DAY 1 – THURSDAY 5th November	
08:00 – 08:35	**REGISTRATION, REFRESHMENTS and NETWORKING**
08:35 – 08:45	**OPENING and WELCOME** Prof. Ali Tehrani (Conference Chair)
SESSION 1 **Chair: Prof. Ali Tehrani** – *Office for Nuclear Regulation*	
08:45 – 09:10	**Keynote 1: Brian Matthews** Founder and Chief Executive Officer of AMPERA
09:10 – 09:30	1.1 **AI Surrogate-Accelerated Reliability Analysis for FEM Workflows** N. Callow, A. Kyrieleis, K. Fitzgerald, J. Horne-Jones Amentum, UKAEA
09:30 – 09:50	1.2 **A Novel Application of the ALEPH2 Burn-up and Activation Code to the MINERVA Linear Proton Accelerator Facility** E. Ramoisiaux, V. Baena, A. Stankovskiy, E. Delvaux, A. Fabich, S. Van Damme The Binding Energy, SCK CEN
09:50 – 10:10	1.3 **Atomistic Insight into the Interactions of Small Molecules with PuO2 Surfaces** L. Kiltinavicius, J. Flitcroft, J. Skelton University of Manchester
10:20 – 10:45	**BREAK**
SESSION 2 **Chair: Prof. Paul Smith** – *Amentum UK*	
10:45 – 11:10	**Keynote 2: Professor Luis E. Herranz** Head of the Nuclear Safety Research Unit (CIEMAT) and Research Professor *Severe Accident Modelling Capabilities: Experiences from Fukushima Daiichi Analyses*
11:10 – 11:30	2.1 **Development and Validation of a Vectorised User Material Subroutine (ManVUMAT) for Explicit Finite Element Analysis** V. Zolotarevskiy, G.N. Hall, A.N. Jones University of Manchester
11:30 – 11:50	2.2 **Fit for Purpose Modelling – When is Good Enough, Good Enough?** A. Little ONR
11:50 – 12:10	2.3 **Digital Twin Development for Breeder Blanket Systems: Bridging Physics and Engineering** N. Callow, E. Wilkinson, M. Brown, E. Norfield, L. Ahmed, A. Kyrieleis, Z. Parker Amentum
12:10 – 12:30	2.4 **FINDER (Fissile INventory DEtection and Reconstruction): A Modelling Framework for In-Situ Fissile Material Characterisation in Nuclear Decommissioning** J. Wright Sellafield Ltd
12:30 – 12:50	2.5 **Development of Numerical Modelling Approaches for Accurate Prediction of Natural Circulation Loops** R. Petty, C. Katsamis, T. Craft, H. Iacovides, D. Wilson University of Manchester, EDF UK
12:50 – 14:00	**GROUP PHOTO, LUNCH, POSTER SESSION and NETWORKING**
14:00 – 14:35	**PANEL DISCUSSION** **Chair:** Dr Mark Bankhead **Panellists:** Dr John Jones, Prof. Chris Pain, Kuran Basra, Prof. Paul Smith

SESSION 3: Early Careers Session 1 **Chair: Dr John Jones** – *Fairlie Associates*	
14:35 – 14:55	3.1 **AGRIGID Modelling of Observed and Postulated Segment Bowing** J. Trotter, N. Solanki, D. Broadbent, J. Melia, C. Minors Amentum
14:55 – 15:15	3.2 **A Multi-Objective Optimisation Algorithm for Nuclear Micro-reactor Radiation Shielding Design with Geant4** T. Kimber, J. Spiga Loughborough University
15:15 – 15:35	3.3 **Architectural Systems Modelling for Nuclear Facility Resilience: The Layered Compartmentalized Defensive Environments (LCDE) Framework**** K. Cooper Kayla Cooper Design
15:35 – 15:55	3.4 **Automatic Diagnosis of Fission Source Convergence in MONK®** G. Bradshaw Amentum
15:55 – 16:10	**BREAK**
SESSION 4 **Chair: Prof. Christopher Pain** – *Imperial College London*	
16:10 – 16:35	**Keynote 3: Dr. Davide Mancusi** Nuclear Scientist, OECD/Nuclear Energy Agency (NEA) *Harnessing the Power of Artificial Intelligence for Nuclear Science, Engineering, and Education*
16:35 – 16:55	4.1 **HYDRA: An Innovative Modular Framework for Integrated Monte Carlo Transport and Activation Modelling** E. Ramoisiaux, W. Uyttenhove, D. Van Dyck, E. Forton, E. Gnacadja, L. Engelen, F. Stichelbaut The Binding Energy, IBA
16:55 – 17:15	4.2 **Initial Adoption of AI for ODIN Reactor Design** S. Boddington Cambridge AtomWorks
17:15 – 17:35	4.3 **Meteor: A Monte Carlo Criticality Code** F. Fleurot Nuclear Transport Solutions
17:35 – 17:55	4.4 **PWR Reactor Core – A History of Design Optimisation** J. Jones & A. Tehrani Fairlie Associates & ONR
17:55 – 18:00	**DAY 1 CLOSING REMARKS**

DAY 2 – FRIDAY 6th November	
08:00 – 08:30	**COFFEE and NETWORKING**
SESSION 5 **Chair: Dr Andrew Buchan** – *Queen Mary University of London*	
08:30 – 08:55	**Keynote 4: Prof. Panagiota Angeli** Department of Chemical Engineering, UCL *Digitalisation of Separations Related to Nuclear Industry*
08:55 – 09:15	5.1 **Numerical Insights of the Two-Phase Cross-Flow Inside an In-Line 5x5 Tube Bundle Configuration and Data Driven Modelling** C. Katsamis, B. Kakimpa, F. De Freitas, E. Iyamabo EDF UK R & D, OneEpsilon, EDF R & D
09:15 – 09:35	5.2 **Optimisation of the Cogeneration of Electricity and Heat from the Power Cycles of Generation-IV Nuclear Reactors for HTSE and SAF Production** C. Connolly United Kingdom National Nuclear Laboratory
09:35 – 09:55	5.3 **Probabilistic Modelling of Potential Cracking Pathways in AGR Graphite Cores** A. Farrokhnia, A. N. Jones, G. N. Hall University of Manchester
09:55 – 10:15	5.4 **Multi-Physics Modelling of Tritium Generation and Transport in Molten-Salt Breeder Systems** S.Lo, D. Foster, H. Brooks UK Atomic Energy Authority
10:15 – 10:40	**BREAK**
SESSION 6 **Chair: Prof. Panagiota Angeli** – *Department of Chemical Engineering, UCL*	
10:45 – 11:05	6.1 **Review of the University of Manchester Research on Flow-Induced Vibrations for Nuclear Reactor Applications** H. Iacovides, M.R.A. Nabawy, A. Cioncolini, L. Hao, T. Craft University of Manchester, Guangdong Technion - Israel Institute of Technology (GTIIT)
11:05 – 11:25	6.2 **Simulation Supported Design and Development for Radiation Imaging Systems** M. A. Macleod Innovative Physics Ltd
11:25 – 11:45	6.3 **Surrogate-Based Inverse Design of Porosity-Graded TPMS Cooling Channels for Small Modular Reactors** S. Mirfasihi, A. Sadat Madani, A. Keshmiri Mansim
SESSION 7: Poster Walking Presentations	
11:50 – 12:20	Walking Posters (2 mins each)
12:20 – 13:30	**LUNCH, POSTER SESSION, and NETWORKING**
SESSION 8: Early Careers Session 2 **Chair: Dr Amir Nourian –** *University of Salford*	
13:30 – 13:55	**Keynote 5: Prof. Mike Smith** Professor of Welding Technology at the University of Manchester *Multi-scale Modelling of Structural Components: Vital Tool or Plausible Rubbish?*
13:55 – 14:15	8.1 **Bottom-Up Techno-Economic Modelling of the ACP100 Small Modular Reactor** M. Yan, P.S. Lee, T.L Chng National University of Singapore

14:15 – 14:35	8.2 **Engineering, Physical and Thermohydraulic STAR-PLUS(M) SMR Core Modelling, using Ducted Assembly Steady-State Heat Transfer Software (DASSH)** S. Hammachi, P. Petkov Aalto University, Sofia University
14:35 – 14:55	8.3 **Simulation Based Investigation of Novel Shielding Materials for Fusion** E. Wilkinson, G. Moore, P. Sherlock, O. Goodwin, S. Daudia, S. Thornley-Hayes, A. Harrison, H. Staley-Wiggins Amentum
14:55 – 15:15	8.4 **The Use of Machine Learning Models for the Automation of Microreactor Process Control** S. Srikumar Cavendish Nuclear
15:15 – 15:30	**BREAK**
SESSION 9 **Chair: Prof. Ali Tehrani** – *Office for Nuclear Regulation*	
15:30 – 15:50	9.1 **The Development of the Reactor Operation Simulation Environment (ROSE), a Whole Plant Transient Analysis Capability** S. Lee, M. Kallo Rolls-Royce SMR
15:50 – 16:10	9.2 **Theoretical Characterisation of Zirconolite's Vibrational Spectra** J. Flitcroft, L. Blackburn, J. Skelton, L. Kiltinavicius, L. Haigh University of Manchester, University of Sheffield
16:10 – 16:30	9.3 **Validation of EDF UK neutronics modelling using the NEA LW-SMR benchmark** T. Taylor, J. Brotherton, R. Aldred, K. Lessnoff, P. Bryce EDF UK
16:30 – 16:50	9.4 **High-fidelity CFD of Flow and Heat Transfer in an Idealised Pebble-Bed HTGR Geometry** D. Wilson, H. Iacovides, E. Iyamabo, C. Katsamis University of Manchester, EDF R &D UK
16:50 – 17:00	**CLOSING REMARKS and FEEDBACK**

POSTERS	
Poster 1	**Consideration of Cavitation in CFD Modelling and Optimisation of Pump Inducers for Cooling-System Applications** A. Keshmiri, P. Talebizadeh Sadari, A. Deyranlou Mansim
Poster 2	**Engineering-Scale Modelling of High-Temperature Creep and Crack Growth at ASTM A297 Reformer Tubes Using MOOSE** J. Kchrezne Bang As, University of New Mexico
Poster 3	**ERT Validated CFD Prediction of High Viscosity Contrast Mixing: A Transferable Framework for Nuclear Processing and Waste Facilities** S. Mirfasihi, A. Keshmiri Mansim
Poster 4	**Exploring Source Term Uncertainty for Nuclear Power Plant Accidents** I.Jadav, A. Little Met Office, ONR
Poster 5	**Extending the Calibrations of a Cf-shuffler Aystem Using Monte Carlo Modelling of Outlier Waste Types** C. Binnersley, G. White Mirion Technologies
Poster 6	**First Principles Modelling of a Complex Unit Operation for Nuclear Reprocessing Design Using gPROMS** E. McCann, A Siddiqi DBD International
Poster 7	**Modelling Coated Particulate Fuels** M. Thomson, F. Fleurot Nuclear Transport Solutions
Poster 8	**Overview of Modelling Requirements and Approaches in the STEP Fuel Cycle** S. Oyenuga UK Atomic Energy Authority
Poster 9	**Trustworthy AI for Nuclear Modelling: Uncertainty-Aware Surrogates Across the Life Cycle** K. Basra, C, Cowley, D. Greenhouse, N. Papadimas, A. Corbett digiLab
Poster 10	**Value of Discrete Event Simulation in Spent Fuel Management** O. Boardman, J. South UKNNL