Technical Meeting on Advances in Laser Driven Neutron and X-ray Sources and their Applications

IAEA Headquarters
Vienna, Austria
29 June–2 July 2020
Ref. No.: EVT1905325

Information Sheet

A. Introduction

In recent years, significant progress has been made in generating intense ion beams from relativistic laser-plasmas (RLP). Laser-driven ion beams are born in sub-picosecond timescales and micron spatial scales. Thus, they can deliver unprecedented power densities and neutron-beam fluences exceeding $10^{10}$ neutrons/sr in approximately ns-long pulses and to date the prospects of significantly improved performance of Laser-Driven Neutron Sources (LDNS) are excellent.

These developments have prompted many discussions on the compelling applications for such intense neutron beams that include, among many others, non-destructive testing and evaluation, active interrogation for nuclear safeguards and volumetric dynamic thermometry for macroscopic samples in shock physics and warm-dense-matter research.

Due to these features, Laser-Driven Neutron and X-ray sources may have a large potential for contributing to the socio-economic development of IAEA Member States. To assess this potential and propagate further the advantages in using these technologies in the interest of IAEA’s Member States a Technical Meeting on Advances in Laser-Driven Neutron and X-ray Sources and their applications is necessary.

B. Objectives

The purpose of the event is to:

1. Review progress made on the production of intense neutron and X-ray beams generated by high-power lasers and associated technologies
2. Discuss the prospects of future compact laser systems and their possible nuclear applications
3. Record training needs in the field addressed by the Technical Meeting, especially for scientists from developing countries
4. Collect and evaluate scientific information for the preparation of an IAEA TECDOC.
C. Target Audience
This technical meeting is addressed to experts and stakeholders from IAEA Member States including regulators, as well as scientists from industry.

D. Working Language(s)
The working language of the meeting is English; no interpretation will be provided.

E. Expected Outputs
1. Meeting report including recommendations on the meeting objectives.
2. Layout of an IAEA TECDOC tentatively entitled “Advances in Laser Driven Neutron and X-ray Sources and their Applications” with draft scientific contributions by the meeting participants.

F. Meeting Structure
The meeting will start at 09:30 on 29 June 2020 and end by 16:30 on 2 July 2020. It will feature invited and contributed oral papers presented in sessions devoted to special topics. At the beginning of the meeting, participants will elect a chair person and a few rapporteurs who will take notes and coordinate the preparation of the draft meeting report.

Invited talks will be 35 minutes long followed by 5 minutes for discussion; contributed oral presentations will be 20 minutes long including 5 minutes for discussion. A summary session will provide the opportunity to review the progress reported at the meeting. Participants will then form working groups focusing on particular cases of interest and topics covered in order to prepare the draft meeting report, which will be jointly reviewed and finalized by all participants before meeting closure.

Participants will be asked to contribute on voluntary basis to the publication of an IAEA TECDOC. For the preparation of the TECDOC, an editing committee to be coordinated by the Scientific Secretary of the meeting will be assigned by the participants. If agreed by the participants, a summary report of the meeting will be prepared by the International Programme Advisory Committee of the meeting (see below), for submission to a scientific journal.

An electronic projector connected to a computer capable of reading CDs and memory sticks will be available for the presentations (PowerPoint recommended).

G. Topics
A non-exhaustive list of topics to be covered by the Technical Meeting is given below:

- Laser-based neutron and X-ray production schemes
- Measurements of matter properties with short pulsed neutron and X-rays sources
- Neutron scattering and isotope selective imaging
- Development of compact and deployable systems
- Applications with societal impact
- Analytical capacity in challenging environments and proliferation to developing countries.
- Innovative solutions for nuclear safeguards and non-proliferation
• Industry-related applications, including: a) Non-destructive testing and evaluation, b) Inspection techniques, and c) Techniques to identify small quantities of materials/contaminants
• Priority research needs and instrumentation R&D
• Training in Laser Driven Neutron and X-ray Sources and their Applications.

H. Participation and Registration

About 30 to 35 experts from IAEA Member States are expected to attend the meeting. Participants should be actively involved in the field addressed by the meeting. All persons wishing to participate in the event must be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the attached Participation Form (Form A) to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by 3 April 2020. Participants who are members of an organization invited to attend are requested to send the Participation Form (Form A) through their organization to the IAEA by the above deadline. Selected participants will be informed in due course on the procedures to be followed regarding administrative and financial matters.

Please note that the IAEA is in a transition phase to manage the entire registration process for all regular programme events electronically through the new InTouch+ (https://intouchplus.iaea.org) facility, which is the improved and expanded successor to the InTouch platform that has been used in recent years for the IAEA’s technical cooperation events. Through InTouch+, prospective participants will be able to apply for events and submit all required documents online. National authorities will be able to use InTouch+ to review and approve these applications. Interested parties that would like to use this new facility should write to: InTouchPlus.Contact-Point@iaea.org

I. Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the topics listed above.

Participants who wish to give presentations are requested to submit an abstract of their work. The abstract will be reviewed as part of the selection process for presentations. The abstract should be in A4 page format, should extend to no more than 2 pages (including figures and tables) and should not exceed 1000 words (including author names, affiliations and acknowledgments, if necessary). It should be sent electronically to Mr. Sotirios Charisopoulos, Scientific Secretary of the event (see contact details below), not later than 3 April 2020. Due to time constrains, scientists interested in attending the meeting are strongly recommended to submit their abstracts the soonest possible. Furthermore, participants are strongly advised to submit, together with the Participation Form (Form A), their abstract as well as the attached Form for Submission of a Paper (Form B) to their competent national authority or their organization for onward transmission to the IAEA not later than 3 April 2020. Authors will be notified of the acceptance of their proposed presentations by 20 April 2020.

J. Expenditures and Grants

The costs for the organization of the meeting are borne by the IAEA. 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 event. The IAEA has, however, limited funds at its disposal to help meet 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 event.

The application for financial support should be made using the Grant Application Form (Form C), which has to be stamped, signed and submitted by the competent national authority to the IAEA together with the Participation Form (Form A) by 3 April 2020.

It is therefore expected that all necessary documents for attendance, i.e. Form A, Form B (if an abstract is to be presented) and Form C (in case of request for financial support) should all be received by the IAEA by 3 April 2020, the latest.

K. Venue

The event will be held at the Vienna International Centre (VIC), where the IAEA’s Headquarters are located. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page:
http://www-pub.iaea.org/iaeaevents/GeneralInfo/Guide/VIC.

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC at least one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

L. Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

A letter of invitation, if needed, should be requested from the Administrative Secretary of the meeting (see IAEA Contacts below).

M. Additional Information

An International Programme Advisory Committee (IPAC) is established for the Technical Meeting composed by the following members:

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<tr>
<th>Name</th>
<th>Affiliation</th>
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<tr>
<td>Mr. Markus Roth</td>
<td>Institut für Kernphysik, Technische Universität Darmstadt, Darmstadt, Germany</td>
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<tr>
<td>Ms. Ceri Brenner</td>
<td>STFC Rutherford Appleton Laboratory, Didcot, Oxford, UK</td>
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<tr>
<td>Mr. Ishay Pomerantz</td>
<td>School of Physics and Astronomy, Tel-Aviv University, Tel Aviv, Israel</td>
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<tr>
<td>Mr. Akifumi Yogo</td>
<td>Institute of Laser Engineering, Osaka University, Osaka, Japan</td>
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<tr>
<td>Mr. Sven Vogel</td>
<td>Los Alamos Neutron Science Center, LANL, Los Alamos, NM 87545, USA</td>
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N. Deadlines

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<tr>
<td>3 April 2020</td>
<td>Deadline for submission of abstracts according to the instructions given above for paper selection</td>
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<tr>
<td>3 April 2020</td>
<td>Submission of Form A, Form B (if an abstract is to be presented) and Form C (in case of request for financial support) by the participant’s Member State to the IAEA</td>
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<td>20 April 2020</td>
<td>Notification of acceptance of contribution to participants sent by email</td>
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<tr>
<td>30 April 2020</td>
<td>Submission, by email, of invitation letters / grant awards to participants</td>
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<tr>
<td>29 June 2020</td>
<td>Start of the Technical Meeting.</td>
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O. IAEA Contacts

Scientific Secretaries:

Mr Sotirios Charisopoulos
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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries and correspondence on other matters related to the event to the Administrative Secretary.

Event Web Page

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

www.iaea.org/events/EVT1905325