IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Interregional Workshop on Aspects of Modelling and Simulation in Gen-IV Type SMR Developments

Hosted by

The Government of the Russian Federation

through the

State Atomic Energy Corporation 'Rosatom'

Moscow, Russian Federation

03 to 07 November 2025

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Information Sheet

Purpose

The purpose of the event is to discuss and share experience on the novel approaches in physical models and simulation tools for innovative Small Modular Reactors (SMRs), within the framework of the six reactor concepts outlined by the Generation IV International Forum (GIF).

Working Language

The event will be conducted in English

Deadline for Nominations

Nominations received after 30 July 2025 will not be considered.

Project Background

To meet the growing demand for energy and to mitigate global climate challenge, the interest in Small and Medium sized or Modular Reactors (SMRs) and Micro-Reactors (MRs) is growing, especially with regions inaccessible to large electricity grids and regions with smaller electricity grids that need technology options deployed incrementally to closely match increasing energy demand. SMRs and MRs are also viable options for users that need beyond electricity supply, e.g., district heating, desalination, industrial process heat, as well as hydrogen. The purpose of the project is to provide broad support to Member States in the development and deployment of SMRs and MRs. The project provides a broad range of forum to enable effective capacity building through training and technology transfer activities on all aspects of SMR development. The project also covers the emerging MRs, the deployment of SMRs for electric and non-electric applications, and the coupling of such nuclear systems with renewables in integrated energy systems. The aim of the project is to enable national stakeholders to gain enhanced understanding on key characteristics of SMR and MR technologies and their applications, and to formulate, in line with international safety standards, countries' specific legal and regulatory frameworks, and generic user requirements and criteria for SMR technologies.

Through established Agency forums and mechanisms, including the Technical Working Group (TWG) for SMRs, Member States (MS) have requested that the IAEA provide technical training on recent advances in the development of innovative SMRs, including the conceptual designs introduced and investigated by the Generation-IV International Forum (GIF). There are several different SMR designs currently under development that use the basic principles formulated by GIF for next-generation innovative reactors. For example, a fast neutron reactor, in addition to its efficient fuel utilization, can operate either as a breeder to produce more fissile fuel or as a burner of plutonium and/or long-lived minor actinides. Combining this capability with the flexibility benefits of SMR power generation could yield additional advantages. However, it also introduces new challenges — technological and others — such as the need to adjust the physical and mathematical models used to simulate SMRs and their plant components.

Scope and Nature

This training course will include a combination of classroom lectures, discussions, and interactive exercises. It will be conducted as a series of presentations by IAEA staff, international and local experts. The programme will also include discussions, case studies, peer-to-peer exchange of good practices, and working sessions on related topical issues.

Expected outputs

The expected outputs of the training course are improved knowledge and understanding of novel physical and mathematical models, simulation techniques and tools in the following areas:

- simulations of thermal hydraulics using system codes, subchannel analysis, and CFD codes;
- neutronics simulations with Monte Carlo and deterministic codes;
- multiphysics and multiscale simulations of SMRs;
- validation and verification of computer codes; and
- open source simulation tools for nuclear reactors and power plant simulations.

Participation

The event is open to up to 25 participants from the following Member States participating in the TC Project INT/2/023:

Algeria; Argentina; Armenia; Azerbaijan; Belarus; Bolivia; Brazil; Bulgaria; Croatia; Egypt; El Salvador; Estonia; Ethiopia; Georgia; Ghana; Greece; Guatemala; Hungary; Indonesia; Iran; Jamaica; Jordan; Kazakhstan; Kenya; Kuwait; Kyrgyzstan; Latvia; Libya; Lithuania; Madagascar; Malaysia; Mexico; Mongolia; Morocco; Myanmar; Namibia; Nigeria; Pakistan; Peru; Philippines; Poland; Qatar; Romania; Rwanda; Saudi Arabia; Senegal; Serbia; Singapore; Slovakia; Slovenia; Spain; Sri Lanka; Sudan; Thailand; Tunisia; Türkiye; United Republic of Tanzania; Uzbekistan; Zambia. *The selected participants to attend will be funded through INT2023.*

Belgium; Canada; China; Czech Republic; Denmark; Finland; France; Italy; Japan; Korea, Republic of; Russian Federation; South Africa; Spain; United Kingdom; United States of America. *The participants to attend will be cost free to IAEA.*

Participants' Qualification and Experience

This course is targeted to representatives of the Member States' governments, NEPIOs, regulatory bodies, and those of the current or future owner/operator organizations, particularly those with responsibility for stakeholder involvement and/or public communication. It is expected that participants are managers or implementing staff (e.g. Public Information Officers) with direct responsibilities in stakeholder involvement, public communication, media relations, public relations, etc.

Candidates are requested to include a summary of how this training will provide direct benefit to their current or future job position in their application.

Individuals who participated in this course or a similar course in the past three years should not apply.

Participants are encouraged to complete the following IAEA E-Learning Modules before joining the course:

Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (https://intouchplus.iaea.org) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (https://websso.iaea.org/IM/UserRegistrationPage.aspx) before proceeding with the event application process below.
2. On the InTouch + platform, the candidate must:
    a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
    b. Search for the relevant technical cooperation event (**EVT2500405**) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

NOTE: Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline. **All nominations must include a scan of the candidate's first page of passport with photo.**

For additional support on how to apply for an event, please refer to the InTouch+ Help page. Any issues or queries related to InTouch+ can be addressed to InTouchPlus.Contact-Point@iaea.org.

Should online application submission not be possible, candidates may download the nomination form for the training course from the IAEA website.

NOTE: A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

Training on Basic Security in the Field (BSITF)

In order to comply with UN system-wide security measures, it is required that all training course participants complete the online security awareness training BSAFE (which replaces BSITF and ASITF), prior to traveling to locations where UN security phases are in effect. The aim of these course is to educate participants on how best to avoid or minimize potential dangers and threats, and to demonstrate what individuals can do if they find themselves in insecure situations. The course is available online (https://training.dss.un.org/course/category/6).

Once an individual has completed the training, he/she must go back to the main training page to receive the certificate. If the button to get the certificate is not immediately visible, please refresh the page. BSAFE is maintained by UNDSS; in case of problems with the system, please contact UNDSS through the "Contact Us" page on the training website (https://dss.un.org/dssweb/contactus.aspx).

This certificate is compulsory for any IAEA-supported activity and should be submitted, along with the Nomination Form, through the competent authority in your country (NLO). Copies of the certificate should be kept by the candidate for his/her records as the BSAFE certificate does not expire.

Administrative and Financial Arrangements

Nominating authorities will be informed in due course of the names of the candidates who have been selected and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants will receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses. They will also receive either a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the duty station through the IAEA's travel agency American Express, or a travel grant, or they will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

Disclaimer of Liability

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

Note for female participants

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

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