



INTERNATIONAL ATOMIC ENERGY AGENCY

**20th IAEA Fusion Energy Conference****Vilamoura, Portugal  
1-6 November 2004****ANNOUNCEMENT AND CALL FOR PAPERS****1. INTRODUCTION**

Recognizing the increasingly prominent role that energy plays in the world and the expectation that nuclear fusion can provide an abundant energy source, the International Atomic Energy Agency (IAEA) supports the exchange of scientific and technical information on fusion research through conferences, meetings and projects. The 20th IAEA Fusion Energy Conference (FEC 2004) provides a forum for elaborating the excellent progress that is being made in fusion experiments, theory and technological developments. FEC 2004 will be organized in co-operation with the Centro de Fusão Nuclear, Instituto Superior Técnico, Lisbon, Portugal

Previous conferences in this series were held in Salzburg (1961), Culham (1965), Novosibirsk (1968), Madison (1971), Tokyo (1974), Berchtesgaden (1976), Innsbruck (1978), Brussels (1980), Baltimore (1982), London (1984), Kyoto (1986), Nice (1988), Washington (1990), Würzburg (1992), Seville (1994), Montreal (1996), Yokohama (1998), Sorrento (2000), and Lyon (2002).

**2. TOPICS**

- OV Overviews
- EX Magnetic Confinement Experiments (subtopics see Annex A)
- TH Magnetic Confinement Theory and Modelling (subtopics see Annex A)
- IT ITER Activities
- IF Inertial Fusion Experiments and Theory
- IC Innovative Concepts
- FT Fusion Technology and Power Plant Design
- SE Safety, Environmental and Economic Aspects of Fusion

Papers on these topics will be considered for presentation at FEC 2004 if clearly relevant to the development of fusion energy (see attached Scientific Guidelines for Authors – Annex A). A Programme Committee with a representative international membership will be responsible for the selection of papers, the arrangements of conference sessions and the overall scientific content of the conference. The Programme Committee will meet in May 2004 at IAEA Headquarters in Vienna, Austria.

### 3. PARTICIPATION

To participate in the conference, please send a completed Participation **Form A** (attached) to the appropriate government authority for subsequent transmission to the IAEA. A participant will be accepted only if the Participation Form is transmitted to the IAEA by one of the official channels (see Section 6). Participants whose nominations have been received by the IAEA will receive further information by airmail about three months before the conference.

### 4. SYNOPSES AND ABSTRACTS

Anyone wishing to present a paper or poster during this conference must submit a **two page synopsis and an abstract, both in electronic format** (no paper copies should be submitted) directly to the IAEA. The synopses (in Portable Document Format – PDF) and abstracts **must** be submitted through the IAEA's web browser based, password protected file submission system, called **LISA** (follow carefully the Instructions for Electronic Submission of Two Page Synopses and Abstracts – Annex B). Authors must further submit the following forms to their appropriate government authority (see Section 6) for transmission to the IAEA in time for them to be received by the IAEA by **16 April 2004**.

- Participation **Form A** (attached)
- **Form B** for Submission of a Paper (attached)

The electronically received two page synopsis will be considered by the Programme Committee only if the Participation Form A and Paper Submission Form B have been received by the IAEA from official government channels.

### 5. EXPENDITURES

The costs for the organization of the conference are borne by the Host Government and the IAEA. **No registration fee** is charged to participants.

As a general rule, the IAEA does not pay for participants' travel and living expenses. However, limited funds are available to help meet the cost of attendance of selected specialists, mainly from developing countries with low economic resources. Generally, not more than one travel grant may be awarded to any one country. To apply for a travel grant, please send the Grant Application **Form C** (attached) – typewritten or clearly printed, through your appropriate government authority (see Section 6) together with the Participation Form (Form A), and the Paper Submission Form (Form B) and other relevant material in time for these materials to reach the IAEA at the latest by **16 April 2004**. Travel grants will be **awarded only to authors of accepted papers**. Incomplete or late applications will not be considered. The grants will be lump sums usually covering **only part of the cost** of attendance.

### 6. CHANNELS OF COMMUNICATION

The Participation Form A, the Paper Submission Form B and, if applicable, the Grant Application Form C have to be sent through the participant's competent official authority (Ministry of Foreign Affairs, national atomic energy authority or, for ITER participants, the ITER organization) for subsequent transmission to the IAEA.

## 7. POST-DEADLINE PAPERS

A limited number of papers will be considered for post-deadline acceptance. To be considered, a paper must meet the following criteria:

- It deals with subject matter appropriate for this conference.
- It presents new experimental or theoretical data, or technology development, of sufficient importance to attract wide-ranging interest among the conference participants.
- It is submitted with Paper Submission Form B (see Section 4) and government endorsement (see Section 6).
- A two page synopsis has been sent by e-mail as a file attachment to G. Mank, IAEA, before **8 October 2004**; e-mail: [physics@iaea.org](mailto:physics@iaea.org) (**PDF files only**).

The Programme Committee will meet in Vilamoura on 1 November 2004 to consider the post-deadline submissions. Authors will be notified promptly about the acceptance or rejection of their papers. Time has been allocated for presentations of up to three oral post-deadline papers between 4 and 6 November 2004, and post-deadline poster papers will be presented on the morning of that day, so post-deadline paper authors should be prepared to give either an oral presentation or a poster. The full manuscripts for the proceedings must follow the same guidelines as for regular papers (see Section 8(b) below), only the deadline for submission will be set to a later date.

## 8. PAPERS AND CONFERENCE PROCEEDINGS

### (a) Acceptance of papers

Authors will be notified by e-mail in **June 2004** whether their papers have been accepted for oral presentation or for presentation as a poster and will be informed of the assigned paper number and session of presentation.

### (b) Submission of full manuscripts

Specifications for the layout and electronic format (PDF) of the full manuscripts and for the preparation of posters will be sent to all main authors of accepted papers. These specifications will also be posted on the FEC 2004 web site when available. The full manuscripts **must** be submitted through LISA in the same way as the two page synopses (see Annex B). LISA will be reopened for submission of accepted papers on 13 September 2004. The deadline for electronic submission of the full papers in PDF is **15 October 2004**. Papers received after that deadline will not be accepted for presentation. Authors who might need editorial help are encouraged to contact the English Editor, Ms. Marianne Spak (e-mail: [m.spak@iaea.org](mailto:m.spak@iaea.org)) before or during the conference.

The specifications and instructions for preparing the full manuscripts will be similar to those for the FEC 2002 proceedings; they are still available on the Internet in PDF: <http://www.iaea.org/programmes/ripc/physics/>.

### (c) Publication of proceedings

The papers will be published by the IAEA as unedited proceedings in electronic format on CD-ROM and on the IAEA Physics Section web site as soon as possible after the conference (<http://www.iaea.org/programmes/ripc/physics/>).

#### **(d) Publication in the Nuclear Fusion journal**

In addition to preparing their papers for publication in the electronic conference proceedings, authors of accepted papers are strongly encouraged to submit modified versions of their manuscripts for possible publication in the Nuclear Fusion (NF) journal. Authors should bear in mind that the page limits established for the electronic conference proceedings do not apply to the journal, however it is expected that this version should be in style and content suitable for a high quality scientific journal. These revised and expanded versions of conference papers will be submitted to the normal double-referee peer-review procedure of NF. In case of FEC2002 about half of the conference contributions were submitted to NF in this way. Prospective authors will be approached by the NF editorial office, after acceptance of their contribution by the Programme Committee, if they are interested in this possibility and they will be given instructions how to submit.

#### **9. WORKING LANGUAGE**

The working language of the conference is English. All communications, synopses, abstracts and full manuscripts must be sent to the IAEA in English.

#### **10. DISTRIBUTION OF DOCUMENTS**

The preliminary programme and the Book of Abstracts will be posted on the FEC 2004 web site in June 2004, the final programme in October 2004. The final programme booklet and the book of abstracts will be made available to participants upon registration in Vilamoura. Preprints of complete papers will not be available unless provided by the authors.

#### **11. ACCOMMODATION**

Detailed information on accommodation and other items will be sent to all designated participants well in advance of the conference and will be made available on the FEC 2004 web site. The official Travel Agency is Viagens Abreu SA.

#### **12. VISA**

Please find out whether you need a visa (Schengen visa) to enter Portugal and submit the necessary application to the nearest diplomatic or consular representative of Portugal as early as possible (please note that this procedure may take three or four weeks).

#### **13. CONTACT INFORMATION**

The following persons may be contacted for further information or assistance:

(a) Administrative Issues – Conference Organizer

**Ms. Hildegard Schmid**

Conference Service Section, MTCD  
International Atomic Energy Agency  
IAEA-CN-116  
P.O. Box 100  
Wagramer Strasse 5  
A-1400 Vienna, Austria  
Telephone No.: (+43) 1-2600-21316 (or -21311)  
Telefax No.: (+43) 1-26007  
E-mail: [hildegard.schmid@iaea.org](mailto:hildegard.schmid@iaea.org)  
(General mail for IAEA: [official.mail@iaea.org](mailto:official.mail@iaea.org) )

(b) Scientific Issues – Scientific Secretaries

(submission of two page synopses, abstracts and full manuscripts,  
conference programme)

**Mr. Günter Mank**

Section Head, Physics Section, NAPC  
International Atomic Energy Agency  
P.O. Box 100  
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Telefax No.: (+43) 1-26007  
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E-mail: [physics@iaea.org](mailto:physics@iaea.org)

(c) Editorial Issues – English Editor

**Ms. Marianne Spak**

Publishing Section, MTCD  
International Atomic Energy Agency  
P.O. Box 100  
Wagramer Strasse 5  
A-1400 Vienna, Austria  
Telephone No.: (+43) 1-2600-22499  
Telefax No.: (+43) 1-26007  
E-mail: [m.spak@iaea.org](mailto:m.spak@iaea.org)

**(d) Conference Site Issues**

**Host Government Official**

**Ms. Maria Fernanda Pinto**

Centro de Fusão Nuclear

Instituto Superior Técnico

Av. Rousico Pais

P-1049-001 Lisboa, Portugal

Telephone No.: +351 218417818

Telefax No.: +35121 8417819

E-mail: [mfernanda@cfm.ist.utl.pt](mailto:mfernanda@cfm.ist.utl.pt)

**(e) Travel Agency**

Ms. Helena Desidério

Congress Department

Viagens ABREU SA

Avenida 25 de Abril 2

P-2799-556 Linda-A-Velha, Portugal

Telephone No.: +351 214156122

Telefax No.: +351 214156383

E-mail: [hdesiderio.lisboa@abreu.pt](mailto:hdesiderio.lisboa@abreu.pt)

**14. SATELLITE MEETINGS**

Deadline for Booking Requests: **22 September 2004**

For booking and information please contact:

Mr. Carlos Silva

Centro de Fusão Nuclear

Instituto Superior Técnico

Au. Rousico Pais

P-1049-001 Lisboa, Portugal

Telephone No.: +351 218419113

Telefax No.: +35121 8417819

E-mail: [csilva@cfm.ist.utl.pt](mailto:csilva@cfm.ist.utl.pt)

**15. CONFERENCE WEB SITES**

It is recommended to visit the conference web sites regularly for checking new or updated information. The conference web site addresses are:

IAEA: <http://www-pub.iaea.org/MTCD/Meetings/Announcements.asp?ConfID=116>

IAEA/LISA: <http://www.iaea.org/cgi-bin/lisa/start>  
(LISA open for electronic submission of :  
two page synopses and abstracts (15 March – 16 April 2004) and  
full manuscripts (13 September – 15 October 2004)

Conference Site Matters/Centro de Fusão Nuclear:  
<http://www.cfn.ist.utl.pt/20IAEAConf/Announcement.htm>

**The following information will be posted on the FEC 2004 web sites:**

















December 2003	Conference announcement and annexes; Forms A, B and C
February 2004	Instructions for submission of two page synopses and abstracts
February 2004	Sample two page synopsis and templates (Word, LaTeX)
June 2004	Preliminary programme, Book of Abstracts General information and conference site Hotel reservation form Notification of Authors (through LISA)
July 2004	Author instructions for full manuscripts and templates (Word, LaTeX)
October 2004	List of Satellite meetings
October 2004	Final programme
March 2005	Conference Proceedings

**16. DEADLINES/TIME SCHEDULE**



15 March-16 April 2004	Electronic submission of abstracts and two page synopses (LISA open)
16 April 2004	Submission of Forms A, B and C to IAEA through official channels
30 July 2004	Hotel reservation
22 September 2004	Registration of satellite meetings
13 Sept.-15 Oct. 2004	Submission of full manuscripts (LISA open)
8 October 2004	Submission of post-deadline papers (2-page synopses)
1 November 2004	Conference starts
1 November 2004	Acceptance of post-deadline papers (PC)
4-6 November 2004	Oral presentation of post-deadline papers
6 November 2004	Conference ends
10-21 November 2004	Submission of session summaries (TBD), and correction of papers (LISA open)
March 2005	Conference Proceedings on CD Rom and on Website

## ANNEX A

### SCIENTIFIC GUIDELINES FOR AUTHORS

1. A paper must present original and previously unreported work on any of the conference topics listed below. In particular, papers on subjects covered by the same authors at previous IAEA conferences must contain only results obtained since those already reported, and this should be indicated in the extended synopsis.
2. The two page extended synopsis provides the basis on which the Programme Committee will make its decision on inclusion of the paper in the conference, and therefore it should be sufficiently detailed in describing the purpose of the work and the results obtained.
3. Detailed work specific to diagnostics physics should not be submitted to this conference.
4. General engineering work not specific to fusion should not be submitted to this conference.
5. Topical Areas:
  -  OV Overview
  -  EX Magnetic Confinement Experiments
    -  C: Confinement
    -  S: Stability
    -  W: Wave–plasma interactions – current drive, heating, energetic particles
    -  D: Plasma–material interactions – divertors, limiters, SOL
  -  TH Magnetic Confinement Theory and Modelling
    -  C: Confinement
    -  S: Stability
    -  W: Wave–plasma interactions – current drive, heating, energetic particles
    -  D: Plasma–material interactions – divertors, limiters, SOL
  -  IT ITER Activities
  -  IF Inertial Fusion Experiments and Theory
  -  IC Innovative Confinement Concepts
  -  FT Fusion Technology and Power Plant Design
  -  SE Safety, Environmental and Economic Aspects of Fusion

In the case of EX and TH, include a single main subtopic for the paper.

6. Overview papers will be considered in the following categories:
  -  An overview of a number of presentations from a major facility;
  -  An overview of studies in a topical area.
7. There is sometimes ambiguity as to whether a paper which includes discussion of a new fusion concept should be included under EX, TH, or IC. If the purpose of the paper is primarily to expose a new fusion concept, it should be identified as IC even if a moderate amount of theory and/or data are included. If a paper primarily presents new theory, it should be identified as TH. If it primarily presents new experimental results, it should be identified as EX.

## ANNEX B



## **INSTRUCTIONS FOR ELECTRONIC SUBMISSION OF TWO PAGE SYNOPSES AND ABSTRACTS**

Anyone wishing to present a paper at FEC 2004 is requested to submit a **two page synopsis** (to be used for paper selection by the Programme Committee) and a **short abstract** (to be used for the Book of Abstracts) to the IAEA not later than **16 April 2004**.

### **(a) Web Browser Based File Transmission**

The two page synopses and the abstracts **must** be submitted in **electronic format** (no paper copies should be submitted). For the submission of the synopses and abstracts the IAEA will provide a web browser based, password protected file submission system called **LISA** (**L**ightweight **I**nteractive **S**torage **A**pplication for the Collection of Conference Contributions Online). The two page synopses and abstracts **must** be submitted through LISA; submission by e-mail, on CD-ROM or floppy, or as paper copies cannot be accepted.

LISA will be operational from **15 March to 16 April 2004** for abstract and synopsis submission (no access before and after this period). LISA can be accessed using a web browser (e.g. Netscape Navigator 3.0 or higher, Internet Explorer 4.0 or higher, etc.) through the following Internet address:

<http://www.iaea.org/programmes/ripc/physics/fec2004>

Authors will be guided through LISA step-by-step. Access to LISA is password protected. For the first time login a **common password** has to be used. This common password will be communicated to scientists potentially interested in submitting a paper, to the members of the International Fusion Research Council, and to the members of the Programme Committee. Interested persons who did not receive this information should contact the IAEA Scientific Secretary by e-mail: [physics@iaea.org](mailto:physics@iaea.org) providing the following information: (i) in the subject line: FEC 2004 LISA; (ii) in the body text: full name, affiliation, full address and e-mail address (no file attachment, not other information).

In the course of the first login every author has to define his/her **individual password**. This password is needed for any subsequent login to submit author information, abstracts, two page synopses and, in September/October 2004, full manuscripts of accepted papers.

Besides the individual password you have to provide your e-mail address, which is a kind of "**user name**" of your LISA "account". **Do not forget the e-mail address** (your "user name") **you chose for your first login and your chosen individual password!** Within one LISA account ("user name") you may submit information for different papers. This makes it possible for a co-ordinator or secretary to submit information for different authors, or for one author to submit several conference contributions.

If you experience difficulties when uploading the synopsis (see the next section, Electronic Format) and need to retry or if you want to change the information you have already submitted, you may visit LISA again until 16 April 2004. However, you should note that not more than 10 uploads of your abstract and synopsis are possible (per contribution; if you manage information for more than one contribution, you have 10 tries for each of them).

**The ultimate deadline** for electronic submission of the two page synopses and abstracts through LISA is **16 April 2004**. New or replacement abstracts and synopses will not be accepted after 16 April 2004!

### **(b) Electronic Format of Two Page Synopses and Abstracts**

**Two Page Synopsis:** **Portable Document Format** (PDF) or, in exceptional cases, when an author is not able to produce a usable file in PDF, **PostScript** (PS) format, will be the required format for submission of the two page synopses (see layout specifications below). No other formats will be accepted. Instructions on how to produce PDF or PS files will be posted on the FEC 2004 web site in February 2004. LISA will check your uploaded PDF or PS file(s), as past experience has shown that PDF and PS files may contain errors and may not show up correctly on different computers. LISA will inform you about any errors and their reasons; in that case you will have to prepare and resubmit a new PDF or PS file (please keep in mind the maximum limit of 10 uploads per contribution).

**Abstract:** All information required for the short abstract and the abstract text must be typed into **special text boxes** provided by LISA. Please note: (i) these text boxes provide only limited space that cannot be exceeded (2400 characters including spaces); text exceeding the space limit will be truncated; (ii) mathematical characters and expressions, Greek or other symbols, and superscripts or subscripts may not be used in the abstract text boxes; use, for example, “beta” instead of “ $\beta$ ”, “n(e)” instead of “ $n_e$ ”, etc. The input provided in the text boxes will be used for producing the Book of Abstracts. More details will be posted on the FEC 2004 web site in February 2004.

### **(c) Specifications for the Layout of the Two Page Synopsis and Sample for Abstract Submission**

#### **Two Page Synopsis:**

- ▶ Page size: A4 (297 mm by 210 mm) – vertical orientation
- ▶ Full margins (left/right/top/bottom): 25 mm
- ▶ Layout: single-spaced, one additional line between paragraphs
- ▶ Alignment: left
- ▶ Font: Times New Roman only
- ▶ Title: 14-point size, bold
- ▶ Authors: 12-point size
- ▶ Affiliation and e-mail address: 12-point size
- ▶ Text: 12-point size
- ▶ Length: maximum 2 pages

## Sample for Abstract Submission

All information needed for the short abstract must be typed into text boxes provided by LISA. Example:

### Paper Title

The Spherical Tokamak Programme at Culham

### Author: Family Name, Initials (only the main author's name should be given)

Sykes, A.

### Affiliation of Main Author (including city and country)

Euratom-UKAEA Fusion Association, Culham,  
United Kingdom

### E-mail Address of Main Author

alan.sykes@ukaea.org.uk

**Abstract Text.** Enter the abstract in one continuous paragraph (maximum of 2400 characters including spaces); text exceeding the space limit will be truncated. Do not use mathematical characters or expressions, Greek or other symbols, and superscripts or subscripts. The size of the text box cannot be exceeded.

The spherical tokamak (ST) is the low aspect ratio limit of the conventional tokamak and appears to offer attractive physics properties in a simpler device. The START (Small Tight Aspect Ratio Tokamak) experiment provided the world's first demonstration of the properties of hot plasmas in an ST configuration and was operational at Culham from January 1991 to March 1998, obtaining plasma currents of up to 300 kA and pulse durations of ~50 ms. Its successor, MAST, is nearing completion and is a purpose built, high vacuum machine designed to have a tenfold increase in plasma volume with plasma currents of up to 2 MA. Current drive and heating will be by a combination of induction-compression as on START, a high performance central solenoid, with 1.5 MW ECRH and 5 MW of NBI. The promising results from START are reviewed and the many challenges posed for the next generation of purpose built STs (such as MAST) are described.