Organisation for Economic Co-operation and Development

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WPRS Benchmarks Workshops

Agenda

Cambridge, 30 June - 4 July 2025

The 2025 annual Benchmarks Workshops of the Working Party on Scientific Issues and Uncertainty Analysis of Reactor Systems (WPRS) will be hosted by the Department of Engineering of the University of Cambridge in collaboration with the Cambridge Nuclear Energy Centre, University of Cambridge, United Kingdom.

From 30 June to 4 July 2025, participants of the different WPRS Benchmark Activities will meet, exchange results and discuss future activities. The WPRS Benchmarks Workshops will address benchmarks for neutronics, thermal-hydraulics, fuel performance, and multi-physics aspects of reactor core simulations in light-water reactors (LWRs), high-temperature gas-cooled reactors (HTGRs), sodium-cooled fast reactors (SFRs), and lead-cooled fast reactors (LFRs). The event also features a dedicated session on the performance of AI and Machine Learning in the domain of single and multi-physics reactor simulations based on the work of the Task Force on Artificial Intelligence and Machine Learning for Scientific Computing in Nuclear Engineering. Two new activities on the reactor multiphysics of light-water cooled, small, modular reactors (LW-SMRs) and on reactor pressure vessel fluence simulations for LWRs are anticipated to hold their kick-off meetings.

The third edition of the NEA International School on Simulation of Nuclear Reactor Systems (SINUS) will be co-located with the Workshops.

wprs@oecd-nea.org

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Logistics

The 2025 annual Benchmarks Workshops of the Working Party on Scientific Issues and Uncertainty Analysis of Reactor Systems (WPRS) will be hosted by the Department of Engineering of the University of Cambridge in collaboration with the Cambridge Nuclear Energy Centre, University of Cambridge, United Kingdom.

Venue

The Workshop will be held in the Trumpington Street site of the Department of Engineering in the University of Cambridge: Trumpington Street, CB2 1PZ, Cambridge, United Kingdom. You can enter the main reception of the Engineering Department, where you can register and where you will see signs leading to the rooms. The meetings will be held in the following rooms:

- Track 1: Lecture Theater #1 (LT1)
- Track 2: LT2
- Track 3: LT6

Instructions on how to reach the venue are also given on the Cambridge webpages:

https://www.eng.cam.ac.uk/about-us/how-find-us

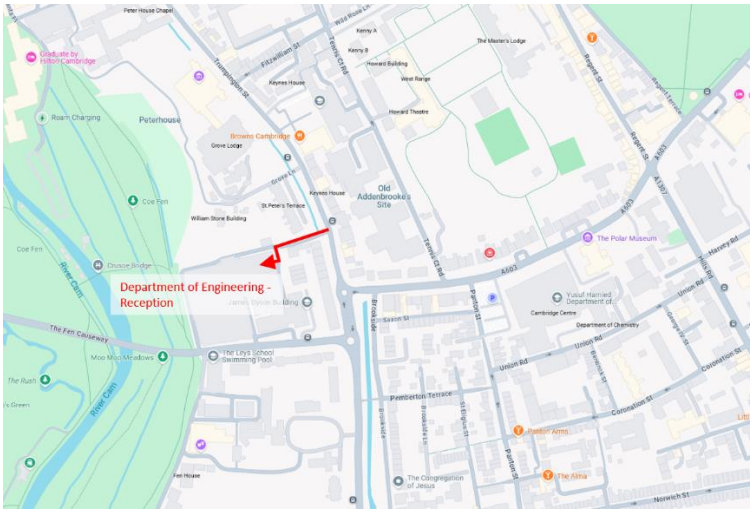

Figure 1: Access to Department of Engineering from Trumpington Street

Meeting Material

The meeting material including latest up-to-date agendas are hosted on MyNEA SharePoint:

https://mynea.oecd-nea.org/sites/WPRS/benchmarks/WPRS_BW_UK2025

SharePoint Login Information

Please follow these steps to sign in to OECD SharePoint:

1. Open https://mynea.oecd-nea.org/sites/WPRS/benchmarks/WPRS_BW_UK2025
2. On the SharePoint sign in page, enter your email address as your username. Then type in your NEA password, which you should have received in an automatic email (password reminder).
3. We now have a two-factor authentication. So please select 'MyNEA Access Authentication Agent 3.1' as next step, which is the service for delegates.
4. You will receive an email with an additional access code. Enter the access code on the web site.

Users sometimes experience issues if their browser caches access codes, because they change over time. Please try to refresh/delete your browser cache if you experience these kind of issues.

Social Event on Monday Evening

The social dinner on Monday evening will be held at Clare College (Trinity Ln, Cambridge CB2 1TL). Reception will start at 7:15pm, and dinner will end at 10pm. You will see signs leading to the Great Hall at the entrance of the college.

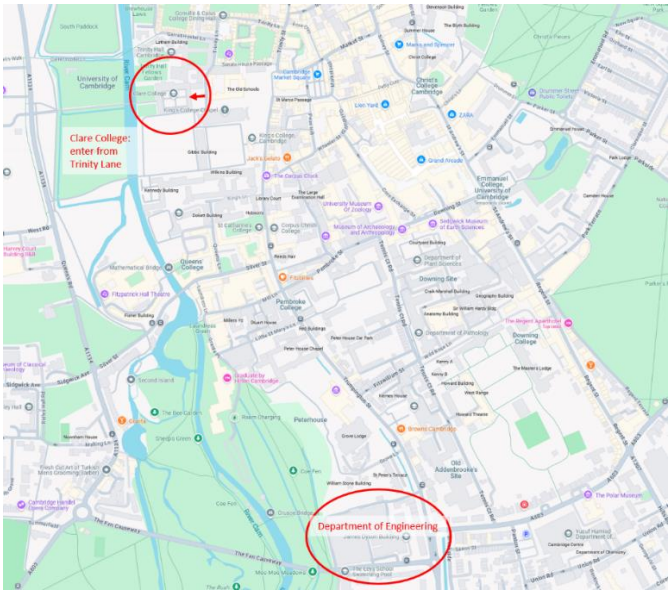

Figure 2: Access to Clare College from Trinity Lane.

WIFI Connection

Please use the WIFI network *UniOfCam-Guest* at the Department of Engineering in the University of Cambridge.

Organisation

- Technical Programme Chair: Prof. Kostadin IVANOV, North Carolina State University (NCSU), United States
- Local Chair: Dr Valeria RAFFUZZI, Cambridge University, United Kingdom
- Session Chairs:
  - Dr Agustin ABARCA, NCSU, United States
  - Dr Arzu ALPAN, Oak Ridge National Laboratory, United States
  - Prof Maria N. AVRAMOVA, NCSU, United States
  - Dr Laurent BUIRON, Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France
  - Dr Grigorios DELIPEI, NCSU, United States
  - Dr Aaron S. EPINEY, Idaho National Laboratory, United States
  - Prof Nuria GARCIA HERRANZ, Universidad Politecnica de Madrid (UPM), Spain
  - Prof Alireza HAGHIGHAT, Virginia Tech, United States
  - Dr Jason HOU, NCSU, United States
  - Dr Jean-Marie LE CORRE, Westinghouse, Sweden
  - Dr Francesco LODI, ENEA, Italy
  - Prof Bojan PETROVIC, Georgia Institute of Technology, United States
  - Dr Pascal ROUXELIN, NCSU, United States
  - Dr Claire VAGLIO-GAUDARD, CEA, France
  - Prof Xu WU, NCSU, United States
  - Prof Xingang ZHAO, University of Tennessee, United States
- Student Chair: Mr Maximilian KRAUS, Cambridge University, United Kingdom

NEA Secretariat

- Mr Charles BORY, charles.bory@oecd-nea.org
- Dr Oliver BUSS, oliver.buss@oecd-nea.org
- Ms Annabel SANDERS, annabel.sanders@oecd-nea.org

Agenda

Daily Schedule

Color Coding: T/H related, Neutronics related , Multiphysics, OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)

Monday, 30 June 2025

Day	Local Time in UK [UTC+1h]	Track 1 Room LT1	Track 2 Room LT2	Track 3 Room LT6
	Starting at 8:00	**Registration**		
	9:00-9:30	**Opening of the WPRS Benchmarks Workshops** **- V. Raffuzzi, Cambridge** **- K. Ivanov, NCSU** **- T. Ivanova, NEA** **(with SINUS)** NEA Contact: O. Buss		
	9:45-13:00	**AI and Machine Learning: CHF Benchmark** NEA Contact: O. Buss	**FHR Benchmark** NEA Contact: C. Bory	**OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)** NEA Contact: A. Sanders
	14:00-18:00	**AI and Machine Learning: PUR-1 Time Series Analysis** NEA Contact: O. Buss	**HTGR T/H Benchmark** NEA Contact: C. Bory	**OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)** NEA Contact: A. Sanders
	19:15	**Social Event, Clare College (suggested dress code: "business smart/casual")** NEA Contact: O. Buss		

Tuesday, 1 July 2025

Local Time in UK [UTC+1h]	Track 1 Room LT1	Track 2 Room LT2	Track 3 Room LT6
9:00-11:00	**Topical session on Challenges in Modelling and Simulation of SMRs** **- Presentations by invited speakers** **- Panel discussion** **(with SINUS)** NEA Contact: O. Buss		
11:30-13:00	**Kick-Off Workshop for LW-SMR Benchmark** **- Presentation of specifications (PWR and BWR)** NEA Contact: O. Buss	**HTGR T/H Benchmark (cont'd)** NEA Contact: C. Bory	**OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)** NEA Contact: A. Sanders
14:00-15:00	**Kick-Off Workshop for LW-SMR Benchmark** **- Panel discussion on future benchmark problems** NEA Contact: O. Buss	**LFR Benchmark - TH Stage: - Results of Phase 1** NEA Contact: C. Bory	**OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)** NEA Contact: A. Sanders
15:00-18:00	**Kick-Off Workshop for TVA-WB1 Reactor Pressure Fluence Exercises** **- Presentation of specifications (45min)** **- Presentation by participants on fluence simulation methodologies (objective: learning to know each other)** NEA Contact: O. Buss	**LFR Benchmark - TH Stage: - Results of Phase 1** NEA Contact: C. Bory	**OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)** NEA Contact: A. Sanders

Wednesday, 2 July 2025

Local Time in UK [UTC+1h]	Track 1 Room LT1	Track 2 Room LT2	Track 3 Room LT6
9:00-11:00	**UAM LWR** **(with SINUS)** NEA Contact: O. Buss	**LFR Benchmark - Neutronics Stage** NEA Contact: C. Bory	
11:30-13:00	**UAM LWR** **(with SINUS)** NEA Contact: O. Buss	**Deterministic Time-Dependent Neutron Transport Benchmark without Spatial Homogenisation (C5G7-TD)** NEA Contact: C. Bory	
14:00-15:00	**UAM SFR** NEA Contact: C. Bory	**Deterministic Time-Dependent Neutron Transport Benchmark without Spatial Homogenisation (C5G7-TD)** NEA Contact: O. Buss	**OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)** NEA Contact: A. Sanders
15:00-18:00	**UAM SFR** NEA Contact: C. Bory	**Topical session on Challenges in Modelling and Simulation of Reactor Transients** NEA Contact: O. Buss	**OECD NEA International School on Simulation of Nuclear Reactor Systems (SINUS)** NEA Contact: A. Sanders

Thursday, 3 July 2025

Local Time in UK [UTC+1h]	Track 1 Room LT1	Track 2 Room LT2	Track 3 Room LT6
9:00-13:00	**TVA-WB1 Multiphysics** NEA Contact: C. Bory	**LMFR T/H** NEA Contact: O. Buss	**CTF Training**
14:00-15:30	**TVA-WB1 Multiphysics** NEA Contact: C. Bory	**MSR session** **- invited presentations** NEA Contact: O. Buss	**CTF User Group**
16:00-18:00	**EGMUP Task Force on Fuel Temperature Assumptions in Depletion Analyses** NEA Contact: C. Bory	**MSR session** **- invited presentations** **- panel discussion on benchmark development needs** NEA Contact: O. Buss	**CTF User Group**

Friday, 4 July 2025

Local Time in UK [UTC+1h]	Track 1 Room LT1	Track 2 Room LT2	Track 3 Room LT6
9:00-13:00	**ROSTOV 2 VVER-1000 Benchmark** NEA Contact: C. Bory	**MPCMIV - Multi-physics Pellet Cladding Mechanical Interaction Validation Benchmark** NEA Contact: O. Buss	

Detailed Schedules of Individual Sessions

This is the status of the detailed agendas on 27 June 2025, 11:00 CEST. Please also check the SharePoint calendar for up-to-date information:

https://mynea.oecd-nea.org/sites/WPRS/benchmarks/WPRS_BW_UK2025/_layouts/15/Events.aspx?ListGuid=b7618b75-9495-4cbf-b0d0-3bc20d2af4a2

Monday, 30 June 2025, Track 1

Opening of the WPRS Benchmarks Workshops

Item ID	Start Time [UK]	Duration	Title	Speaker
1	09:00	00:15	Welcome by the Host Organization	Valeria Raffuzzi, University of Cambridge
2	09:15	00:10	Opening Remarks by the WPRS Chair	Kostadin Ivanov, North Carolina State University
3	09:25	00:10	Opening Remarks by the Head of Division of Nuclear Science & Education	Tatiana Ivanov, NEA

AI and Machine Learning

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:45	00:10	Welcome speech, introduction of participants and workshop objectives	G. Delipei, X. Wu , NCSU
2	09:55	00:10	Updates from the NEA Secretariat	O. Buss, NEA
3	10:05	00:10	Current status of the Task Force on Artificial Intelligence and Machine	G. Delipei, X. Wu
4	10:15	00:30	Critical Heat Flux (CHF) Benchmark Exercise Phase I Results	J.-M. Le Corre, Westinghouse
5	10:45	00:15	Feature-based interpretability of CHF model	E. Nikitin, HZDR

Item ID	Start Time [UK]	Duration	Item Title	Speaker
6	*11:00*	*00:30*	*Coffee Break*	
7	11:30	00:15	Preliminary Results from the OECD NEA CHF Benchmark	D. Litskevich, University of Liverpool
8	11:45	00:15	AI/ML-based CHF Prediction Using LUT Database: Comparison of XGBoost and Deep Learning Models	M. Lee, KAERI
9	12:00	00:15	Uncertainty Quantification of Critical Heat Flux Using Monte Carlo Dropout Method	E. Osei Tutu, McMaster University
10	12:15	00:15	Critical Heat Flux (CHF) Benchmark Exercise Phase II Plan	J.-M. Le Corre, Westinghouse
11	12:30	00:30	Roundtable discussion on CHF Phase I and II exercises	All
12	*13:00*	*01:00*	*Lunch*	
13	14:00	00:20	Update on the PUR-1 Benchmark Exercise Specifications	W. S. Richards, S. Chatzidakis, Purdue University
14	14:20	00:15	Update on the SAFARI-1 Benchmark Exercise Specifications	L. Moloko, P. Bokov, NCSU
15	14:35	00:15	Proposals for Numerical Benchmarks	G. Delipei, X. Wu, NCSU
16	14:50	00:20	AI/ML model for reactor physics using RAPID and JSI's TRIGA	A. Haghighat, Virginia Tech
17	15:10	00:20	AI/ML model for fuel management using RAPID and power reactors	A. Haghighat, Virginia Tech
18	*15:30*	*00:30*	*Coffee Break*	
19	16:00	00:20	Aixpertise Joint Project Proposal	O. Buss, NEA
20	16:20	00:20	Preliminary application of ML to the optimal design of an SMR core	K. Zhang, KIT
21	16:40	00:20	ARTISANS Research Group activities related to AI/ML	X. Wu, NCSU

Item ID	Start Time [UK]	Duration	Item Title	Speaker
22	17:00	00:25	RDFMG and ARDOR Research Groups activities related to AI/ML	G. Delipei, J. Hou, M. Avramova, K. Ivanov, NCSU
23	17:20	00:15	Roundtable discussion on benchmark exercises and deliverables	All
24	17:45	00:10	OECD/NEA Task Force on AI/ML - Action Items, Work Plan, and Schedule	G. Delipei, X. Wu, NCSU
25	18:00	00:05	Closing workshop remarks	G. Delipei, X. Wu, NCSU

Monday, 30 June 2025, Track 2

FHR Benchmark

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:45	00:10	Welcome speech, introduction of participants (in person and online) and workshop objectives	B. Petrovic, Georgia Tech + All participants
2	09:55	00:10	Updates from the NEA Secretariat	C. Bory, NEA
Phase I				
3	10:05	00:10	Review of the Benchmark progress and status	B. Petrovic, Georgia Tech
4	10:15	00:05	Brief summary of Phase I-A and I-B results and lessons learned	B. Petrovic, Georgia Tech
5	10:20	00:10	Summary of Phase I-C and I-C modified results and lessons learned	B. Petrovic, Georgia Tech
6	10:30	00:15	Participants' presentations on Phases I modelling and simulations challenges	All participants
		00:05	UIUC modelling and simulations challenges faced on Phases I	Luke Seifert, UIUC

Item ID	Start Time [UK]	Duration	Item Title	Speaker
7	*10:45*	*00:30*	*Coffee break*	
Phase II				
8	11:15	00:10	Lessons learned from Phase I and resulting recommendations for Phase II	B. Petrovic, Georgia Tech
9	11:25	00:15	Review and discussion for the Phase II : current version of specifications, results to be required, template(s) for submitting results	B. Petrovic, Georgia Tech
10	11:40	00:20	Discussion	All participants
Moving forward				
11	12:00	00:15	Action items and schedule of benchmark activities	B. Petrovic, Georgia Tech
12	12:15	00:15	Publishing plan for already generated/collected results and for future results (to be generated)	B. Petrovic, Georgia Tech
13	12:30	00:20	Presentations on other related activities linked with the benchmark	All participants
14	12:50	00:10	Conclusions and closing remarks	B. Petrovic, Georgia Tech + C. Bory, NEA

HTGR T/H Benchmark

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	14:00	00:10	Welcome speech, introduction of participants and workshop objectives	A. Epiney, INL
2	14:10	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	14:20	00:20	HTGR T/H benchmark status	A. Epiney, INL
4	14:40	00:20	Ex 2b boundary conditions & discussion: Q/A timeline, etc	R. Kile, A. Epiney, INL

5	15:00	00:20	HTGR T/H Benchmark Problem 3, Exercise 2: Preliminary Code-to-data Comparison	T. Hua, ANL
6	15:20	00:20	Current Status of Problem 2 in the HTGR T/H Benchmark	R. Kile, INL
7	*15:40*	*00:30*	*Coffee Break*	
8	16:10	00:20	GAMMA+ results	S. N. Lee, KAERI
9	16:30	00:20	Problem 3 Exercise 1A-1C	M. Mannino, Numerical
10	16:50	00:20	CNL Status on Simulation of Lower Plenum Mixing Problem using CFD	K. Podila, CNL
11	17:10	00:20	Ex 3 introduction	A. Epiney, INL
12	17:30	00:20	HTTF and MHGTR Pressurized and Depressurized Conduction Cooling Scaling Assessment Via H2TS and DSS	R. Yoshiura, INL
13	17:50	00:10	Conclusions and closing remarks	A. Epiney, INL

Tuesday, 1 July 2025, Track 1

Topical session on Challenges in Modelling and Simulation of LW-SMRs

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:00	00:30	Challenges in Modelling and Simulation of SMRs	J. Lavarenne, Amentum
3	09:30	00:30	Challenges in neutronics simulation of SBF-PWR type SMRs	R. Vuiart, ANSR
4	10:00	00:30	Challenges in Modelling and Simulation of SMRs	L. Nutt, GE
5	10:30	00:30	Panel discussion	Moderator: T. Valentine, ORNL

Kick-Off Workshop for LW-SMR Benchmark

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	11:30	00:05	Opening Remarks	Kostadin Ivanov, NCSU
2	11:35	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	11:45	00:35	PRATIC Core benchmark (PWR-type)	G. Prulhiere, CEA
4	12:20	00:10	NCSU preliminary results for PW-SMR with Serpent	G. Delipei, P. Rouxelin, NCSU
5	12:30	00:10	LW-SMR BENCHMARK EDF R&D contribution	M. Tiberga, EDF
6	12:40	00:10	VTT's Statement of Interest on the LW-SMR Benchmark	A. Jambrina, VTT
7	12:50	00:10	KIT Tools and methos for PRATIC benchmark	L. Mercatali, V. Sanchez, G. Huaccho, KIT
8	13:00	01:00	Lunch	
9	14:00	00:10	TRACTEBEL Intention of Contribution and Expectation to LW-SMR Benchmarks	J. Zhang, C. Schneidesch, TRACTEBEL
10	14:10	00:10	Currents works on SMR at UPV	R. Miro, UPV
11	14:20	00:10	KIT Tools and methos for BWRX-300 benchmark	V. Sanchez, L. Mercatali, K. Zhang, A. Campos, KIT
12	14:30	00:15	Presentation of BW-SMR benchmark specifications	P. Rouxelin, G. Delipei, J. Zino, L. Nutt, NCSU, GEH
13	14:45	00:10	NCSU preliminary modelling and results for BW-SMR. Discussion on BW-SMR (output results and more)	P. Rouxelin, G. Delipei, NCSU
14	14:55	00:05	Discussion on BW-SMR (output results and more)	All

Kick-Off Workshop for TVA-WB1 Reactor Pressure Fluence Exercises

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	15:00	00:10	Welcome speech, introduction of participants and workshop objectives	K. Ivanov, NCSU and N. Garcia-Herranz, UPM
2	15:10	00:10	Updates from the NEA Secretariat	NEA Secretariat
2	15:20	00:15	Input and Update on Specifications	A. Haghighat, C. Friedman, A. Alpan, N. Garcia-Herranz, K. Ivanov, VT, ORNL, UPM, NCSU
3	15:35	00:25	Coffee Break	
4	16:00	00:20	Input and Update on Specifications	N. Garcia-Herranz, A. Alpan, C. Friedman, A. Haghighat, K. Ivanov, UPM, ORNL, VT, NCSU
5	16:20	00:10	VTT's Statement of Interest on the TVA-WB1-RPVF Benchmark	A. Jambrina, VTT
6	16:30	00:15	Validation of ASNR Reactor ageing simulation scheme VACS	M. Brovchenko, ASNR
7	16:45	00:15	Neutron Source Term for TVA-WB1 Cycle 1 using the SEANAP System: Verification, Validation, and Nuclear Data-Induced Uncertainties	N. Garcia-Herranz, UPM
8	17:00	00:10	VERA source calculation for Exercise 8 of TVA WB1 benchmark	P. Rouxelin, T. Albagami, S. Palmtag, NCSU
9	17:10	00:15	RAPID-PV Fluence Calculation Approach	A. Haghighat, VT
10	17:25	00:15	HB Robinson Unit 2 Cycle 9 RPV Fluence Benchmark SINBAD Task Force Subgroup Status	A. Alpan, ORNL
11	17:40	00:10	ANS Standard Discussion	A. Haghighat, VT

Item ID	Start Time [UK]	Duration	Item Title	Speaker
12	17:50	00:10	EVEREST activities	N. Garcia-Herranz, UPM
13	18:00	00:10	Actions and Final Remarks	Coordinators and Secretariat

Tuesday, 1 July 2025, Track 2

HTGR T/H Benchmark (cont'd)

Item ID	Start Time [UK]	Duration	Item Title	Speaker
14	11:20	00:20	Representativity template	J. Barthle, University of Tennessee
15	11:40	00:20	UKNNL's contribution to HTGR T/H Benchmark (Lower Plenum Mixing, CFD)– Problem-1, Exercise-1	S. Graham, V. Ravindra, G. Reece , UKNNL
16	12:00	00:20	Status of VKI's contribution	L. K. Koloszar, Von Karman Institute
17	12:20	00:20	Status of OSU's contribution	B. Nakhnikian-Weintraub, OSU
18	12:40	00:20	Progress of NRG PALLAS towards the HTTF Benchmark	M. Hussain, NRG
19	13:00	00:10	Action items and schedule of benchmark activities - next workshop and plans	A. Epiney, INL + NEA Secretariat

LFR Benchmark - TH Stage

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	14:00	00:10	Welcome speech, introduction of participants and workshop objectives	F. Lodi, ENEA

Item ID	Start Time [UK]	Duration	Item Title	Speaker
2	14:10	00:10	Updates from the NEA Secretariat	NEA Secretariat
2	14:20	00:30	Overview of benchmark status and specifications	F. Lodi, ENEA
3	14:50	00:20	DNS data phase I	D. Trane, Unimore
4	15:10	00:20	Status of ENEA activities for phase I	R. Da Via', ENEA
5	*15:30*	*00:30*	*Coffee break*	
6	16:00	00:20	University of Pisa activities on Phase I: modelling and results	A. Pucciarelli, University of Pisa
7	16:20	00:20	LFR Thermal-Hydraulics Benchmark: Phase I Modeling and Results	A. Maroni, A. Abarca, M. Avramova, NCSU
8	16:40	00:20	Updates on VKI's status	M. Faruoli, VKI
9	17:00	00:20	Preliminary Thermal-hydraulic Analysis of Proposed Simplified Test Blanket Module (TBM) as a Subcritical Reactor Driven by Fusion Neutrons	S. K. Mousavibalgehshiri, F. Devia, F. Panza, G. Lomonaco, University of Genova
10	17:20	00:30	Action items and review of schedule of benchmark activities - next workshop (LFR-5) and plans	NEA Secretariat, All
11	17:50	00:10	Conclusions and closing remarks	F. Lodi, ENEA

Wednesday, 2 July 2025, Track 1

UAM LWR: Benchmark for Uncertainty Analysis in Best-Estimate Modelling for Design, Operation and Safety Analysis of Light Water Reactors

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:00	00:05	Welcome speech, introduction of participants and workshop objectives	K. Ivanov, NCSU
2	09:05	00:10	Introductory Remarks and Updates from the OECD/NEA	NEA Secretariat

Item ID	Start Time [UK]	Duration	Item Title	Speaker
3	09:15	00:05	WPRS LWR-UAM Benchmark NSE Issue	F. Rahnema, GA Tech , K. Ivanov , NCSU
4	09:20	00:25	Uncertainty assessment process applied to the coupled simulation of a Main Steam Line Break transient in a French 1300MWe reactor	P. Olita, CEA
5	09:45	00:20	LWR-UAM Phase II and III specifications update	G. Delipei, M. Avramova, K. Ivanov, NCSU
6	10:05	00:10	Overview of SINUS-3 educational initiative	K. Ivanov, O. Buss
7	10:15	00:25	Description of SINUS-3 exercises	P. Rouxelin, A. Abarca, G. Delipei, NCSU , B. Vezzoni, CEA
8	10:40	00:15	Summary of SINUS Participants Results Presentation	SINUS Team
9	10:55	00:05	Closing remarks on SINUS and future educational initiatives	K. Ivanov, NCSU
10	11:00	00:30	Coffee Break	
11	11:30	00:15	Application of Uncertainty Analysis Methods to Safety Analysis of CANDU Reactors	D. Novog, McMaster University
12	11:45	00:15	An Uncertainty Analysis of the Hydrogen production for a Station Blackout Accident in UNPP for WWER-1000 Using MELCOR 1.8.5	K. Naffaa, O. Balashevskyi, Energoatom
13	12:00	00:15	NCSU activities related to LWR-UAM	P. Rouxelin, A. Abarca, G. Delipei, K. Ivanov, M. Avramova, NCSU
14	12:15	00:15	RMC Code Upgrade: Integrated Sensitivity and Uncertainty Analysis Toolkit for Monte Carlo Simulations Benchmark for LWR-UAM	J. Zhang, Tsinghua University
15	12:30	00:15	Uncertainty Quantification of Steady State and Depletion Calculations	D. Lee, UNIST

Item ID	Start Time [UK]	Duration	Item Title	Speaker
16	12:45	00:10	Roundtable discussions, Action Items, Work Plan, and Schedule	All
17	12:55	00:05	Closing workshop remarks	K. Ivanov, NCSU

UAM SFR: Subgroup on Uncertainty Analysis in Modelling (UAM) for Design, Operation and Safety Analysis of Sodium-cooled Fast Reactors (SFR-UAM)

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	14:00	00:05	Welcome speech, introduction of participants and workshop objectives	L. Buiron, CEA
2	14:05	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	14:15	00:10	Update on Phase I and II	L. Buiron, CEA
4	14:25	00:05	Prospect and survey for Phase III	All
5	14:30	00:20	TRACTEBEL's Analysis of Sodium-Cooled Fast Reactors (SFR) Using CTF Software	J. Vanderwaeren, L. Rueda, C. Schneidesch and A. Sabater, Tractebel-ENGIE
6	14:50	00:20	SEFOR Subchannel Simulation with SURET	Z. István Böröczki, HUN-REN Centre for Energy Research
7	15:10	00:20	Update on the SEFOR benchmark phase II	E. Garcia Cervantes, L. Buiron, CEA
8	*15:30*	*00:30*	*Coffee break*	
9	16:00	00:20	SEFOR Benchmark Phase 1: Progress, Paper in Preparation, and possible further activities	E. Garcia Cervantes, L. Buiron, CEA

10	16:20	00:20	Initial SEFOR Core I-E and Core I-I Doppler Reactivity Feedback Validation using DOE NEAMS Tools	A. Abdelhameed, ANL
11	16:40	00:20	Validation of Reactivity Feedback Calculations for Sodium Fast Reactors Using SEFOR Experimental Data	Y. Cao, ANL
12	17:00	00:15	Roundtable, discussion on Benchmark Exercises, Papers and Phases	All
13	17:15	00:05	Closing workshop remarks	L. Buiron, CEA

Wednesday, 2 July 2025, Track 2

LFR Benchmark - Neutronics Stage

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:00	00:10	Welcome speech, introduction of participants and workshop objectives	F. Lodi, ENEA
2	09:10	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	09:20	00:25	Overview of results submission	F. Lodi, ENEA
4	09:45	00:05	RATEN ICN status update	C. Margeanu, RATEN ICN
5	09:50	00:15	NCSU’s Modeling and Simulation on LFR Assembly and Super-cell Neutronics for Benchmark exercises	K. Ivanov, NCSU
6	10:05	00:15	CEA results	L. Buiron, CEA
7	10:20	00:15	SCK CEN status update	P. Romojaro, SCK-CEN
8	10:35	00:20	Action items and review of schedule of benchmark activities - next workshop (LFR-5) and plans	NEA Secretariat, All
9	10:55	00:05	Conclusions and closing remarks	F. Lodi, ENEA

C5G7-TD: Deterministic Time-Dependent Neutron Transport Benchmark without Spatial Homogenisation

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	11:30	00:05	Welcome speech, introduction of participants and workshop objectives	J. Hou, NCSU
2	11:35	00:05	Updates from the NEA Secretariat	NEA Secretariat
3	11:40	00:10	Overview and Status of C5G7-TD Benchmark Activities	J. Hou, NCSU
4	11:50	00:15	Progress in Transient Coupling Calculation Research based on RMC	G. Liu, Tsinghua University
5	12:05	00:20	Development of Time-Dependent Random-Ray Methods and Benchmarking on C5G7-TD	M. Kraus, University of Cambridge
6	12:25	00:10	Status of contribution to the C5GT-TD HEX OECD/NEA Benchmark	B. Vezzoni, CEA
7	12:35	00:15	Preliminary Results and Preparations for C5G7-TD Part C: VVER-440	J. Zert, GRS
8	12:50	00:15	New developments at NC State related to the C5G7-TD Benchmark	K. Ivanov, NCSU
9	*13:00*	*01:00*	*Lunch break*	
10	14:00	00:15	Update on Phase I Specification and Results	K. Nguyen, NCSU
11	14:15	00:20	Update on Phase II-2 Specification and Preliminary Results	J. Hou, NCSU
12	14:35	00:15	Roundtable Discussion on Benchmark Exercises and Deliverables	All
13	14:50	00:10	Action Items, Schedule of Benchmark Activities and Plans	J. Hou, NCSU

Topical session on Challenges in Modelling and Simulation of Reactor Transients

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	15:00	00:05	Welcome speech	NEA Secretariat
2	15:05	00:25	Selection-Driven Evolutionary Population Control for Kinetic Monte Carlo Variance Reduction	M. Skretteberg, P. Cosgrove, Cambridge University
3	15:30	00:25	Continuous Energy Kinetics Solutions for Benchmarking Time Dependent Transport Methods	F. Rahnema, GA Tech
4	*15:55*	*00:30*	*Coffee break*	
5	16:25	00:25	Modelling and Simulation of Transients of Thermal Molten Salt Reactors	L. Bures, Saltfoss
6	16:50	00:25	RAPID's Time-Dependent Algorithm (tRAPID) and its V&V	A. Haghighat, Virginia Tech
7	17:15	00:25	Critical perspective on the UAM and EGMUP transient benchmark studies	E. Ivanov, ASNR
8	17:40	00:20	Panel discussion	Moderator: V. Raffuzzi, Local chair

Thursday, 3 July 2025, Track 1

TVA-WB1 Multiphysics Benchmark

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:00	00:10	Welcome speech, introduction of participants and workshop objectives	K. Ivanov, NCSU
2	09:10	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	09:20	00:10	Summary of TVA-WB1-4	P. Rouxelin, NCSU

Item ID	Start Time [UK]	Duration	Item Title	Speaker
4	09:30	00:30	Benchmark Specification Updates, Output Templates Discussion.	P. Rouxelin, T. Albagami, NCSU
5	10:00	00:30	Comparison of participants results	T. Albagami, P. Rouxelin, NCSU
7	10:30	00:30	Updated results of the calculation of TVA Watts Bar Unit 1 benchmark using the ARCADIA code system	V. Jauregui Chavez, Framatome
8	*11:00*	*00:30*	*Coffee Break*	
9	11:30	00:30	Update on WB1 progress at EDF Energy UK	S. Collyer, P. Bryce, EDF - UK
10	12:00	00:30	CEA Contribution to TVA WB1 Benchmark	B. Vezzoni, CEA
11	12:30	00:30	TVA WB1 NCSU Results	T. Albagami, P. Rouxelin, NCSU
12	*13:00*	*01:00*	*Lunch*	
13	14:00	00:10	New calculations on Watts Bar 1 benchmark with Odyssée advanced scheme	D. Kerdraon, EDF
14	14:10	00:50	Roundtable discussions, Action Items, Work Plan, and Schedule	All
15	15:00	00:15	WPRS TVA WB1 Benchmark NSE Issue	F. Rahnema, Georgia Tech, K. Ivanov, NCSU
16	15:15	00:15	Closing Remarks	P. Rouxelin, NCSU

EGMUP Task Force on Fuel Temperature Assumptions in Depletion Analyses

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	16:00	00:20	Welcome speech, introduction of participants and workshop objectives	G. Delipei, NCSU

Item ID	Start Time [UK]	Duration	Item Title	Speaker
2	16:20	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	16:30	00:20	Doppler Effective Temperature Correlations Uncertainty Assessment using Monte Carlo Simulations for Depletion	G. Delipei, NCSU
4	16:50	00:20	Presentation from Jacobs	Jacobs (TBD)
5	17:10	00:20	Refined methodology for modelling fuel Doppler temperature	S. Di Pasquale, NINE
6	17:30	00:20	Roundtable discussion on benchmark exercises, deliverables, and future activities	All
7	17:50	00:10	Action Items, Work Plan, Schedule, and Closing Remarks	All

Thursday, 3 July 2025, Track 2

LMFR T/H: Liquid Metal Fast Reactor Core Thermal-Hydraulics Benchmark

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:00	00:10	Welcome speech, introduction of participants and workshop objectives	M. Avramova, NCSU
2	09:10	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	09:20	00:25	Presentation of LMFR-TH benchmark specifications updates	M. Avramova, NCSU
4	09:45	00:25	Summary of Phase I results and draft report	A. Abarca, D. Holler, M. Avramova, NCSU
5	10:10	00:20	Tractebel-ENGIE contribution to Phase II - Study of the Experimental THORS facility Using CTF	A. Sabater, J. Zhang, Tractebel-ENGIE
6	10:30	00:30	Thermal-Hydraulics Analysis of Sodium Cooled RTR using CTF	A. Abarca, NCSU

Item ID	Start Time [UK]	Duration	Item Title	Speaker
7	*11:00*	*00:30*	*Coffee Break*	
8	11:30	00:30	Updates on the Phase II Output templates and NCSU CTF preliminary results	M. Avramova, A. Abarca, NCSU
9	12:00	00:20	Hi2Lo opportunities in Phase II	A. Abarca, M. Avramova, NCSU
10	12:20	00:20	Uncertainty analysis of Phase II and Connection with SFR-UAM benchmark	K. Ivanov, M. Avramova, NCSU
11	12:40	00:20	Round Table and Closing Remarks	M. Avramova, NCSU

MSR Session

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	14:00	00:30	Saltfoss status and need	E. Klinkby, Saltfoss
2	14:30	00:30	Benchmark needs for MSR modeling and simulation	P. Britt, T. Cisneros, TerraPower, M. Avramova, K. Ivanov, NCSU
3	15:00	00:30	CORE POWER - MSR M&S Progress & Challenges for Maritime Applications	I. Kourasis, Core Power
4	15:30	00:30	Coffee break	
5	16:00	00:30	Proposal for multi-step multi-physics benchmark for CLFMSR	K. Ivanov, NCSU
6	16:30	00:45	Discussion on future benchmark activity	All
7	17:15	00:15	Conclusions and final remarks	All + NEA Secretariat
8	17:30		Closing	

Thursday, 3 July 2025, Track 3

CTF Training

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:00	00:10	Opening Remarks	A. Abarca, M. Avramova, NCSU
2	09:10	00:50	CTF Repository and configuration. Training environment	A. Abarca, NCSU
3	10:00	01:00	CTF input deck and pre-processors.	A. Abarca, NCSU
4	*11:00*	*00:30*	*Coffee Break*	
5	11:30	00:45	Hands on training – Exercise I (hexagonal geometry)	A. Abarca, NCSU
6	12:15	00:30	Hands on training – Exercise II (parallel simulation)	A. Abarca, NCSU
7	12:45	00:15	Round Table and Closing Remarks	A. Abarca, M. Avramova, NCSU

CTF User Group

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	14:00	00:15	Opening Remarks, User Group Developments, Code Agreements and Licenses	M. Avramova, K. Ivanov, NCSU
2	14:15	00:20	Modelling the coolant properties and fuel temperature based on CTF calculations for full core PWR coupled analysis by using Machine Learning	M. Papadionysiou, EPFL/PSI , G. Delipei NCSU
3	14:35	00:20	Overview of ORNL Activities with CTF	R. Salko, ORNL
4	14:55	00:20	LMFR-Phase II benchmark M&S with CTF	A. Sabater, Tractebel-ENGIE
5	15:15	00:20	Rolls-Royce SMR CTF applications	A. White, Rolls-Royce SMR
6	15:35	00:20	Overview of GRS activities with CTF	Y. Perin, GRS
7	15:55	00:15	Coffee Break	

Item ID	Start Time [UK]	Duration	Item Title	Speaker
8	16:10	00:20	Implementation and Testing of High Burnup Fuel. Performance Models in CTF.	C. Cheron, NCSU
9	16:30	00:20	CTF / Serpent Coupling Interface and Applications	A. Abarca, NCSU
10	16:50	00:20	CTF V&V for VVER Core Thermal-Hydraulics and Multi-Physics Modelling and Simulation	A. Abarca, NCSU , N. Kolev, INRNE
11	17:10	00:20	Rostov-2 benchmark contributions with CTF, CTF / Serpent and CTF/PARCS	Y. Kutlu, NCSU
12	17:30	00:20	Summary of Developments and Applications at NCSU	A. Abarca, NCSU
13	17:50	00:10	Round Table and Closing Remarks	M. Avramova, NCSU

Friday, 4 July 2025, Track 1

MPCMIV - Multi-physics Pellet Cladding Mechanical Interaction Validation Benchmark

Item ID	**Start Time [UK]**	**Duration**	**Item Title**	**Speaker**
1	09:00	00:15	Welcome speech, introduction of participants and workshop objectives	Coordinators
2	09:15	00:15	Updates from the NEA Secretariat	NEA Secretariat
3	09:30	00:20	Status and last updates on MPCMIV benchmark specifications and cross-section library	G. Delipei, NCSU, D. De Luca, S. Di Pasquale, A. Petruzzi , NINE
4	09:50	00:40	NCSU Proposal on Transient Multi-Physics Modeling Validation Guidelines	G. Delipei
5	10:30	00:30	Roundtable discussion on Transient Multi-Physics Modeling Validation and Handbook/Database	All
6	*11:00*	*00:30*	*Coffee Break*	

Item ID	Start Time [UK]	Duration	Item Title	Speaker
7	11:30	01:00	Roundtable discussion on benchmark exercises, deliverables, and future activities	All
8	12:30	00:20	OECD/NEA MPCMIV Benchmark - Action Items, Work Plan, and Schedule	G. Delipei, NCSU, A. Petruzzi, NINE
9	12:50	00:10	Closing workshop remarks	G. Delipei, NCSU, A. Petruzzi, NINE

Friday, 4 July 2025, Track 2

Rostov-2 VVER-1000 Benchmark

Item ID	Start Time [UK]	Duration	Item Title	Speaker
1	09:00	00:10	Welcome speech, introduction of participants and workshop objectives	Coordinators
2	09:10	00:10	Updates from the NEA Secretariat	NEA Secretariat
3	09:20	00:15	Summary of Rostov-2 Workshop 6	P. Rouxelin, NCSU
4	09:35	00:30	Benchmark Specification Updates, Output Templates Discussion	P. Rouxelin, NCSU
5	10:05	00:30	Rostov-2 VVER-1000 HZP benchmark with Helios/DYN3D and Serpent at Framatome	A. Kawalec, AGH University of Krakow
6	10:35	00:30	Results of Phase 1, Exercise 3 calculation of OECD/NEA Rostov-2 benchmark	J. Hádek, R. Meca, ÚJV Rez
7	*11:05*	*00:25*	*Coffee Break*	
8	11:30	00:30	Validation of SERPENT/SUBCHANFLOW using Beginning-of-Transient Experimental Data from Rostov-2 VVER-1000 Core at 36.37 EFPD	N. Beydogan, KIT
9	12:00	00:30	High-Fidelity Modeling and Simulation of Rostov-2 with Serpent2/CTF Coupled Code	Y. Kutlu, NCSU
10	12:30	00:20	NCSU PARCS/CTF Results	A. Abarca, NCSU

Item ID	Start Time [UK]	Duration	Item Title	Speaker
11	12:50	00:10	Discussions / Conclusions & Closing Remarks	P. Rouxelin, NCSU