DAY 1 – THURSDAY 6th 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	**Neural Physics and Foundational Surrogates for Nuclear Science and Engineering - the Future of AI Prediction** Prof. Christopher Pain Head of Applied Computation and Modelling Group (AMCG) at Imperial College London
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 **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
15:05 – 15:25	3.3 **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
15:25 – 15:45	**BREAK**
SESSION 4: Chemical and Fuel Cycle Facilities Chair: Dr Andrew Buchan	
15:45 – 16:05	4.1 **Fission Reaction Rate Distribution Calculation with POD Tallies** R. Kondo, A. Yamamoto, T. Endo Japan Atomic Energy Authority, Nagoya University
16:05 – 16:25	4.3 **Optimised Fuel Selection for PWR Dry Storage Using Genetic Algorithms** T. Henry, S. Young EDF
16:25 – 16:45	4.4 **Modern Methods for Boron-Free Core Optimisation in SMRs** O. Hannant, A. Buchan Rolls-Royce SMR
16:45 – 17:05	4.5 **Small Modular Reactors What has Changed and Why?** J. Jones, A. Tehrani Fairlie Associates, Office for Nuclear Regulation
17:05 – 17:25	**DAY 1 CLOSING REMARKS**
17:25 – 18:45	**ANSWERS Software Demonstration - Amentum Evening Reception**

DAY 2 – FRIDAY 7th 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 **Resistivity of Frenkel Pairs in BCC transition metals** J. Singh, D. Nguyen-Manh, A. Mottura, B. Cai University of Birmingham, UK Atomic Energy Authority
14:25 – 14:45	7.3 **Advanced Wall Functions for Improved Prediction of Industrial Heat Transfer** D. Wilson, C. Katsamis, T. Craft, H. Iacovides, E. Iyamabo University of Manchester
14:45 - 15:05	7.4 **Application of AFRY Intelligent Scenario Modelling in a level 3 PSA** T. Lindberg AFRY
15:05 – 15:20	**BREAK**
SESSION 8: Energy Systems and Experimental Techniques in Supporting Modelling Activities Chair: Dr John Jones	
15:20 – 15:40	8.1 **Melting of Expanded Graphite-Paraffin Composite Phase Change Material using Toroidal Tube Heat Exchanger** S. Patel, S.H. Tasnim, S. Mahmud University of Guelph
15:40 – 16:00	8.2 **Modelling the Future Nuclear Production Ship: Delivering Energy Resilience** J. Rigby, T. Beard BMT
16:00 – 16:20	8.3 **Crystal Plasticity Finite Element Modelling of Cyclic Behaviour of Heat Sink Components in Fusion Reactor** W. Maisarah, N. Grilli University of Bristol
16:20 – 16:40	**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 PuO_2 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