



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Fourth IAEA Technical Meeting on Fusion Data Processing, Validation and Analysis

Virtual Event

30 November - 3 December 2021

Ref. No.: EVT2004605

Information Sheet

Introduction

The International Atomic Energy Agency (IAEA) will organize the fourth Technical Meeting on Fusion Data Processing, Validation and Analysis from 30 November to 3 December 2021 as a virtual event.

Objectives

The objective of the meeting is to provide a platform during which a set of topics relevant to fusion data processing, validation and analysis are discussed with the view of extrapolation needs to next step fusion devices such as ITER. The validation and analysis of experimental data obtained from diagnostics used to characterize fusion plasmas are crucial for a knowledge-based understanding of the physical processes governing the dynamics of these plasmas. The meeting will aim at fostering, in particular, discussions about research and development results that set out or underline trends observed in the current major fusion confinement devices. A special focus will be dedicated this edition on data analysis requirements for ITER and DEMO with a particular attention paid to Artificial Intelligence for getting automatization and confidence on the control processes.

Target Audience

This meeting is suitable for experienced scientists and young scientists working in the domain of plasma diagnostics, synthetic diagnostics data analysis including image processing, regression analysis, inverse problems, deep learning, machine learning, big data, physics-based models for control.

Working Language(s)

English

Topics

The meeting will cover the following topics:

1. Data Analysis for Fusion Reactor
2. Data analysis preparation for ITER and Software Tools for ITER diagnostics
3. Uncertainty Propagation of Experimental Data in Modelling Codes
4. Applications of probabilistic inference and statistics
5. Real time prediction of off-normal events, with particular attention to disruption and predictive maintenance
6. Inverse Problems
7. Image Processing
8. Causality Detection in Time Series
9. Synthetic Diagnostics, Integration, Verification and Validation
10. Deep Learning
11. IMAS/IDA Integration
12. Big data

Organization

The format of the meeting will be invited and contributed papers to be presented in sessions devoted to mentioned topics with subsequent discussions. It is expected that invited talks will be 30 minutes plus 5 minutes discussion and session talks will be ~20 minutes with ~5 minutes for discussion. An electronic projector with a computer capable of reading memory sticks will be available (Power Point recommended). It is expected that the meeting will start at 9:30 on 30 November 2021 and end by 15:30 on 3 December 2021. Final session will be a summary session where session chairs will report about the main finding in their area and a specific discussion will follow targeting ITER and DEMO data analysis requirements. At

the issue of the discussion, we will try to identify additional work that could be included on the ITER and DEMO strategy including recommendation by the board of experts.

In addition, tutorial sessions listed below are foreseen on Monday, 29 November in the afternoon.

Participation and Registration

All persons wishing to participate in the event have to 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 **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 **15 October 2021**. 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 above deadline.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and technical matters.

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.

Papers and Presentations

Participants wishing to make a contribution at the meeting are requested to submit a one-page electronic abstract.

Abstracts should be submitted through INDICO system (<https://conferences.iaea.org/event/251/>) by **15 September 2021**.

Template for one-page abstract is provided at the web site.

Abstracts can be text only or contain figures and graphics. The abstracts must contain the authors' names, affiliation and email address. Acceptable file format is pdf. The filename should be in the following format: "LASTNAME_INITIAL.pdf".

Authors must make sure that the files do not include copyrighted fonts or any other impediments for reproduction. The abstracts will be reviewed and selected by the International Programme Advisory Committee. Authors will be informed of the acceptance of their contributions via email by **19 October 2021**.

Publications

Electronic proceedings of the Meeting consisting in abstracts and the material presented at the meeting will be made available to all participants on the meeting website.

Under the coordination of the Chair of the International Programme Advisory Committee and the IAEA Scientific Secretary, it is planned to publish a summary of the Meeting as a summary paper in Nuclear Fusion. In addition, a Special Issue containing selected papers of the meeting is planned to be published at Plasma Physics and Controlled Fusion.

Meeting website:

IAEA web site:

<https://conferences.iaea.org/event/251/>

Key Deadlines

15 March 2021	Beginning of abstract submission
15 September 2021	Deadline for submission of abstracts according to the instructions above for paper selection.
15 October 2021	Deadline for submission of the Participation Form through the appropriate governmental authority (Forms A and B)
19 October 2021	Participants will be informed about the acceptance of their papers.
29 November 2021	Tutorial session
3 December 2021	Meeting begins

International Programme Advisory Committee

The International Programme Advisory Committee (IPAC) is composed by the following members:

Min Xu (chair and host)	China
Didier Mazon (co-chair)	France

Geert Verdoolaege	Belgium
Andrea Murari	Eurofusion/EU
Wolfgang Biel	Germany
Andreas Dinklage	Germany
Rainer Fischer	Germany
Simon Pinches	ITER Organisation
Keisuke Fujii	Japan
Jesus Vega	Spain
Darren McDonald	UK
Michael Churchill	USA
Pablo Rodriguez Fernandez	USA
Josh Stillerman	USA

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/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/EVT2004605

Enclosure: Form for Submission of a Paper (Form B)