoto (The University of Tokyo, Japan)
NUTHOS-15-1081	**CFD ANALYSIS OF THE SECOND LOWER PLENUM MIXING TEST OF THE HIGH TEMPERATURE TEST FACILITY BENCHMARK BY NRG PALLAS AND OSU** Mohammed Muaaz Mohamed Dilshad Hussain (NRG PALLAS, Netherlands), Benjamin Nakhnikian-Weintraub (Numerical Advisory Solutions, United States), Izabela Gutowska (Oregon State University College of Engineering, United States)
NUTHOS-15-1407	**Numerical Study of Flow and Heat Transfer Characteristics of Supercritical Carbon Dioxide in a Round Tube** Haikuo Yang, Yunlong Jiang, Kui Zhang, Wenxi Tian (Xi'an Jiaotong University, China)

6-1G. Severe Accident, Debris and Molten-Material Behavior

Sep. 30 (Wed.), 13:00 - 15:00, Room 1

Chair: **Takahiro Arai(wrong MA)** (Central Research Institute of Electric Power Industry, Japan)
Anton P. Pshenichnikov (Japan Atomic Energy Agency, Japan)

NUTHOS-15-1004	**APPLICATION OF THE MULTIPHASE VOLUME-OF-FLUID METHOD FOR COMPUTATION OF 1F CORIUM DEBRIS FLOW** Anton P. Pshenichnikov (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1151	**Blockage formation model in a large-diameter fuel relocation duct for analyses of severe accidents of sodium-cooled fast reactors** Yuya Imaizumi, Shinya Ishida, Ken-Ichi Matsuba, Hidemasa Yamano (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1229	**Numerical simulation of single-component melting in debris bed with the Moving Particle Semi-implicit (MPS) method** Lu Zhao, Andrei Komlev, Di Fang, Wei Min Ma (Royal Institute of Technology, Sweden)
NUTHOS-15-1338	**HIGH-RESOLUTION DISTRIBUTED TEMPERATURE MEASUREMENT FOR MOLTEN METAL SPREADING USING FIBER-OPTIC SENSORS** Takahiro Arai, Masahiro Furuya, Shota Ueda (Central Research Institute of Electric Power Industry, Japan)
NUTHOS-15-1442	**Numerical Modeling of Gas–Solid Systems from Packed Beds to Spouting Regimes Using a Coupled SPH–DEM Framework** Joongyoung Seo, Ho Jin Jang (Seoul National University, Korea), Young Beom Jo (Kyung-Hee National University, Korea), Eung Soo Kim (Seoul National University, Korea), Eung Sun Kim (Korea Atomic Energy Research Institute, Korea)

6-5G. Research Reactor and Cooling System

Sep. 30 (Wed.), 13:00 - 15:00, Room 2

Chair: **Riichiro Okawa** (Central Research Institute of Electric Power Industry, Japan)
Cezary Bojanowski (Argonne National Laboratory, United States)

NUTHOS-15-1024	**Computational Analysis of Single-Phase Heat Transfer in Plate-Type Fuel Elements of High Flux Research Reactors** Ruiyang Liu, Junyi Wang, Huang Zhang (Tsinghua University, China), Yan Yan, Zhanfei Qi (Shanghai Nuclear Engineering Research & Design Institute Co., LTD, China), Huaqiang Yin (Tsinghua University, China), Chuntao Tang (Shanghai Nuclear Engineering & Research Design Institute Co., LTD, China)
NUTHOS-15-1080	**EVALUATION OF RANS-BASED CFD CODES FOR THERMAL-HYDRAULIC MODELING OF INVOLUTE-PLATE FUEL ELEMENTS** Cezary Bojanowski (Argonne National Laboratory, United States), Ronja Schönecker (Forschungs-Neutronenquelle Heinz Maier-Leibnitz, Germany), Katarzyna Borowiec (Oak Ridge National Laboratory, United States), Yiqi Yu, Marta Sitek (Argonne National Laboratory, United States), Kaltrina Shehu, Christian Reiter (Forschungs-Neutronenquelle Heinz Maier-Leibnitz, Germany), Frederic Thomas (Institut Laue–Langevin, France), Aurelien Bergeron, Jeremy Licht (Argonne National Laboratory, United States)
NUTHOS-15-1227	**Validation of the system code CATHARE 3 for research reactors' applications** Stéphanie Zimmer, Alberto Ghione (Commissariat à l'énergie atomique et aux énergies alternatives, France)
NUTHOS-15-1056	**ASSESSMENT OF CFD SIMULATIONS FOR VERTICAL STEAM-WATER TWO-PHASE FLOW IN A LAB-SCALE CHIMNEY REPRESENTATIVE OF BWR CONDITIONS** Krishna Podila, Qi Chen (Canadian Nuclear Laboratories, Canada), Robert A Brewster, Emilio A Baglietto (Massachusetts Institute of Technology, United States)
NUTHOS-15-1105	**Loss Factor Variations within a Large-Scale Water-Based RCCS Under Passive, Two-Phase Operation** Matthew Jeffrey Jasica, Qiuping Lv, Darius D. Lisowski (Argonne National Laboratory, United States)
NUTHOS-15-1202	**Analysis of ATLAS' Passive Safety Systems During Design Basis Accident Scenarios** Sergio Gallardo, Jose García-Sanjuán, Gumersindo Verdú (Universitat Politècnica de València, Spain)

6-2F. Advances in Numerical Methods 1

Sep. 30 (Wed.), 13:00 - 15:00, Room 3+4

Chair: **Susumu Yamashita** (Japan Atomic Energy Agency, Japan)

Co-Chair: **Ariele Defossez** (Electricity of France, France)

NUTHOS-15-1332	**A Least Squares Finite Volume Particle Method for Simulating Free Surface Flows** Zhen Zhang, Xing Xiao Liu (Sun Yat-sen University, China)
NUTHOS-15-1334	**A SEMI-IMPLICIT WEAKLY COMPRESSIBLE SOLVER FOR EFFICIENT GAS–LIQUID TWO-PHASE FLOW SIMULATIONS** Kenta Sugihara, Yasuhiro Idomura, Yos Panagaman Sitompul, Susumu Yamashita (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1333	**Gas Entrainment Simulation under Varying Flowrates Using a Two-Phase Lattice Boltzmann Method with Local Mesh Refinement** Yos Panagaman Sitompul, Kenta Sugihara (Japan Atomic Energy Agency, Japan), Seiya Watanabe (Kyushu University, Japan), Yasuhiro Idomura (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1425	**GPU-based Lattice Boltzmann Simulation for Urban Dispersion: Comparative Study of Turbulence Models** Jiho Kim, Eung Soo Kim (Seoul National University, Korea)
NUTHOS-15-1087	**Hybrid AI-CFD framework for stable and accelerated 3D nuclear thermal-hydraulics simulations** Shilaj Baral (Pohang University of Science and Technology, Korea), Youngkyu Lee (Brown University, United States), Sangam Khanal (Jeonbuk National University, Korea), Joongoo Jeon (Pohang University of Science and Technology, Korea)
NUTHOS-15-1351	**INVESTIGATION OF OPTIMUM TURBULENT SCHMIDT NUMBER FOR MULTICOMPONENT GAS MIXING** Yosuke Iwasaki, Takayuki Wada, Masahiro Ishigaki (University of Fukui, Japan), Satoshi Abe, Yoshiyasu Hirose, Yasuteru Sibamoto (Japan Atomic Energy Agency, Japan)

7-1H. Natural, Mixed and Marangoni Convection

Sep. 30 (Wed.), 15:10 - 16:50, Room 5

Chair: **Patrick Martin Lewis** (Rolls-Royce, United Kingdom)

Anton P. Pshenichnikov (Japan Atomic Energy Agency, Japan)

NUTHOS-15-1240	**THERMO-FLUID CHARACTERIZATION OF FREE-SURFACE NATURAL CONVECTION BY VISUALIZATION AND SPECTRAL ANALYSIS: A FUNDAMENTAL STUDY USING INFRARED THERMOGRAPHY AND PIV** Taiga Nishikawa, Yanrong Li, Terumi Inagaki (Ibaraki University, Japan)
NUTHOS-15-1242	**HEAT TRANSPORT MECHANISMS AND FLOW-REGIME CLASSIFICATION OF THERMALLY DRIVEN BUOYANCY AND MARANGONI CONVECTION** Kenta Saito, Sho Sakamoto, Yanrong Li, Terumi Inagaki (Ibaraki University, Japan)
NUTHOS-15-1258	**Mechanistic Insight into Integral Behavior in Perturbed Natural Circulation** Patrick Martin Lewis, Thomas John, Heather Davies, Ryan Tunstall (Rolls-Royce, United Kingdom)
NUTHOS-15-1279	**Ensemble DNS of Transient Mixed Convection in a Vertical Differentially Heated Turbulent Channel** Alexey Burbasov (North Carolina State University, United States), Tri Nguyen, Elia Merzari (The Pennsylvania State University, United States), Igor Bolotnov (North Carolina State University, United States)
NUTHOS-15-1416	**Modeling of Forsmark 1 BWR natural circulation stability tests using TRACE and PARCS system codes** Graeme Joseph Trundle, Sevostian Bechta (Royal Institute of Technology, Sweden), Michael Söderström (Vattenfall Nuclear Fuel AB, Sweden), David Palko (Forsmarks Kraftgrupp AB, Sweden), Peter Balint (Vattenfall Nuclear Fuel AB, Sweden), Sean Roshan (Royal Institute of Technology, Sweden)

7-5H. Thermal-Hydraulics in SFR

Sep. 30 (Wed.), 15:10 - 16:50, Room 6

Chair: **Kei Ito** (Kyoto University, Japan)

Xue-Nong Chen (Karlsruhe Institute of Technology , Germany)

NUTHOS-15-1061	**Investigation of Gas Radiation Heat Transfer in Large-Scale Sodium Spray Fire** Masateru Sonehara (Japan Atomic Energy Agancy, Japan), Yuji Tajima (ENO Suri Kaiseki Research, Japan), Mitsuhiro Aoyagi, Akihiro Uchibori, Shin Kikuchi (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1251	**3D Velocity-Field Measurement of Gas-Entraining Vortices in SFR-Relevant Conditions** Navdeep Singh, David Guenadou (Commissariat à l'énergie atomique et aux énergies alternatives, France), Simon Becker, Nicolas Louvet, Alexandre Labergue (Université de Lorraine, France)
NUTHOS-15-1302	**Applicability Investigation of Statistical Method to a Core Hot Spot Evaluation Issues for Pool-type Sodium-cooled Fast Reactors** Shota Mochinaga, Norihiro Doda (Japan Atomic Energy Agency, Japan), Takashi Iwasaki (ENO, Japan), Kenichi Igawa (NESI, Japan), Masaaki Tanaka (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1355	**Code-to-code validation based on the SEFOR benchmark: from thermal-hydraulics to multiphysics analysis** Héloïse Velardo, Elias Yammis Garcia-Cervantes (CEA Cadarache, France), Jonas Vanderwaeren (Tractebel Engineering (ENGIE), Belgium), Yan Cao (ANL, United States), Lucia Ruedo Villegas (Tractebel Engineering (ENGIE), Belgium)
NUTHOS-15-1339	**Development of evaluation method for transition behavior of non-condensable gas in primary cooling system of pool-type sodium-cooled fast reactor -Bubble behavior in cold plenum region of pool-type reactor-** Kentaro Matsushita, Toshiki Ezure, Masaaki Tanaka (Japan Atomic Energy Agency, Japan), Tatsuya Fujisaki, Yoshiaki Nakamine, Yasutomo Imai (NDD Corporation, Japan)

7-1I. Two-Phase Flow Instabilities and Interfacial Dynamics

Sep. 30 (Wed.), 15:10 - 16:50, Room 1

Chair: **Yutaka Ikeda** (Central Research Institute of Electric Power Industry, Japan)

Tomio Okawa (The University of Electro-Communcations, Japan)

NUTHOS-15-1027	**Experiment of flow instability in sco2 horizontal flow with quartz tube visualization** Seongseok Chung, Hangjin Jo (POSTECH, Korea)
NUTHOS-15-1098	**Experimental Investigation on Jet Breakup in Adiabatic Inverted Annular Upward Flow** Rongxuan Zhang, Jinbiao Xiong (Shanghai Jiao Tong University, China)
NUTHOS-15-1278	**FOUR-FIELD MODELING OF DISTURBANCE WAVES AT HIGH-PRESSURE NEAR THE ONSET OF ANNULAR TWO-PHASE FLOW** Howard Yuen Kit Li (McMaster University, Canada), Jean-Marie Le Corre (Westinghouse Electric Sweden AB, Sweden), Ketan Ajay, David R. Novog (McMaster University, Canada)
NUTHOS-15-1343	**MECHANISM OF VOID FRACTION FLUCTUATIONS WITH FORCED-CONVECTION SUBCOOLED BOILING UNDER OSCILLATED VELOCITY AND POWER IN A VERTICAL ANNULAR CHANNEL** Yutaka Ikeda, Shota Ueda, Takahiro Arai, Riichiro Okawa, Kenetsu Shirakawa, Masahiro Furuya, Atsushi Ui (Central Research Institute of Electric Power Industry, Japan)

7-6C. AI for Reactor Design, Optimization and Intelligent Control

Sep. 30 (Wed.), 15:10 - 16:50, Room 2

Chair: **John Cui** (Canadian Nuclear Laboratories, Canada)
Ik Jae Jin (Ulsan National Institute of Science and Technology, Korea)

NUTHOS-15-1238	**Impact of Data Sampling Strategies on Machine Learning Models for PI-controller Optimization of i-SMR** Semin Joo, Jeong Ik Lee (Korea Advanced Institute of Science and Technology, Korea)
NUTHOS-15-1361	**Loading Pattern Design for a NuScale-Like Core Using a Quantum-Inspired Evolutionary Algorithm** Jui Yang Lin (National Tsing Hua University , Taiwan), Jenq-Horng Liang, Shun-Chi Wu, Shin-Rong Wu (Institute of Nuclear Engineering and Science,National Tsing Hua University, Taiwan), Jhao-Yang Hong, Der-Sheng Chao (National Tsing Hua University , Taiwan)
NUTHOS-15-1389	**VARIABLE-LOAD CONTROL OF THE BRAYTON-CYCLE HEAT-PIPE REACTOR SYSTEM BASED ON INTELLIGENT CONTROL** Gerson Kautane Kondo, Guanghui Jiao, Genglei Xia (Harbin Engineering University, China)
NUTHOS-15-1308	**Deep Reinforcement Learning for Load Following of Micro-Reactor Hybrid Systems under Multiple Operational Constraints** Ziang Guo, Ziyin Liu, Changhe Liu, Yihu Wang, Limin Liu, Tenglong Cong, Hanyang Gu (Shanghai Jiao Tong University, China)
NUTHOS-15-1447	**Non-Invasive Visualization of Pool Boiling Dynamics via Acoustic-to-Video Generative AI** Doyeong Lim (Chosun University, Korea), In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)

7-4F. Severe Accident Phenomena and Analysis

Sep. 30 (Wed.), 15:10 - 16:50, Room 3+4

Chair: **Hidemasa Yamano** (Japan Atomic Energy Agency, Japan)
Jules Delacroix (French Atomic Energy Commission , France)

NUTHOS-15-1312	**Leaching Mechanisms of Ceramic Model Materials for Corium under Accident-Relevant Aqueous Conditions** Myriam Sebaa (Autorité de sûreté nucléaire et de radioprotection, France)
NUTHOS-15-1327	**SEVERE ACCIDENT ASPECTS OF LIGHT WATER REACTOR POWER UPRATES USING ACCIDENT TOLERANT FUELS** Charles Erickson, Woohyun Jung, Mohammad Amer Allaf, Juliana Pacheco Duarte (University of Wisconsin-Madison, United States)
NUTHOS-15-1060	**EFFECT OF STRUCTURE DEFORMATION ON MECHANICAL ENERGY GENERATION AFTER ENERTGETICS IN ESFR-SMR** Yoshiharu Tobita, Xue-Nong Chen, Andrei Rineiski (Karlsruhe Institute of Technology, Germany)
NUTHOS-15-1041	**Research Project on Eutectic Reaction Behavior of Control Rod Materials in Severe Accidents of Sodium-Cooled Fast Reactors** Hidemasa Yamano, Toshihide Takai, Yuki Emura (Japan Atomic Energy Agency, Japan), Hiroyuki Fukuyama, Hideo Higashi (Tohoku University, Japan), Tsuyoshi Nishi (Ibaraki University, Japan), Koji Morita (Kyushu University , Japan), Kinya Nakamura (Central Research Institute of Electric Power Industry, Japan), Zeeshan Ahmed (University of Tokyo, India)
NUTHOS-15-1176	**ADVANCEMENTS IN THERMOPHYSICAL PROPERTY MEASUREMENTS OF URANIUM MELTS USING THE MAXIMUM BUBBLE PRESSURE TECHNIQUE** Hugo Bitard, Jules Delacroix, Romain Le Tellier (CEA, France), René Guinebretière (IRCER, France), Pascal Piluso (CEA, France)

(Panel Session 1) Emerging Thermal Hydraulic Challenges in Reactor Operation and Safety

Sep. 30 (Wed.), 17:00 - 18:20, Room 5

Chair: **Jean-Marie Le Corre** (Westinghouse, Sweden)
Jinzhao Zhang (Tractebel Engineering (ENGIE), Belgium)
Co-Chair: **Daichi Yamada** (TEPCO, Japan)
Yong Joon Choi (Electric Power Research Institute, United States)
Yu Yeon Park (KINS, Korea)

Moderators: Dr. Jean-Marie LeCorre (Westinghouse), Dr. Jinzhao Zhang (Tractebel), Dr. Hidemasa Yamano (JAEA)
Panelists:
Dr. Yamada Daichi (TEPCO)
Dr. Yong-Joon Choi (EPRI)
Dr. Jinzhao Zhang (TRACTEBEL)
Dr. Yu Yeop Park (KINS)

(Panel Session 2) AI and Digital Transformation for the Future of Nuclear Engineering

Sep. 30 (Wed.), 17:00 - 18:20, Room 6

Chair: **Shuichiro Miwa** (The University of Tokyo, Japan)
Co-Chair: **Kazuyuki Demachi** (The University of Tokyo, Japan)
Xu Wu (North Carolina State University, United States)
Kenichi Katono (Hitachi, Ltd. , Japan)
Mitsuhiro Itakura (JAEA, Japan)

Moderators: Shuichiro Miwa (UTokyo)
Panelists:
Prof. Kazuyuki Demachi (UTokyo)
Prof. Xu Wu (NC State)
Dr. Kenichi Katono (Hitachi-GE)
Dr. Mitsuhiro Itakura (JAEA)

(Panel Session 3) SMR/ AMR/ MMR: Global Progress, Deployment, and Future Prospects

Sep. 30 (Wed.), 17:00 - 18:20, Room 1+2

Chair: **Bao-Wen Yang** (Delta Energy Group, United States)
Martina Adorni (OECD Nuclear Energy Agency, France)
Co-Chair: **Antonin Povolny** (Hitachi-GE Vernova Nuclear Energy, Japan)
Aaron S. Epiney (Idaho National Laboratory, United States)
Antoine Gerschenfeld (Stellaria Design, France)
Jeong Ik Lee (KAIST, Korea)
Scott Roberts (Westinghouse, United States)

Chairs/Moderators: Dr. Bao-Wen Yang (Delta Energy Group), Dr. Martina Adorni (OECD NEA)
Panelists:
Dr. Aaron S. Epiney(INL)
Dr. Antonin Povolny (Hitachi-GE Nuclear Energy)
Dr. Antoine Gerschenfeld (Stellaria Design)
Dr. Jeong Ik Lee (KAIST)
Dr. Scott Roberts (Westinghouse)

Oct. 1 (Thu.)

Keynote Lecture 10

Oct. 1 (Thu.), 09:00 - 09:40, Room 5

Chair: **Kyoung-Ho Kang** (KAERI, Korea)

NUTHOS-15-KL07	**Reactor safety research to support deployment of water cooled small modular reactors in Canada** Andrew Morreale (Canadian Nuclear Laboratories, Canada)

Keynote Lecture 11

Oct. 1 (Thu.), 09:00 - 09:40, Room 6

Chair: **Hidemasa Yamano** (Japan Atomic Energy Agency, Japan)

NUTHOS-15-KL06	**Solidification of High-Melting-Point Coolants and Its Impact on Reactor Design and Safety Characteristics** Maolong Liu (Fudan University, Korea)

Keynote Lecture 12

Oct. 1 (Thu.), 09:00 - 09:40, Room 1+2

Chair: **Kai Wang** (SUN YAT-SEN UNIVERSITY, China)

NUTHOS-15-KL12	**The Role of Computational Fluid Dynamics in Deepening the Understanding of Severe Accident Phenomena: Current Status and Future Prospects** Susumu Yamashita (Japan Atomic Energy Agency, Japan)

8-1J. Safety Analysis, Code Development and V&V 1

Oct. 1 (Thu.), 09:50 - 11:30, Room 5

Chair: **Michael Böttcher** (Karlsruhe Institute of Technology, Germany)

Yu-Jou Wang (Massachusetts Institute of Technology, United States)

NUTHOS-15-1132	**HeX Manifold Design Methods** Jacob Morrell, Ben Davies, David Rice, Ryan Tunstall (Rolls-Royce, United Kingdom)
NUTHOS-15-1136	**UPSCALING OF A NITROGEN INTRUSION TRANSIENT IN A GENERIC 3-LOOP PWR** Jose García, Sergio Gallardo, Tomás Ten, Gumersindo Verdú (Universitat Politècnica de València, Spain)
NUTHOS-15-1171	**Simulation of Spent Fuel Pool assembly dewatering in ASPIC device with ASTEC code** Laurent Laborde, Lucas Rotily (Autorité de Sûreté Nucléaire et de Radioprotection, France)
NUTHOS-15-1276	**APPLICATION OF THE WILKS METHOD IN CFD FOR QUANTIFICATION OF THE INPUT UNCERTAINTY** Dirk C. Visser, Jordi Reitsma, Marek M. Stempniewicz, Muaaz M. M. D. Hussain, Stijn Franssen - van Rijsingen, Ed M. J. Komen (NRG PALLAS, Netherlands)
NUTHOS-15-1345	**Effect of Corner Geometry on Backflow in the Branch Pipe of a T-Junction** Kaori Yamamoto (Public Komatsu University, Japan), Yoichi Utanohara (Komatsu University , Japan)

8-5I. Thermal-Hydraulics in Fusion Reactor

Oct. 1 (Thu.), 09:50 - 11:30, Room 6

Chair: **Shao-Wen Chen** (NTHU, Taiwan)

Walter Villanueva (Bangor University, United Kingdom)

NUTHOS-15-1173	**Experimental measurement of MHD pressure drop of Galinstan liquid metal in a circular pipe under a non-uniform magnetic field** Archana Prasad, Walter Villanueva (Bangor University, United Kingdom), Nejdet Erkan, Gerasimos Politis (United Kingdom Atomic Energy Authority, United Kingdom)
NUTHOS-15-1310	**Thermal–Hydraulic and Control-Oriented Pre-Commissioning Analysis of the STEAM Facility for DEMO-Relevant Reduced-Power Operation** Alessandra Vannoni, Marica Eboli, Pietro Maccari (Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile, Italy), Giorgio Mongiardini (Università di Roma "La Sapienza", Italy), Alessandro Del Nevo (Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile, Italy)
NUTHOS-15-1473	**Design of High Temperature Lead-Lithium MHD Experimental Loop for Fusion Blanket Applications** Ryder Belgarde (University of Wisconsin-Madison, United States), Donkoan Hwang, Juliana Duarte (University of Wisconsin Madison, United States), Craig Jacobson (Realta Fusion, United States)
NUTHOS-15-1236	**Thermal-Hydraulic Design of Water Cooling System for Fusion Reactor Breeding Blanket** Wenhai Guan, Kiyohito Tanno, Takanori Hirose, Yoshinori Kawamura (National Institutes for Quantum Science and Technology, Japan)

8-4G. Thermal Hydraulic Experiments and Simulation

Oct. 1 (Thu.), 09:50 - 11:30, Room 1

Chair: **Taku Nagatake** (Japan Atomic Energy Agency, Japan)

Xicheng Wang (Royal Institute of Technology, Sweden)

NUTHOS-15-1255	**Comparative Thermal-Hydraulic Simulations of the New Research Reactor to be Installed at the Monju Site** Basar Ozar (Argonne National Laboratory, United States), Taku Nagatake, Takashi Tsumura, Kazuhiko Izawa, Masaji Arai (Japan Atomic Energy Agency, Japan), Dong Hoon Kam, Jeremy R Licht, John G Stevens (Argonne National Laboratory, United States)
NUTHOS-15-1256	**Benchmark Study of Thermal-hydraulics Simulation Related to the New Research Reactor to be Installed at the Monju Site in Japan** Taku Nagatake, Takashi Tsumura, Kazuhiko Izawa, Masaji Arai (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1301	**Investigation of Heat Transfer Characteristics in 7×7 Rod Bundle under Experimental Reflood Conditions** Bohan Li (Shanghai Jiao Tong University, China)
NUTHOS-15-1315	**Post-Test Validation of PANDA Suppression Pool Experiments under Prototypical Steam Injection Condition** Xicheng Wang, Dmitry Grishchenko, Pavel Kudinov (Royal Institute of Technology, Sweden), Nabil Ghendour, Ralf Kapulla, Yago Rivera, Simon Suter, Christoph Hug, Myeong-Seon Chae, Domenico Paladino (Paul Scherrer Institute, Switzerland)
NUTHOS-15-1294	**MELCOR case study on a District Heating Reactor** Marcello Principato, Mateusz Malicki, Terttaliisa Lind (Paul Scherrer Institut, Switzerland), Tuomo Sevón (Technical Research Centre of Finland, Finland)

8-6D. AI for CHF and Boiling Heat Transfer

Oct. 1 (Thu.), 09:50 - 11:30, Room 2

Chair: **Yihui Wu** (Forschungszentrum Jülich GmbH, Germany)

Yang Liu (Virginia Tech, United States)

NUTHOS-15-1142	**PHYSICS-INFORMED NEURAL NETWORKS WITH CHF CORRELATIONS: A COMPARATIVE STUDY IN VERTICAL HEATED TUBES** Eunhye Yeom, Taeseok Kim (Jeju National University, Korea)
NUTHOS-15-1439	**DEVELOPMENT OF A FRAMEWORK FOR CHF PREDICTION IN ROD BUNDLE ASSEMBLIES BASED ON GRAPH NEURAL NETWORK** Chanyeong Yoon, Seojun Park (Korea Institute of Energy Technology, Korea), Mooneon Lee, Hyuk Kwon (Korea Atomic Energy Research Institute , Korea), Kyungmo Kim (Korea Institute of Energy Technology, Korea)
NUTHOS-15-1340	**Multi Physics-Guided Hybrid Framework for Enhanced Critical Heat Flux Prediction** Abdullah Al Mahmud (Kyushu University, Japan), Yoshihiro Tokushima (Kyushu Univeristy, Japan), Shuhei Muroya, Koji Morita, Wei Liu (Kyushu University, Japan)
NUTHOS-15-1396	**Prediction of Critical Heat Flux in a PWR fuel test bundle with machine learning leveraging Recurrent Neural Networks** Krzysztof Mikolaj Marcinkiewicz, Peter Pohl, Ole Wieckhorst (Framatome GmbH, Germany), Rafael Macian-Juan (Technical University of Munich, Germany), Markus Rehm (Framatome GmbH, Germany)
NUTHOS-15-1172	**Bayesian Identification of Dimensionless Numbers and Governing Laws: A Framework for Scaled Experiments Design** Camille Razaire, Amandine Marrel (CEA, France), Bertrand Iooss (EDF R&D, France), Jérome Cardolaccia, Sébastien Renaudière de Vaux (CEA, France)

8-2G. Multi-Scale and Multi-Physics Coupling Simulation 2

Oct. 1 (Thu.), 09:50 - 11:30, Room 3+4

Chair: **Roberto Bonifetto** (Politecnico di Torino, Italy)

Co-Chair: **Olga Dutkiewicz** (Framatome GmbH, Germany)

NUTHOS-15-1067	**Integrated Thermal Model for Pebble Bed Reactors Using GPU-Based Ray Tracing** Sohyeon Ahn, Eungsoo Kim (Seoul National University, Korea)
NUTHOS-15-1260	**Progress Towards a Multi-Scale Multi-Fidelity Modelling Framework for Critical Heat Flux** Patrick Martin Lewis, Ryan Tunstall (Rolls-Royce, United Kingdom), Matthew Meyers, Jakub Cranmer, Alex Skillen, Giovanni Giustini (University of Manchester, United Kingdom), Edward Smith (Brunel University of London, United Kingdom)
NUTHOS-15-1017	**MODELLING THE SELF-LEVELLING BEHAVIOUR OF CORIUM DEBRIS BED UNDER A SFR SEVERE ACCIDENT** Bruno Turpin, Rémi Clavier, Lhassan Amarsid (Commissariat à l'énergie atomique et aux énergies alternatives, France), Farhang Radjaï (University of Montpellier, France), Nathalie Seiler (Commissariat à l'énergie atomique et aux énergies alternatives, France)
NUTHOS-15-1204	**SEMI-IMPLICIT COUPLING IN THE MYMUSCLE MULTI-SCALE FRAMEWORK** Kevin Zwijsen, Marek Stempniewicz (NRG PALLAS, Netherlands), Ferry Roelofs (NRG PALLS, Netherlands)
NUTHOS-15-1048	**MULTI-PHYSICS MULTI-SCALE COUPLED SIMULATION OF E-SCAPE AT STEADY OPERATION CONDITIONS** Mohammed Muaaz Mohamed Dilshad Hussain, Fajar Sri Lestari Pangukir, Dirk Cornelis Visser, Marek Michal Stempniewicz, Ferry Roelofs (NRG PALLAS, Netherlands), Julio Pacio (SCK CEN, Belgium)

9-1K. SMR and Reactor System Thermal-Hydraulics

Oct. 1 (Thu.), 13:00 - 15:00, Room 5

Chair: **Taeseok Kim** (Jeju National University, Korea)

Bart Thaam Henricus Verdonschot (NRG PALLAS, Netherlands)

NUTHOS-15-1030	**Multi-Scale Coupled Analysis of SMR Behavior Under Main Steam Line Break Conditions** Alejandro Campos Muñoz, Victor Sanchez-Espinoza (Karlsruhe Institute of Technology, Germany)
NUTHOS-15-1140	**Integration of 2D Nodal Reactor Kinetics within the System Thermal-Hydraulic Code SPECTRA for the LDR-lite SMR** Bart Thaam Henricus Verdonschot, Marek Stempniewicz (NRG PALLAS, Netherlands)
NUTHOS-15-1178	**Modelling of the ELSMOR-II Facility for SBO Transient Analysis with the APROS Code** Sonia Justyna Spisak (Paul Scherrer Institute, Switzerland)
NUTHOS-15-1272	**Systematic Design of PCHE-Based Steam Generators via Partial Flow Boiling for Marine Nuclear Reactors** Taeseok Kim (Jeju National University, Korea)
NUTHOS-15-1330	**Coupled Multi-physics Simulation of PRATIC SMR Benchmark Equilibrium State Using Sub-channel CFD and SERPENT** Bryan Tan (Imperial College London, United Kingdom), Bo Liu (Science and Technologies Facilities Council, United Kingdom), Michael J Bluck, Matthew D Eaton (Imperial College London, United Kingdom)
NUTHOS-15-1006	**EFFECTS OF FREE SURFACE COVERING ON SPENT FUEL POOL LOCA: EXPERIMENTAL RESULTS OF THE MIDI FACILITY** Thomas Naudin (Autorité de Sûreté Nucléaire et de radioprotection, France)

9-5J. Thermal-Hydraulics in MSR

Oct. 1 (Thu.), 13:00 - 15:00, Room 6

Chair: **Clément Renon** (French Alternative Energies and Atomic Energy Commission, France)

Masaaki Satake (Central Research Institute of Electric Power Industry, Japan)

NUTHOS-15-1164	**CFD Study on the Thermal-Hydraulic Performance of a Internally Heated Fuel Salt in a Vertical Concentric Annulus** Zhiqi Yang, Sheng Zhang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)
NUTHOS-15-1147	**Numerical heat-transfer and pressure-drop correlations in TPMS channels for a laboratory-scale MSR heat exchanger** Clément Renon, Xavier Jeanningros, Aubin Palmier (French Alternative Energies and Atomic Energy Commission, France)
NUTHOS-15-1349	**Simulation of the Thermal-Hydraulic and Reactivity Insertion Tests in the Molten Salt Reactor Experiment (MSRE) using the GAMMA+ Code** Hyun Sik Park, Nam Il Tak, Hong Sik Lim (Korea Atomic Energy Research Institute, Korea)
NUTHOS-15-1436	**IMPLEMENTATION OF A SOLID GRAPHITE HEAT-TRANSFER MODULE IN SyTH, AN MSR SYSTEM THERMAL-HYDARLICS CODE** Charles Owen, Caleb Miller, Braden Pecora, Tristan Villarreal, Cole Gentry, Nicholas Luciano, Benjamin Collins, Kevin Clarno (University of Texas at Austin, United States)
NUTHOS-15-1201	**Thermal-Hydraulic Impact of Graphite Deformation in a Liquid-Fuel Molten Salt Reactor** Zheng Gong, Sheng Zhang, Yang Zou, Jian Tian, Hongjie Xu (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China)
NUTHOS-15-1065	**Design Optimization of Helical Coil Heat Exchangers in a Gas-Lift Enhanced Passive Molten Salt Fast Reactor under Strict Fuel Inventory Constraints** Jihun Im, Jinho Song, Joon-Eon Yang, Sung Joong Kim (Hanyang University, Korea)

9-4H. Aerosol Behavior

Oct. 1 (Thu.), 13:00 - 15:00, Room 1

Chair: **Masanori Naitoh** (Advancesoft Corporation, Japan)

Stéphanie Alage (Authority for Nuclear Safety and Radiation Protection , France)

NUTHOS-15-1015	**Aerosol removal efficiency of wet ESP and combined scrubbing approaches for CsI under controlled conditions** Satish Basnet (University of Eastern Finland, Finland), Teemu Kärkelä (VTT Technical Research Center of Finland, Finland), Olli Sippula, Anna Lähde (University of Eastern Finland, Finland)
NUTHOS-15-1206	**Sensitivity Analysis of Cesium Aerosol Behavior in the BWR Reactor Building Using CFD Code BAROC** Masanori Naitoh, Atsuo Takahashi, Toshiharu Mitsuhashi, Achihiro Hamano, Fumitomo Onishi, Hirotaka Hadachi (Advancesoft Corporation, Japan)
NUTHOS-15-1161	**Development and performance test of an aerosol generator based on a wet-dispersion method** Kotaro Kai, Munemichi Kawaguchi, Kazuhiro Sawa (Hokkaido University, Japan), Rika Sato, Hiroshi Seino (Japan Atomic Energy Agency, Japan)
NUTHOS-15-1237	**CHARACTERIZATION OF AEROSOLS PRODUCED BY LASER HEATING OF REAL CORIUM: THE AEROLAS PROJECT** Stéphanie Alage, Emmanuel Porcheron, Marc Barrachin (Authority for Nuclear Safety and Radiation Protection, France), Jean-Yves Colle, Thierry Wiss, Daniel Serrano-Purroy, Ramon Carlos-Marquez, Antonio Bulgheroni (Joint Research Center, Germany), Christophe Journeau, Viviane Bouyer (Atomic Energy Commission, France)
NUTHOS-15-1277	**Experimental and analytical study on contaminant transfer through real cracks in a concrete wall representative of a PWR containment vessel** Thomas Gelain, Florent Dany, Thomas Heitz, Laurent Ricciardi (Autorité de Sûreté Nucléaire et de Radioprotection, France)

9-6E. AI for Reactor Monitoring, Diagnostics and Digital Twins

Oct. 1 (Thu.), 13:00 - 15:00, Room 2

Chair: **Wen Zhou** (The University of Tokyo - Hongo Campus, Japan)

Kai Wang (SUN YAT-SEN UNIVERSITY, China)

NUTHOS-15-1166	**Development of MLP-based 3D pin-by-pin power reconstruction method for digital twin of nuclear reactor core** Xiang Dong, Jinbiao Xiong (Shanghai Jiao Tong University, China)
NUTHOS-15-1299	**Reactor Dynamics Anomaly Detection using a Physics-Informed LSTM Autoencoder** Jaden Palmer, Nelson Snow (North Carolina State University, United States), Ryan Stewart (Idaho National Laboratory, United States), Jason Hou, Xu Wu (North Carolina State University, United States)
NUTHOS-15-1443	**Development of System Diagnostic Method for Heat-Pipe Cooled Microreactors using Deep Learning** Ik Jae Jin, In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)
NUTHOS-15-1137	**NEURAL-NETWORKS PREDICTION OF XENON-INDUCED AXIAL POWER OSCILLATIONS IN VVER-1000 REACTORS** Jan Ullmann (Faculty of Electrical Engineering, University of West Bohemia, Pilsen, Czech republic, Czech Republic), Jiří Závorka, Jana Jiřičková (Faculty of Electrical Engineering, University of West Bohemia, Czech Republic), Radek Škoda (Czech Technical University in Prague, Czech Institute of Informatics, Robotics and Cybernetics, Czech Republic)
NUTHOS-15-1110	**INVESTIGATION OF ARIANT-ALIGNED SURROGATE MODEL AND PARAMETER OPTIMIZATION FOR RD-14M TEST APPLICATION** John Cui, Geoffrey P. Waddington, Shujun P. Wang, Benjamin P. Sears (Canadian Nuclear Laboratories, Canada)
NUTHOS-15-1328	**Development and Verification of an Artificial Intelligence Training Assistant for Nuclear Reactor Operators** Jason Clifford, Jake Mikouchi-Lopez (North Carolina State Univeristy, United States), Mason Mines (University of North Carolina at Chapel Hill, United States), Jason Hou, Xu Wu (North Carolina State Univeristy, United States)

9-5K. Safety Analysis and Code Validation

Oct. 1 (Thu.), 13:00 - 15:00, Room 3+4

Chair: **Michael Böttcher** (Karlsruhe Institute of Technology, Germany)

Kei Ito (Kyoto University, Japan)

NUTHOS-15-1306	**Numerical Study of a Brayton Power Conversion System for a Heat Pipe Nuclear Reactor** Yihu Wang, Tenglong Cong, Ziyin Liu, Ziang Guo, Limin Liu, Hanyang Gu (Shanghai Jiao Tong University, China)
NUTHOS-15-1320	**Development of Efficient Searching Algorithm for Identification of Failure Domain of Passive Safety System** Yun Feng (Harbin Engineering University, China), Xicheng Wang, Aleksander Kipiela, Dmitry Grishchenko, Pavel Kudinov (Royal Institute of Technology, Sweden), Ruifeng Tian (Harbin Engineering University, China)
NUTHOS-15-1093	**Development and Validation of an OpenFOAM-GEMS Coupled Framework Through Benchmarking Against cGEMS** Dowon Lee, Juhyeong Lee, Jinho Song, Sung Joong Kim (Hanyang University, Korea)
NUTHOS-15-1125	**Modeling and thermal performance evaluation of a phase change material based passive safety system for the passive molten salt fast reactor using the GAMMA+ code** Baptiste Berlot, Jihun Im, Dowon Lee, Jinho Song, Sung Joong Kim (Hanyang University, Korea)
NUTHOS-15-1293	**NEA/ATHENA: SHAPING THE FUTURE OF THERMAL-HYDRAULIC RESEARCH FOR NUCLEAR SAFETY** Joëlle Fleurot (ASNR, France), Eero Virtanen (STUK, Finland), Sanjeev Gupta (Framatome, Germany), Junichi Kaneko (NRA, Japan), Kyoung-Ho Kang (KAERI, Korea), Stephen M. Bajorek (NRC, United States), Didier Jacquemain, Markus Beilmann, Martina Adorni (OECD Nuclear Energy Agency, France)
NUTHOS-15-1292	**NEA JOINT EXPERIMENTAL PROJECTS: ADVANCING NUCLEAR SAFETY WITH FOCUS ON SMR AND CFD APPLICATIONS** Didier Jacquemain, Martina Adorni, Markus Beilmann (OECD Nuclear Energy Agency , France), Simon Philipp Shollenberger (Framatome, Germany), Vesa Riikonen (LUT University, Finland), Constantin Ledier (CEA, France), Kyoung-Ho Kang (KAERI, Korea), Martin Freitag (Becker Technologies GmbH, Germany), Domenico Paladino (PSI, Switzerland), Florian Guillou (CEA, France), Seok Kim (KAERI, Korea)

10-1L. Safety Analysis, Code Development and V&V 2

Oct. 1 (Thu.), 15:10 - 17:10, Room 5

Chair: **Yoichi Utanohara** (Komatsu University, Japan)

Stijn Franssen (NRG PALLAS, Netherlands)

NUTHOS-15-1036	**CFD investigation of Three Mile Island Nuclear Power Plant** Michael Böttcher, Victor Sanchez-Espinosa (Karlsruhe Institute of Technology, Germany)
NUTHOS-15-1149	**A DETERMINISTIC SAFETY ANALYSIS FOR A NEW-BUILD, CHALLENGES, SOLUTIONS AND DEVELOPMENTS** Stijn Franssen, Cristian Vega (NRG PALLAS, Netherlands)
NUTHOS-15-1192	**Sensitivity of Nodalization and Wall Models on LOCA in Fusion Reactor with System Code** Shun Nukaga, Masahiro Furuya (Waseda University, Japan)
NUTHOS-15-1322	**BALANCING ACCURACY, STABILITY, AND COMPUTATIONAL COST IN SYSTEM THERMAL-HYDRAULICS: A CASE STUDY SUPPORTING GOTHIC MODEL DEVELOPMENT OF HWAT EXPERIMENTAL LOOP** Aleksander Kipiela, Dmitry Grishchenko, Pavel Kudinov (KTH Royal Institute of Technology, Sweden), Yun Feng (Harbin Engineering University, China)
NUTHOS-15-1454	**ENHANCING INTERPRETABILITY IN CFD-BEPU FRAMEWORKS FOR NUCLEAR SAFETY ANALYSIS: A CASE STUDY OF THE TALL-3D EXPERIMENT** Yu-Jou Wang, Emilio Baglietto (Massachusetts Institute of Technology, United States), Monica Pham, Patrick McGah (TerraPower, LLC, United States), Pavel Kudinov, Dmitry Grishchenko (KTH Royal Institute of Technology, Sweden)

10-5L. Thermal-Hydraulics in Advanced LWR

Oct. 1 (Thu.), 15:10 - 17:10, Room 6

Chair: **Michio Murase** (Institute of Nuclear Safety System, Inc., Japan, Japan)

Jorge Perez-Manes (French Alternative Energies and Atomic Energy Commission, France)

NUTHOS-15-1360	**Effect of Zircaloy oxide layer thickness on Leidenfrost temperature** Chaeyeon Kim, Hyunjin Yong, Ilwoong Park (Inha University, Korea)
NUTHOS-15-1374	**CFD Validation of Filmwise Condensation: Towards Comprehensive Simulations of Passive Safety Condenser Systems** Jorge Perez-Manes, Thierry Jeanne, Sebastein Renaudier de Veux, Franck Morin, Bruno Raverdy, Clotaire Geffray (French Alternative Energies and Atomic Energy Commission, France), Nicolas Merigoux (Electricity of France , France), Ethan Rollier (French Alternative Energies and Atomic Energy Commission, France), Thomas Prusek, Michael Montout (Electricity of France, France)
NUTHOS-15-1119	**MAJOR EXPERIMENTAL RESUTLS OF 500 HOUR TYPE TEST FOR LOCALIZED REACTOR COOLANT PUMP OF APR1400 NUCLEAR POWER PLANT** Seok Cho, Seok Kim, Byoung Uhn Bae, Yun Jae Cho, Hae Seob Choi, Woo Jin Jeon (Korea Atomic Energy Research Institute, Korea)
NUTHOS-15-1368	**EFFECTS OF concave-convex defects AND SILLICA COATING ON POOL BOILING critical heat flux (CHF)** Zi Hao Wang, Yanxu Huang, Kai Wang (Sun Yat-Sen University, China)
NUTHOS-15-1077	**Development and Verification of a 6-Degree Of Freedom Motion Pipe Model in Modelica/Dymola Using TRANSFORM** In Jae Kim, Hongsik Kim, Eung Soo Kim (Seoul National University, Korea), Byoungjae Park, Dong-Min Park (Korea Research Institute of Ships & Ocean Engineering, Korea)
NUTHOS-15-1115	**Numerical Investigation of Characteristics and Effectiveness of a Flooding Safety System during an Out-CV LOCA Scenario for a Natural Circulation Small Modular Reactor using MELCOR Code** Hyo Jun An, Jae Hyung Park, Yujin Kim, Jinho Song, Joon Eon Yang, Sung Joong Kim (Hanyang University, Korea)

10-2H. Advances in Numerical Methods 2

Oct. 1 (Thu.), 15:10 - 17:10, Room 1

Chair: **Kenta Sugihara** (Japan Atomic Energy Agency, Japan)

Co-Chair: **Tom De Laet** (Tractebel, Belgium)

NUTHOS-15-1179	**Morphology-Adaptive Modelling of Wall-Bounded Liquid Films Combining a Multi-Fluid and a 2D Thin-Film Approach** Elena Riviera, Richard Meller, Fabian Schlegel, Benjamin Krull, Dirk Lucas (Helmholtz-Zentrum Dresden-Rossendorf, Germany)
NUTHOS-15-1114	**THE EFFECTS OF CORROSION-RELATED UNIDENTIFIED DEPOSIT (CRUD) ON BOILING HEAT TRANSFER IN PWR: ADVANCED NUMERICAL MODELING METHODS** Yuzhe Li, Jiyun Zhao (City University of Hong Kong, Hong Kong)
NUTHOS-15-1465	**Enhanced Validation of Restructured and Updated CFD Combustion Library flameFoam-13.0.0 on UFPE in Hyka A2 Facility** Julius Venckus, Mantas Povilaitis (Lithuanian Energy Institute, Lithuania)
NUTHOS-15-1123	**Optimizing SFP Fuel-Loading for EP Exemption: A Homogenized CFD–GA Integrated Framework** Min-Cheng Tsai (National Tsing Hua University, Taiwan), Yeh Lee (National University of Tainan, Taiwan), You-Xun Chang (National Tsing Hua University, Taiwan), Yung-Shin Tseng (National Tsing-Hua University, Taiwan), Wen-Yu Wang (National Kaohsiung University of Science and Technology, Taiwan), Shun-Chi Wu (National Tsing-Hua University, Taiwan)
NUTHOS-15-1379	**COUPLED SYSTEM AND CFD ANALYSIS OF THERMAL STRATIFICATION IN SFR SECONDARY PIPING USING FOAMFORNUCLEAR** Giovanni Nervi, Alessandro Scolaro (École polytechnique fédérale de Lausanne, Switzerland), Carlo Fiorina (Texas A&M University , United States), Mathieu Hursin (École polytechnique fédérale de Lausanne, Switzerland)
NUTHOS-15-1185	**BOILING AND BUBBLE DYNAMICS STUDY APPLYING THE PSEUDOPOTENTIAL MULTIPHASE LATTICE BOLTZMANN METHOD** Stephan Leyer (Universtiy of Luxembourg, Luxembourg)

10-6F. Physics-Informed AI and Surrogate Modeling for Thermal-Hydraulics

Oct. 1 (Thu.), 15:10 - 17:10, Room 2

Chair: **Norihiro Doda** (Japan Atomic Energy Agency, Japan)

Xu Wu (North Carolina State University, United States)

NUTHOS-15-1100	**Applications of PINNs for Predicting the Temporal Evolution of Internal Energy in Debris Beds Formed in the Late Accident Phase of Nuclear Reactors** Jasmin Joshi-Thompson, Michael Buck, Jörg Starflinger (Institute of Nuclear Technology and Energy Systems (IKE), University of Stuttgart, Germany)
NUTHOS-15-1155	**A Node-Assigned PINN Framework for Thermal–Hydraulic System Modeling of CVH/FL and HS** Jeesuk Shin, Donggyun Seo, Sihyeong Yu, Joongoo Jeon (Pohang University of Science and Technology, Korea)
NUTHOS-15-1249	**Physics-Embedded Graph Neural Network (PE-GNN): Fast Lagrangian Simulation of Viscous Fluid Flow for Nuclear Application** Ryo Yokoyama (The University of Tokyo, Japan), Kai Wang (Sun Yat-Sen University, China), Hiroki Asatsuma, Shuichiro Miwa, Koji Okamoto (The University of Tokyo, Japan)
NUTHOS-15-1208	**Real-Time Computational Fluid Dynamics Prediction for Small Modular Reactor Digital Twin via DeepONet Based Surrogate Modeling** Minseo Lee (Pohang University of Science and Technology, Korea), Bumjin Jo, Chaehyeon Song (Hanyang University, Korea), Seongmin Oh, Shilaj Baral, Sangam Kahnal (Jeonbuk National University, Korea), Minseop Song (Hanyang University, Korea), Joongoo Jeon (Pohang University of Science and Technology, Korea)
NUTHOS-15-1245	**Enhancing Time Resolution in Surrogate Modeling of Severe Accident Analysis Code with Attention Mechanism** Wonung Jeong, Sangam Khanal (Jeonbuk National University, Korea), Semin Joo, Seokho Song, Jeongik Lee (Korea Advanced Institute of Science and Technology, Korea), Joongoo Jeon (Pohang University of Science and Technology, Korea)
NUTHOS-15-1163	**Applicability Assessment of Reinforcement Learning Using a Surrogate Environment for Nuclear Accident Mitigation** Cheolwoong Kim, Joon Young Bae, Yujin Kim, Miro Seo, Taewoo Kim, Joon Eon Yang, Jinho Song, Sung Joong Kim (Hanyang University, Korea)

10-5M. MSR - Molten Salt Drain and Transfer

Oct. 1 (Thu.), 15:10 - 17:10, Room 3+4

Chair: **Hyun-Sik Park** (Korea Atomic Energy Research Institute, Korea)

Jasmin Joshi-Thompson (Institute of Nuclear Technology and Energy Systems (IKE), University of Stuttgart, Germany)

NUTHOS-15-1165	**Experimental and Computational Study on Recharging Dynamics in an MSR Drain System Mock-Up** Woonho Jeong, Hyunwoong Lee, Sanjin Kim, Seul Bin Park, Ji Hwan Kim (Hyundai Engineering and Construction, Korea)
NUTHOS-15-1365	**CFD Analysis of a Density-Lock-based Passive Drain System as an Alternative to Freeze Valves in MSRs** Sewook Hwang, Kyung Mo Kim (Korea Institute of Energy Technology , Korea)
NUTHOS-15-1444	**Ship-Motion Effects on MSR Emergency Drain: An MSRE-Inspired Dual-Tank Study** Hyeonji Kim (Ulsan National Istitute of Science and Technology, Korea), In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)
NUTHOS-15-1446	**An Advanced Freeze Valve Design Incorporating Fin Structures for Reduced Opening Time in MSR Drain Systems** Joohyung Seo, Incheol Bang (Ulsan National Institute of Science and Technology (UNIST), Korea)
NUTHOS-15-1449	**Investigation of Design Feasibility for Cartridge-Type Molten Salt Reactor Concept under Startup and Pump Trip Conditions** Seolhui Kim, Ik Jae Jin, Doyeong Lim, In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)
NUTHOS-15-1111	**Modeling, Experiments, and Safety of a Pressure-Driven Molten Salt Transfer System and its Applications In an MSR Fuel Cycle** Ethan Gunnell, Brittney Blackwood, Caden Wilson, John Benson, Matthew J Memmott (AlphaTech Research Corp, United States)

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