MODELLING IN NUCLEAR SCIENCE AND ENGINEERING SEMINAR 2020

4/5 November 2020 **Online Seminar**

DAY 1 - WEDNESDAY 4TH NOVEMBER

09:30 **Seminar opens for log-in** *Nuclear Institute and Bangor University*

09:45 **Welcome, safety briefing and IT familiarisation**
Chair: Prof. Ali Tehrani, NI & Office for Nuclear Regulation

Session 1 - Keynote addresses: Policies and Strategy

10:00 **The place of atomic scale modelling of materials in the overall process** of modelling in nuclear
Prof. Robin Grimes Imperial College London

10:30 **The importance of modelling within the Nuclear Innovation Programme**
Malwina Qvist, BEIS and Mark Salisbury, NIRO

11:00 **Modelling for the STEP programme**
Andrew Davis, UKAEA

11:30 **Q&A Session**
Chair: Prof. Ali Tehrani, NI & Office for Nuclear Registration

11:45 - COMFORT BREAK

12:00 **Poster Presentations - 1st Session**
Please see separate Itinerary

12:40 - LUNCH

Session 2 - Improving efficiency in the nuclear modelling

Chair: Dr. Simon Middleburgh, Bangor University

13:30 **Reduced order and multi-physics models for nuclear engineering**
Dr. Andrew Buchan, QMUL, UK

13:55 **Computational methods developed to propose a new methodology for IVR efficiency assessment**
Florian Fichot, IRSN, France

14:20 **Modelling advanced thermal reactors with confidence using credal networks**
Hector Diego Estrada-Lugo, University of Liverpool, UK

14:45 - COMFORT BREAK

Session 3 - Automation, Validation and the Future

Chair: Prof. Paul Smith, Jacobs

14:55 **Robust error metrics for adaptivity with ray-effects**
Dr. Steven Dargaville, Imperial College London, UK

15:20 **Severe accident and uncertainty estimation, needs and current activities**
Dr. Fulvio Mascari, ENEA, Italy

15:45 **Numerical modelling of the LIVE L3 experiment for analysing the melt pool behaviour in transient and quasi steady-state**
Aniket Joshi et al, The Open University, UK

Next generation nuclear power

16:10 **Advanced and small modular reactors - an overview of current UK activities and present status**
Prof. John Lillington, Jacobs, UK

17:00 **Q&A session**
Chair: Prof. Paul Smith, Jacobs

17:15 - COMFORT BREAK

17:25 **Poster Presentations - 2nd Session**
Please see separate Itinerary

17:55 - SEMINAR DAY 1 CLOSES

DAY 2- THURSDAY 5TH NOVEMBER

08:10 **Seminar opens for log-in** *Nuclear Institute and Bangor University*

08:25 **Welcome back, safety briefing and IT familiarisation**
Chair: Prof. Ali Tehrani, NI & Office for Nuclear Regulation

Session 4 - Materials modelling for nuclear engineering, resilience and safety

08:30 **Fuel behaviour: can we model it properly and does is matter?**
Glyn Rossiter, NNL, UK

08:55 **Vacancy elastodiffusion around cavities in aluminium: Fast first passage algorithms based on Krylov subspace projection techniques**
Savneet Kaur, CEA, France

09:20 **Modelling of nuclear systems for resilience assessment**
T V Santhosh et al, University of Liverpool, UK

09:45 **Safe Cracking: Monte Carlo nonlinear coupled analysis of nuclear reactor bricks**
Alex Bond, Quintessa Ltd, UK

10:10 - COMFORT BREAK

Session 5 - Development of Numerical (or predictive) applications

Chair: Dr. Amir Nourian, University of Salford

10:30 **Advances in non-linear seismic analysis techniques**
Robin Dickenson, Atkins Global, UK

10:55 **In-vessel core degradation paradigm... Myths and reality, perspectives on ATF fuels**
Florian Fichot, IRSN, France

11:25 **Application of computational methods for modelling of scientific and technological processes at STFC**
Dr. Andrew Ian Duff STFC, Daresbury Laboratory, UK

11:50 **Mechanistic modelling of nuclear fuels for rapid commercial deployment**
Simon Middleburgh, Bangor University, UK

12:15 **EPSRC nuclear fission update**
Andrew Eustace, EPSRC

12:45 **Concluding remarks and thanks**
Prof. Ali Tehrani, NI & Office for Nuclear Regulation and
Prof. Christopher Pain, Imperial College London

13:00 - SEMINAR DAY 2 CLOSES

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14:00 COVID-19 MODELLING, SPECIAL INTEREST GROUP

The organising committee for the Modelling in Nuclear Science and Engineering Seminar includes leading experts in the field from across the UK and internationally.

There is considerable interest in how application of the nuclear science and engineering modelling approach can be applied to support the Covid-19 Pandemic modelling effort.

This session is separate to the Seminar, and will be the initial meeting to establish a formal Nuclear Institute Special Interest Group (SIG) to bring together the Modelling community from across the nuclear sector to share their expertise and knowledge.

To register for this session or for any enquiries related to this session, please email nuclear@bangor.ac.uk. We are very grateful to the Nuclear Futures Institute at Bangor University for hosting this session on their web-based conferencing platform.

the nuclear institute