



The Abdus Salam
**International Centre
for Theoretical Physics**



Joint IAEA-ICTP Workshop on Reactor Physics, Thermal Hydraulics and Plant Design Engineering of Small Modular Reactors (SMR4212)

Trieste, Italy, 13 – 17 April 2026

Technical Programme

Directors:

Alina Constantin and Hadid Subki
IAEA, Austria

Day-1 Monday 13 April 2026: Sessions on High Temperature Gas Reactors (HTGRs)

Time	Topic of the Session	Speaker / Instructor
09:00 – 10:00	Opening Session Introduction of participants and speakers	Natasa Stojic (ICTP, Host) Adriana Pinto (ICTP) Alina Constantin (IAEA) Hadid Subki (IAEA) All participants
10:00 – 10:40	<u>Keynote Session (virtual):</u> Advances in Nuclear Power Technology Development and their Non-Electric Applications: Status in Member States and IAEA Programmatic Activities	Frederik Reitsma Head, IAEA Nuclear Power Technology Development Section (NENP/NPTDS)
10:40 – 11:00	Morning Break	
11:00 – 11:40	<u>HTGR-Session 1:</u> Overview of global HTGR technology developments	Alina Constantin IAEA/NENP/NPTDS
11:40 – 12:20	<u>HTGR-Session 2:</u> Plant engineering	Chunyu Liu Technical University of Munich (TUM), Germany
12:20 – 13:30	Lunch Break	

Time	Topic of the Session	Speaker / Instructor
13:30 – 14:10	<u>HTGR-Session 3:</u> Reactor physics & Thermal fluid dynamics	Chunyu Liu TUM, Germany
14:10 – 14:50	<u>HTGR Session-5:</u> HCP – General introduction	Andre Xhonneux International Expert (Germany)
14:50 – 15:10	Afternoon Break	
15:10 – 15:30	Update on the new HCP version developed by TUM	Chunyu Liu TUM, Germany
15:30 – 17:30	<u>HTGR Session-7:</u> HCP Tutorial 1 - Basics	Andre Xhonneux and Chunyu Liu
17:30 – 17:40	Summary of Day-1	Alina Constantin IAEA/NENP/NPTDS

Day-2 Tuesday 14 April 2026: Microreactors Design and Technology Development

Time	Topic of the Session	Speaker / Instructor
09:00 – 10:20	HCP Tutorial (cont.)	Andre Xhonneux and Chunyu Liu
10:20 – 10:40	Group Photo & Morning Break	
10:40 – 11:20	Technology and Application of HTGR in China	Mr Donghui Wang, Chinergy, China
11:20 – 12:00	<u>Microreactors Session-1 (Virtual):</u> Global progress in the design and technological development of micro nuclear reactors: prospects and challenges	Dandara Araujo da Silva IAEA/NENP/NPTDS
12:00 – 12:40	<u>Microreactors Session-2:</u> Micro reactor applications, transportation, main technology options and key design features (Part I)	Fausto Francheschini Westinghouse Nuclear, Italy
12:40 – 13:40	Lunch Break	
13:40 – 14:20	<u>Microreactors Session-3:</u> Micro reactor applications, transportation, main technology options and key design features (Part II)	Fausto Francheschini Westinghouse Nuclear, Italy

Time	Topic of the Session	Speaker / Instructor
14:20 – 15:00	<u>Microreactors Session-4:</u> Focus on heat-pipe based micro-reactors: design and analysis, manufacturing, demonstration and licensing (Part I)	Fausto Francheschini Westinghouse Nuclear, Italy
15:00 – 15:20	Afternoon Break	
15:20 – 16:00	<u>Microreactors Session-5:</u> Focus on heat-pipe based micro-reactors: design and analysis, manufacturing, demonstration and licensing (Part II)	Fausto Francheschini Westinghouse Nuclear, Italy
16:00 – 16:40	<u>Plant Design Engineering-1</u> IAEA Technical Guidance on Electrical Grid Interface with NPPs, including SMRs	Qun (Annie) YU IAEA Nuclear Power Technology Development Section (<i>virtual</i>)
16:40 – 17:00	Summary of Day-2	Alina Constantin Hadid Subki IAEA/NENP/NPTDS
18:30	Welcome reception	All

Day-3 Wednesday 15 April 2026: Molten Salt Reactors Technology Development

Time	Topic of the Session	Speaker / Instructor
09:00 – 09:40	Overview of global technology development for Molten Salt Reactors (MSRs) and Deployment Status	Vladimir Artisiuk IAEA/NENP/NPTDS
09:40 – 10:20	Early MSR Projects: Molten Salt Fuels and Technological Gaps	Alexander Bychkov International Expert, Austria
10:20 – 10:40	Morning Break	
10:40 – 11:20	MSR Fuel. Development status (Virtual)	Anzhelika Khaperskaia IAEA Nuclear Fuel Cycles and Materials Section
11:20 – 12:00	Modelling challenges of MSRs with Reactor Physics & Thermal Hydraulics - installation and troubleshoots of the OpenFOAM	Tommaso Pernatsch Politecnico di Milano, Italy
12:00 – 12:40	General introduction into OnCore. Getting Access to OpenFOAM.	Tommaso Pernatsch Politecnico di Milano,

Time	Topic of the Session	Speaker / Instructor
	Installation of Solver	Italy
12:40 – 13:40	Lunch Break	
13:40 – 15:00	A general overview of OpenFOAM and example application to MSRs	Tommaso Pernatsch Politecnico di Milano, Italy
15:00 – 15:20	Afternoon Break	
15:20 – 16:00	An example application of OpenFOAM to MSRs	Tommaso Pernatsch Politecnico di Milano, Italy
16:00 – 16:40	Example application of OpenFOAM to MSRs	Tommaso Pernatsch Politecnico di Milano, Italy
16:40 – 17:00	Summary of Day-3	Vladimir Artisiuk IAEA/NENP

Day-4 Thursday 16 April 2026: Advances in SMR Designs, Integral PWR, Plant Design Engineering and SMR Industrial Applications

Time	Topic of the Session	Speaker / Instructor
09:00 – 09:40	<u>SMR Session-1:</u> Advances in SMR Design and Technology Development – Land based and Maritime-applications	Hadid Subki IAEA/NENP
09:40 – 10:20	<u>SMR Session-3 (virtual):</u> Reactor Physics Fundamental for Small Modular Reactors (Part-1)	Haseeb ur Rehman International Expert Blykalla, Sweden
10:20 – 10:40	Morning Break	
10:40 – 11:20	<u>SMR Session-3 (virtual):</u> Reactor Physics Fundamental for Small Modular Reactors (Part-2)	Haseeb ur Rehman International Expert Blykalla, Sweden
11:20 – 12:00	<u>SMR Session-4:</u> Reactor Thermal-Hydraulics and System Engineering of integral PWR type SMRs	Hadid Subki IAEA/NENP/NPTDS
12:00 – 12:40	<u>SMR Session-5 (Virtual):</u> Approaches to the Operation of SMRs - based upon IAEA-TECDOC-2110	Jaehun JUNG

Time	Topic of the Session	Speaker / Instructor
		IAEA/NENP/Nuclear Power Engineering Section (NPES)
12:40 – 13:40	Lunch Break	
13:40 – 14:20	<u>SMR Session-6 (virtual):</u> Introduction to the IAEA Physics Based Simulator for i-PWR SMR	Katya Slavcheva Technical Lead, AWCR IAEA/NENP/NPTDS
14:20 – 15:00	<u>SMR Session-6 (virtual):</u> Plant Layout Arrangement and Design Engineering of SMR	Adil Rashid IAEA/NENP/NPES
15:00 – 15:20	Afternoon Break	
15:20 – 16:00	<u>Integrated Energy System (virtual):</u> Small Modular Reactors for Non-Power Applications and Integrated Energy Systems	Hossam Gaber Ontario Tech University, Canada
16:00 – 17:15	Participants' presentation	All participants (each 5' presentation of research activities)
17:15 – 17:30	Summary of Day-4	Hadid Subki IAEA/NENP

Day-5 Friday 17 April 2026: Exams, Miscellaneous Session, Closing Ceremony

Time	Topic of the Session	Speaker / Instructor
08:30 – 09:00	Quiz	
09:00 – 09:40	Global Nuclear Energy Scenarios in INPRO Studies and Role of SMRs	Alexander Bychkov International Expert
09:40 – 10:20	Nuclear Fuel and Fuel Cycle Aspects for SMRs and Innovative Reactors	Alexander Bychkov International Expert
10:20 – 10:40	Morning Break	
10:40 – 11:00	<u>Miscellaneous Session:</u> Status on Updating IAEA Technology Roadmap for SMR Deployment	Vladimir Artisiuk IAEA/NENP/NPTDS
11:00 – 11:45	Feedback of the participants	All participants
11:45 – 12:15	Handing in Certificate and Closing Ceremony	Natasa Stojic (ICTP) Alina Constantin - IAEA
12:15 – 12:30	Closing Remarks	Natasa Stojic (ICTP) Alina Constantin – IAEA Hadid Subki – IAEA
12:30	Workshop Adjourn	