

DAY 1 – THURSDAY 6 th November	
08:30 – 08:50	REGISTRATION, REFRESHMENTS and NETWORKING
08:50 – 09:00	OPENING and WELCOME Prof. Ali Tehrani (Conference Chair)
SESSION 1: Impact of Modelling in Nuclear Engineering and Science Chair: Prof. Ali Tehrani	
09:00 – 09:25	Application of Artificial Intelligence Methods – The Next Era of Nuclear Safety Technology Dr David Luxat Nuclear Energy Safety Technologies Department, Sandia National Laboratories
09:25 – 09:45	1.1 From Atomistics to Kinetic Monte Carlo and Beyond: Bridging Scales in Defect Transport Modelling of Complex Materials P. Hatton Amentum
09:45 – 10:05	1.2 Uncertainty Quantification for Hyper-Complex Systems A. Ballisat CFMS
10:05 – 10:25	1.3 Understanding Liquid Metal Transport in Magnetic Fields — Simulating Magnetohydrodynamic Duct Flow C. Johnson COMSOL
10:25 – 10:45	1.4 Prediction of Complex Residual Stress via Machine Learning Powered Model for Nuclear Fusion Reactor Design B. Zhu, Y. Wang, T. Sui University of Surrey, UK Atomic Energy Authority, National Physical Laboratory
10:45 – 11:00	BREAK
SESSION 2: Multi-physics and Multi-scale Modelling Chair: Prof. Paul Smith	
11:00 – 11:20	2.1 A Multi-physics, Multi-scale Approach to Modelling of Fusion Power Plant Systems A. Dubas, W. Butt, K. Damm, R. Eardley-Brunt, M. Falcone, P. Naduvakkate, A. Davis UK Atomic Energy Authority
11:20 – 11:40	2.2 Multi-Scale Non-Linear Models for Predicting Cracking and Degradation in Nuclear Concrete Structures A. Burch, S. Santana Herrera EGIS Group
11:40 – 12:00	2.3 Multi-Physics Simulation of Neutronics and Conjugate Heat Transfer in Molten-Salt Breeding Blankets for Fusion Power Plants S. Lo, H. Brooks, D. Foster UK Atomic Energy Authority
12:00 – 12:20	2.4 Probabilistic Evaluation of Neutron Spectra for Investigating Neutron Nuclear Data L. Butt, T. Turner, J. Lim, B. Phoenix, Y. Chiu, L. Packer, C. Wheldon, D. Foster, M. Gilbert, M. Freer University of Birmingham, UK Atomic Energy Authority, The Faraday Institution
12:20 – 12:40	2.5 THYRA - Thermal HYdraulic Reactor Analysis: An Open-Source Multiscale System Code for Transient Thermal-Hydraulic Simulation of Fusion Blanket Water-Cooling Systems M. McDermott, S. He, C. Harrington, N. Sashidharan, J. Bailey University of Sheffield, UK Atomic Energy Authority
12:40 – 14:00	GROUP PHOTO, LUNCH, POSTER SESSION and NETWORKING
SESSION 3: AI, Innovation and Recent Developments in Reactor Performance and Safety Modelling Chair: Prof. Christopher Pain	
14:00 – 14:25	A Regulator Perspective on Opportunities and Challenges Offered by Use of Artificial Intelligence in the Nuclear Industry Michele Devita, Office for Nuclear Regulation (ONR)

14:25 – 14:45	3.1 Serpent Modelling of the High Temperature Test Reactor (HTTR) M. Owen, O. Perry, R. Aldred, T. Taylor EDF
14:45 – 15:05	3.2 A Model-Based Value-Driven Approach to Nuclear Power Plant Development L.J. Anderson Newcleo
15:05 – 15:25	3.3 Machine Learning Powered Tensile Performance Prediction from Nanoindentation in Nuclear Fusion Joints with Residual Stress Impact B. Zhu, Y. Wang, T. Sui University of Surrey, UK Atomic Energy Authority, National Physical Laboratory
15:25 – 15:45	3.4 Direct Modelling of Soil-Structure Interaction in Nonlinear Media by Leveraging Neural Operators E. Oral, T. Guyonneau, E. Bou Said, J. Ampuero EGIS Group, Université Côte d’Azur
15:45 – 16:00	BREAK
SESSION 4: Chemical and Fuel Cycle Facilities Chair: Dr Andrew Buchan	
16:00 – 16:20	4.1 Fission Reaction Rate Distribution Calculation with POD Tallies R. Kondo, A. Yamamoto, T. Endo Japan Atomic Energy Authority, Nagoya University
16:20 – 16:40	4.3 Optimised Fuel Selection for PWR Dry Storage Using Genetic Algorithms T. Henry, S. Young EDF
16:40 – 17:00	4.4 Modern Methods for Boron-Free Core Optimisation in SMRs O. Hannant Rolls-Royce SMR
17:00 – 17:20	4.5 Small Modular Reactors What has Changed and Why? J. Jones, A. Tehrani Fairlie Associates, Office for Nuclear Regulation
17:20 – 17:40	DAY 1 CLOSING REMARKS
17:40 – 19:00	ANSWERS Software Demonstration - Amentum Evening Reception

DAY 2 – FRIDAY 7 th November	
08:00 – 08:30	COFFEE and NETWORKING
SESSION 5: Plant Performance in Accident Conditions Chair: Prof. Panagiota Angeli	
08:30 – 08:55	Bring back the mathematician? Prof. Andreas Kyprianou Centre of Mathematical and Computing Sciences, Warwick University
08:55 – 09:15	5.1 Development of a Cost-effective Simulation Tool to Accelerate the Deployment of Advanced Nuclear Reactors B. Liu, W. Wang, C. Moulinec, S. Rolfo, E. Iyamabo, C. Katsamis, M. Chevalier STFC, EDF
09:15 – 09:35	5.2 Modelling Process-Related Impacts of Physical and Financial Risks on the Savannah River Site J. Hughes, J. Reynolds DBD
09:35 – 09:55	5.3 Trust and VVUQ for Explosion Simulations with CFD: A Focus on Solution Verification S. Howell Abercus
09:55 – 10:15	5.4 Modelling and Simulation: Updates on the OECD NEA Working Party on Scientific Issues and Uncertainty Analysis of Reactor Systems (WPRS) C. Bory, K. Ivanov, H. Ferroukhi, O. Buss, T. Ivanova OECD
10:15 – 10:30	BREAK
SESSION 6: Reactor Thermal Hydraulics, Fuel Performance, Neutronics, Criticality and Shielding Chair: Dr Amir Nourian	
10:30 – 10:50	6.1 Reducing Bias and Uncertainty using Data Assimilation/ Calibration P. Smith Amentum
10:50 – 11:10	6.2 Modelling the Dissolution and Agglomeration of Cerium Oxide Nanoparticles in Hydrogen Peroxide Solutions: Implications for Nuclear Fuel Debris Retrieval M. Pineda, C. Chao, Y. Zhang, T. Tsukahara, P. Angeli, E. S. Fraga The University of Oxford, University College London, Institute of Science Tokyo
11:10 – 11:30	6.3 Molten Salts Density Modelling: New Insights into the Effect of Fission Products Accumulation in Fluoride Fuel Salt Systems O.T. Noordhuis, J. Soppo, S. Couweleers, J. Vlieland, R.J.M. Konings, A.L. Smith Delft University of Technology
11:30 – 11:50	6.4 Atomistic Interactions of Chlorine and Nitrogen with Plutonium Dioxide in Storage R. Bedford, S. Murphy, H. Green Lancaster University, Sellafield
11:50 – 12:10	6.5 A Reduced Order Model with Domain Decomposition for the Space-Angle Phase-Space Discretisation of the Boltzmann Transport Equation for Efficient Reactor Simulations J. Popov, A. Buchan, A. Tehrani Queen Mary University of London
12:10 – 13:20	LUNCH, POSTER SESSION, and NETWORKING
SESSION 7: Optimisation Techniques to Support Design and Process Developments Chair: Mr. Charles Bory	
13:20 – 13:45	Multidisciplinary Modelling for Through-Life Integrity of Nuclear Components Prof. Catrin Davies Department of Mechanical Engineering, Imperial College, London
13:45 – 14:05	7.1 Evaluation of Magnesium Hydroxide Test Materials as Simulants for Developing Technologies for the Management of Magnox Waste Streams J. Curtis, A. Lockwood, T. Hunter Manchester University, Sellafield, University of Leeds

14:05 – 14:25	7.2 Pressuriser Behaviour under LOCA J. Kouvdos Rolls-Royce SMR
14:25 – 14:45	7.3 Resistivity of Frenkel Pairs in BCC transition metals J. Singh, D. Nguyen-Manh, A. Mottura, B. Cai University of Birmingham, UK Atomic Energy Authority
14:45 – 15:00	BREAK
SESSION 8: Energy Systems and Experimental Techniques in Supporting Modelling Activities Chair: Dr John Jones	
15:00 – 15:20	8.1 Advanced Wall Functions for Improved Prediction of Industrial Heat Transfer D. Wilson, C. Katsamis, T. Craft, H. Iacovides, E. Iyamabo University of Manchester
15:20 – 15:40	8.2 Application of AFRY Intelligent Scenario Modelling in a level 3 PSA T. Lindberg AFRY
15:40 – 16:00	8.3 Melting of Expanded Graphite-Paraffin Composite Phase Change Material using Toroidal Tube Heat Exchanger S. Patel, S.H. Tasnim, S. Mahmud University of Guelph
16:00 – 16:20	8.4 Modelling the Future Nuclear Production Ship: Delivering Energy Resilience J. Rigby, T. Beard BMT
16:20 – 16:40	8.5 Crystal Plasticity Finite Element Modelling of Cyclic Behaviour of Heat Sink Components in Fusion Reactor W. Maisarah, N. Grilli University of Bristol
16:40 – 17:00	CLOSING REMARKS and FEEDBACK

POSTERS	
Poster 1	Simulation-Guided Design of Efficient Solvent Extraction Processes A. Siddiqi DBD
Poster 2	Techniques for First Principles Based Flowsheet Development in the Decommissioning Sector M. Giddings DBD
Poster 3	Global Sensitivity Analysis to Support the MSSS Effluent Gproms Model C. Painter, E. Vlazakis UKNNL
Poster 4	Digital Continuity in Nuclear New Build Civil Works A. Burch EGIS Group
Poster 5	An Integrated Rigorous Two Step Method For Calculating Shutdown Dosage Rates Using a MOOSE Wrapped FISPACT application and Cardinal W. Ellis, H. M. Brooks, A. Davis, D. Foster UK Atomic Energy Authority
Poster 6	Development of a Potential Model for the Incorporation of Helium into PuO₂ Powders D.J. Lewis and S.T. Murphy Lancaster University
Poster 7	Modelling Heterogeneity of an Outwash Plain: A Case Study at the UK LLWR E. Adam Paxton, H. Woollard, A. Pavey Amentum
Poster 8	Investigations into Energy Group Schemes for Reactor Physics Calculations G. Hosking, S. MacPherson, S. Morrison, W. Poole Amentum
Poster 9	TBC
Poster 10	TBC