IAEA
International Atomic Energy Agency
Atoms for Peace and Development

International Conference on Research Reactors:
Achievements, Experience and the Way to a Sustainable Future

Dead Sea, Jordan
27 November – 1 December 2023

Organized by the

International Atomic Energy Agency (IAEA)

Hosted by the

Government of the Hashemite Kingdom of Jordan

through

Jordan Atomic Energy Commission (JAEC)

Announcement and Call for Papers

A. Background

The International Atomic Energy Agency (IAEA) has promoted and fostered exchange of scientific and technical information on research reactors for many years. An important mechanism for this exchange has been the periodic meetings, seminars, symposia and conferences organized by the IAEA. In recent years, the Agency has organized major international conferences on topics of interest to the research reactor community every four years. The last such meeting was the International Conference on Research Reactors: Addressing Challenges and Opportunities to Ensure Effectiveness and Sustainability, Buenos Aires, Argentina, November 2019.

Since the 1950s, research reactors have been centres of innovation and development for nuclear science and technology programmes around the world. Research reactors primarily produce neutrons, rather than generate power, for utilization in research, education and training, as well as for other applications in areas such as industry, medicine and agriculture. In addition to the currently operating research reactors, a number of new research reactor programmes are being planned and developed. Feedback from IAEA activities demonstrates the importance of highlighting the achievements of research reactors and exchanging experiences that contribute to a sustainable future where research reactors continue to positively impact society. Ensuring safety, security, adequate resources, managing ageing of the facilities and strategic planning, all lead to effective and sustainable operation and utilization. Challenges include effective leadership and management, spent fuel management, and the need to establish nuclear infrastructure for new research reactor programmes.

In the above context, IAEA is organizing this international conference on research reactors, which will be hosted by the Government of the Hashemite Kingdom of Jordan through the Jordan Atomic Energy Commission (JAEC). Like earlier IAEA conferences on research reactors, the forthcoming one will play a vital role in the national and international efforts to ensure maximization of benefits to society, with a primary focus on the achievements, experience and the way to a sustainable future for these facilities.

B. Objectives

The objective of the Conference is to foster exchange of information on operating and planned research reactors. It is a forum in which reactor operators, managers, users, regulators, designers and suppliers can share experience in all relevant areas including safety, security, operation, fuel front and back-end options, utilization, infrastructure and capacity building, and management, and showcase how achievements and experience attained with research reactors in these areas, contribute to a sustainable future.

C. Format and Topics

A preliminary programme will be made available on the conference web page (see Section M) well in advance of the conference. The final programme and the *Book of Extended Synopsis* will be available upon registration at the conference.

The conference will consist of an opening plenary session, 7 topical sessions, and a closing plenary session. In addition, a forum on IAEA activities and services on enhancing research reactor safety,

security, and operation and maintenance as well as on utilization of high-power research reactors in material testing are scheduled as conference side meetings.

To meet its objectives, the conference will include:

- Presentations by the invited keynote speakers

- Presentations to highlight specific areas within each topical session and stimulate discussion among conference participants

- Posters presentations that present state-of-the-art information and knowledge in the topical area.

While most papers will focus on one of the principle topical areas below, authors are encouraged to consider integration with the other areas as applicable.

1) Utilization and Applications of Research Reactors

This session will cover the following topics:

- Achievements and experience in:
  - Production of radioisotopes for industry, medical diagnostics and cancer treatment.
  - Neutron beam research, including scattering, imaging, and cold neutron beams
  - Neutron transmutation doping
  - Neutron activation analysis
  - Material and fuel testing
  - Other applications, including new developments
- Strategies for effective and sustainable utilization, including regional and international cooperation
- Building research networks associated with new and existing research reactors
- Use of research reactors for development of innovative nuclear power technology, including SMRs, micro-reactors and fusion reactors.
- Use of research reactors to address climate change.
- Synergies and complementarities between small and large research reactors utilization programmes
- Utilization programmes of sub-critical assemblies
- Use of research reactors for education and training
- Member States experience from Integrated Research Reactor Utilization Review (IRRUR) missions

2) Research Reactor Operation and Maintenance

This session will cover the following topics:

- Achievements and experience in establishing effective operation programmes, (Core management, operating procedures, organizational effectiveness, etc.)
- Good practices and lessons learned in maintenance
- Ageing management programmes
- Asset management
- Methods and techniques of in-service inspections
- Experience with major repair, refurbishment, and upgrade projects
- Considerations for ultimate decommissioning in design and operation
- Management of the transition between operation and decommissioning
- Member States experience from Operation and Maintenance Assessment for Research Reactor (OMARR) and in-service inspection missions

3) New Research Reactor programmes

This session will cover the following topics:

- Strategy for accessing research reactor facilities, including new build
- Development of sustainable national nuclear infrastructure for new research reactor programmes
- Effective application of the IAEA Milestones Approach for new research reactor programmes. Relevant topics include:

    o Assessment of needs, development of user communities, stakeholders' involvement and strategic planning
    o Assessment of the national nuclear infrastructure and experience with the IAEA INIR-RR missions
    o Safety and security considerations in different phases of a research reactor project
    o Feasibility studies for new research reactor programmes
    o Development of the functional and technical requirements for new research reactors

- Proliferation resistance in the design of new research reactors
- Status reports on new research reactor programmes in progress, experience and lessons learned

4) Safety of Research Reactors

This session will cover the following topics:

- Experience in application of the IAEA Code of Conduct on the Safety of Research Reactors
- Experience with application of IAEA Safety Standards
- Regulatory oversight of research reactors, including licensing process and inspection programmes
- Leadership and management for safety
- Human factors in design and operation
- Training and qualification programmes
- Development and update of safety documentation
- Safety analysis, including analysis of design extension conditions, approaches and methods
- Ageing management and continued safe operation
- Safety in utilization
- Safety of modifications and upgrades, including digital instrumentation and control systems
- Operational radiation protection and waste management
- Operating experience feedback, including during pandemic
- Periodic safety reviews, and implementation of identified safety upgrades
- Planning for decommissioning in design and operation phases
- Member States experience from Integrated Safety Assessment for Research Reactor (INSARR) missions

5) Security of Research Reactors

This session will cover the following topics:

- Experience with the application of IAEA Nuclear Security Recommendations
- Development of national regulatory framework and functions, including licensing, inspections, and enforcement of the nuclear security regime
- Risk based approach including threat assessment, design basis threat, risk management, graded approach and defence in depth
- Implementing and sustaining research reactor facility security systems:

- o Experience in planning, implementing, evaluating and sustaining physical protection system
- o Addressing emerging threats, including drone and cyber attacks
- o Developing and maintaining nuclear security plans, including computer security
- o Response and mitigation strategies
- Building a robust security culture
- Effective use of the Integrated Nuclear Security Support Plan (INSSP) process
- Experience with Integrated Physical Protection Advisory Service (IPPAS) missions

6) Research Reactor Fuel Management

This session will cover the following topics:

- In-core fuel management experience, related issues and lessons learned
- Qualification of new fuels for research reactors
- Fuel performance
- Fuel handling including safety and security aspects
- Strategies for spent fuel management, including wet and dry storage and transition from wet to dry, and alternatives to fuel reprocessing and repatriation
- HEU minimization efforts and experience from conversion projects

7) Common Management Considerations for Research Reactors

This session will cover the following topics:

- Integrated management systems
- Conduct of self-assessments and follow-up actions
- Development and use of performance indicators
- Interface between nuclear safety and security
- Use of a graded approach in application of common management considerations, including safety requirements and security recommendations
- Human resources development, including competence management, training, and succession planning
- Operational and experimental data management and preservation
- Configuration management
- Management of facilities in extended shutdown (safety, security, surveillance and maintenance)
- Experience with ongoing and recently completed decommissioning projects

Closing Session

The closing session will include a panel discussion which will summarize the principal observations made during the conference and address important issues raised by the audience. During this session, the Rapporteur of the conference and the session chairs will present summaries and highlights of session discussions as well as the conclusions and recommendations of the conference.

D. Contributed Papers and Interactive Presentations

Concise papers on issues falling within the topics outlined in Section C may be submitted as contributions to the conference. All papers, apart from invited papers, must present original work and should not have been published elsewhere.

(a)   Submission of extended synopses

Anyone wishing to present a paper at the conference is requested to submit first an extended synopsis between 600 and 800 words (not exceeding 2 pages including figures, tables, and references) in electronic format. The extended synopsis should give enough information on the contents of the proposed paper to enable the Programme Committee to evaluate it. Authors should state to which of the topics outlined in Section C their contribution relates.

Instructions on how to upload the extended synopses to the conference's web browser-based file submission system (IAEA-INDICO) will be available on the conference web page (see Section M) as of **1 February 2023**. The extended synopses **must** be submitted through this system by **28 April 2023**. No other form of submission will be accepted. In addition, authors must register through InTouch+ (see Section G). InTouch+ will automatically generate Participation Form (Form A) and Form for Submission of a Paper (Form B) which have to be submitted through InTouch+ to the required authority and further on to the IAEA. These forms need to reach the IAEA through InTouch+ by **28 April 2023**. In addition, the abstracts must be sent electronically to: RR-Conference-2023.Contact-Point@iaea.org.

Introductory and general matters should not be included.

IMPORTANT: The electronically received synopses will be considered by the Programme Committee only if above two forms have been received by the IAEA through InTouch+ by the given deadline.

(b)   Acceptance of papers for oral or poster presentation

The extended synopsis will be considered only if the Participation Form (Form A) and Form for Submission of a Paper (Form B) have been received by the above-mentioned deadline and through the established official channels.

A limited number of extended synopses will be selected for submission of a full paper and, consequently, for either oral or poster presentation, which should be delivered during the sessions of the conference.

Authors will be notified by **2 June 2023** as to whether their extended synopses have been accepted and, if so, whether the full papers should be delivered as oral or poster presentations.

Authors will be asked to provide their full-length papers (a maximum of eight pages) by **22 September 2023**. Guidelines and a template for the preparation and submission of full papers and posters will be made available on the conference web page. The full paper must be submitted through IAEA-INDCO system in the same way as the extended synopses.

The Secretariat reserves the right to exclude papers that do not comply with its quality standards or that do not apply to one of the topics outlined in Section C above.

(c)   Proceedings

The proceedings of the conference will be published by the IAEA and made available on the IAEA website soon after the conference. The proceedings will include the conference conclusions and recommendations, session summaries, and the full papers.

E. Participation and Registration

The conference is directed at a broad range of experts in the area of research reactors and aims to bring together the world's senior representatives from regulatory bodies, operating organizations, users, designers, suppliers, research organizations and other relevant stakeholders.

All persons wishing to participate in the symposium must be designated by an IAEA Member State or should be a member of an organization that has been invited to attend. The list of IAEA Member States and invited organizations is available on the symposium web page (see Section P).

Registration through the InTouch+ platform:

1. Access the InTouch+ platform (https://intouchplus.iaea.org):

- Persons with an existing NUCLEUS account can sign in here with their username and password;
- Persons without an existing NUCLEUS account can register here.

2. Once signed in, prospective participants can use the InTouch+ platform to:

- Complete or update their personal details under 'Basic Profile' (if no financial support is requested) or under 'Complete Profile' (if financial support is requested) and upload the relevant supporting documents;
- Search for the relevant event (EVT2102344) under the 'My Eligible Events' tab;
- Select the Member State or invited organization they want to represent from the drop-down menu entitled 'Designating authority' (if an invited organization is not listed, please contact Conference.Contact-Point@iaea.org);
- If applicable, indicate whether a paper is being submitted, and complete the relevant information;
- If applicable, indicate whether financial support is requested, and complete the relevant information (this is not applicable to participants from invited organizations);
- Based on the data input, InTouch+ will automatically generate Participation Form (Form A), Form for Submission of a Paper (Form B) and/or Grant Application Form (Form C);
- Submit their application.

Once submitted through the InTouch+ platform, the application together with the auto-generated form(s) will be transmitted automatically to the required authority for approval. If approved, the application together with the form(s) will automatically be sent to the IAEA through the online platform. Applications submitted and approved via InTouch+ should not additionally be sent via email to the IAEA.

NOTE: Should prospective participants wish to submit a paper or request financial support, the application needs to be submitted by the specified deadlines (see Section K).

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

If it is not possible to submit the application through the InTouch+ platform, prospective participants are requested to contact the IAEA's Conference Services Section via email: Conference.Contact-Point@iaea.org.

Participants are hereby informed that the personal data they submit will be processed in line with the Agency's Personal Data and Privacy Policy and is collected solely for the purpose(s) of reviewing and

assessing the application and to complete logistical arrangements where required. Further information can be found in the [Data Processing Notice](#) concerning IAEA InTouch+ platform.

F. Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the conference. The IAEA has, however, limited funds at its disposal to help cover the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the symposium.

If participants wish to apply for a grant, they should submit applications to their official authority using the InTouch+ platform (see Section E) for onward transmission to the IAEA by **28 April 2023.**

Approved grants will be issued in the form of a lump sum payment that usually covers **only part of the cost of attendance**.

G. Working Language

The working language of the conference will be English. All communications and papers must be sent to the IAEA in English.

H. Conference Venue and Accommodation

Detailed information on accommodation and other relevant matters will be sent directly to all designated participants approximately three months before the opening of the conference. This information will also be made available on the conference web page (see Section M) as soon as possible.

I. Exhibition

A limited amount of space will be available for commercial vendors' displays/exhibits during the conference. Further information will be posted in due course on the conference web page (see Section M).

J. Visas

Designated participants who require a visa to enter Jordan should submit the necessary application to the nearest diplomatic or consular representative of Jordan at least six weeks before they travel to Jordan. Further advise and instructions will be made available on the IAEA webpage for the conference (see Section M)

K. Key Deadlines and Dates

Submission of synopses through IAEA-INDICO	**28 April 2023**
Submission of Form B (together with Form A) through InTouch+ platform	**28 April 2023**

Submission of Form C (together with Form A) through InTouch+ platform	**28 April 2023**
Notification of acceptance of synopses	**2 June 2023**
Submission of accepted full paper (8 pages max.):	**22 September 2023**
Registration only through InTouch+ (no paper submission, no grant request)	No deadline

L. Conference Secretariat

General contact details of the Conference Secretariat:

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries of the conference and correspondence on administrative matters to the IAEA Conference Services Section.

M. Conference Web Page

Please visit the IAEA conference web page regularly for new information regarding this conference:

https://www.iaea.org/events/conference-on-research-reactors-2023