



21st IAEA Fusion Energy Conference
16 - 21 October 2006
Chengdu, China

Organized by the
 International Atomic Energy Agency

Hosted by the Government of China through the
 China National Nuclear Corporation and the Chengdu Municipal Government

ANNOUNCEMENT AND CALL FOR PAPERS

1. INTRODUCTION

Recognizing the prominent role that nuclear energy plays in the world, and based on the expectation that nuclear fusion will be able to provide an abundant source of energy, the International Atomic Energy Agency (IAEA) supports the exchange of scientific and technical information on fusion research through conferences, meetings and projects. The 21st IAEA Fusion Energy Conference (FEC 2006) provides a forum for presenting and discussing the progress that is being made in fusion experiments, theory and technological developments. It is expected that the progress in the establishment of ITER since the last Fusion Energy Conference will put more emphasis on the physics and technology R&D aspects in the realization of fusion as a clean and lasting energy source.

FEC 2006 will be organized in co-operation with the Southwestern Institute of Physics, Chengdu, China. 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), Lyon (2002), and Vilamoura (2004).

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 2006 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 at the end of **April 2006** at IAEA Headquarters in Vienna, Austria.

3. PARTICIPATION

To participate in the conference, please send a completed Participation Form A to the appropriate government authority for subsequent transmission to the IAEA. A participant will be accepted only if the **FORM A** 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 approximately 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) 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 **3 April 2006**.

- Participation **FORM A**
- **FORM B** for Submission of a Paper

N.B.: 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 complete and send the **Grant Application FORM C**– typewritten or clearly printed, through your appropriate government authority (see Section 6) together with the **Participation FORM A**, and the **Paper Submission FORM B** and other relevant material in time for these to reach the IAEA at the latest by **3 April 2006**. 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 one of the following competent official authorities: 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 the scientific secretariat, IAEA, before **29 September 2006**; e-mail: physics@iaea.org (**PDF files only**).

The Programme Committee will meet in Chengdu on **16 October 2006** 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 **19 and 21 October 2006**, 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 is set to a later date.

8. PAPERS AND CONFERENCE PROCEEDINGS

(a) Acceptance of papers

Authors will be notified by e-mail in **May 2006** 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 2006 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 **28 August 2006**. The deadline for electronic submission of the full papers in PDF is **29 September 2006**. Papers received after that deadline will not be accepted for presentation.

(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-naweb.iaea.org/iaea.org/napc/physics/index.htm>

(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 the case of the FEC2004 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 abstracts will be posted on the FEC 2006 web site. The electronic version of the final programme will be available in **September 2006**. The final programme booklet and the book of abstracts will be made available to participants upon registration in Chengdu. The electronic version of the preprints will be made available. Printed hard copies of papers will not be provided.

11. ACCOMMODATION

Detailed information on accommodation and other items will be made available through a link on the FEC 2006 web site by 15 **June 2006**.

12. VISA

If you require a visa for China please contact the nearest consular representative of China at least two months in advance. In case you encounter difficulties in obtaining a visa, please send the following details: Name, organization/institute, position, passport details (date of birth, nationality, passport number, type of passport) as well as arrival & departure dates, length of stay, port of entry; mailing address, e-mail address, fax and telephone numbers **by e-mail** or fax to the Local Organizing Committee in China (see below) **before 15 July 2006**.

Ms. Cathy Zhu
Southwestern Institute of Physics (SWIP)
P.O. Box 432, Chengdu 610041
Tel.: +86-882850506
Fax.: +86-882850251
E-mail: cathyzhu@swip.ac.cn

with copy to:

Mr Haicheng Chen
China National Nuclear Corporation (CNNC)
Department of International Cooperation
1 Nansanxiang, Sanlihe, Xicheng
P.O.Box 2102-12, Beijing 100822
Telephone No: +86-(0)10-68572077
Fax No.: +86-(0)10-68513717
E-mail: Chenhc@cnncc.com.cn

13. SATELLITE MEETINGS

Deadline for Booking Requests: **15 September 2006**
For booking and information please contact:

Manli SHI (Ms.)
Southwestern Institute of Physics,
P.O. Box 432, Chengdu 610041
Tel.: +86-(0)28 82850212
Fax.: +86-(0)28 82850251
E-Mail: mlshi@swip.ac.cn

14. EXHIBITION

A limited amount of space will be available for commercial vendors' displays/exhibits during the Conference. Interested parties are requested to contact Ms. S. Sun at the International Exhibition and Convention Centre of Chengdu directly (see address below).

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=149>
IAEA/LISA: <http://www.iaea.org/cgi-bin/lisa/start>
(LISA open for electronic submission of: two page synopses and abstracts
(1 March – 3 April 2006) and full manuscripts (28 August – 29 September 2006)
Local Conference Site Issues <http://www.chengdu.gov.cn>

16. DEADLINES/TIME SCHEDULE

1 March-3 April 2006	Electronic submission of abstracts and two page synopses (LISA open)
3 April 2006	Submission of Forms A, B and C to the IAEA through official channels
14 July 2006	Hotel reservations
15 September 2006	Registration of satellite meetings
28 Aug.-29 Sept. 2006	Submission of full manuscripts (LISA open)
29 September 2006	Submission of post-deadline papers (2-page synopsis)
16 October 2006	Conference starts
16 October 2006	Evaluation of post-deadline papers (PC)
19-21 October 2006	Oral presentation of post-deadline papers
21 October 2006	Conference ends
31 Oct.-11 Nov.2006	Submission of session summaries (TBD), and correction of papers (LISA open)
March 2007	Conference Proceedings on CD Rom and on Website

17. CONFERENCE SECRETARIAT

E-mail address for any queries on scientific issues: physics@iaea.org

Scientific Secretariat of the Conference:

Mr. Günter Mank

Division of Physical and Chemical Sciences
International Atomic Energy Agency
P.O. Box 100, Wagramer Strasse 5
A-1400 Vienna, Austria

Telephone No.: (+43 1) 2600 21756

Telefax No.: (+43 1) 2600 7

E-mail: G.Mank@iaea.org

Mr. Artur J. Louzeiro Malaquias

Division of Physical and Chemical Sciences
International Atomic Energy Agency

P.O. Box 100, Wagramer Strasse 5

A-1400 Vienna, Austria

Telephone No.:

(+43 1) 2600-21707

Telefax No.:

(+43 1) 2600 7

E-mail:

A.Malaquias@iaea.org

Administration and organization:

Ms. Hildegard Schmid

Division of Conference and Document Services

Conference Services Section, IAEA-CN-149

International Atomic Energy Agency

P.O. Box 100, Wagramer Strasse 5

A-1400 Vienna, Austria

(+43 1) 2600 21316

Telephone No.:

(+43 1) 2600 21316

Telefax No.:

(+43 1) 26007

E-mail:

H.Schmid@iaea.org

Host Government Official:

Prof. PAN Chuanghong

Southwestern Institute of Physics

P.O. Box 432,

Chengdu, Sichuan, China

E-mail: panch@swip.ac.cn

Conference Site Issues:

Mr. HU Benjun

Chengdu Municipal Foreign Affairs Office,

European Division, 19 Xihuamen St.,

Chengdu, 610015, Sichuan, China

E-mail: bbenjun@hotmail.com

Exhibition:

Ms. SUN Susanna

Marketing Center, South West Branch,

International Exhibition and Convention Centre,

258 Shawan Road,

Chengdu, 610031, Sichuan, China

E-mail: autman2001@yahoo.com

Travel Agency (Hotel Reservations and Side Tours):

Ms. HUAN Tracy

Marketing Center, Panda International Travel,

International Exhibition and Convention Centre,

258 Shawan Road,

Chengdu, 610031, Sichuan, China

E-mail: tracyhuang79@163.com

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. The Programme Committee may indicate an appropriated topic for the paper in cases of ambiguity.

ANNEX B - INSTRUCTIONS FOR ELECTRONIC SUBMISSION OF TWO PAGE SYNOPSES AND ABSTRACTS

Anyone wishing to present a paper at FEC 2006 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 **3 April 2006**.

(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 (Lightweight Interactive Storage Application). 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 **1 March to 3 April 2006** 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/cgi-bin/lisa/start>

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 Secretariat e-mail: physics@iaea.org providing the following information: (i) in the subject line: FEC 2006 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 August/September 2006, 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. **Make sure that you provide the email address of the first author for receiving further electronic notifications.**

If you experience difficulties when uploading the synopsis (see the next section, (b) Electronic Format) and need to retry or if you want to change the information you have already submitted, you may visit LISA again until 3 April 2006. However, you should note that not more than 25 uploads of your abstract and synopsis are possible (per contribution; if you manage information for more than one contribution, you have 25 tries for each of them).

The ultimate deadline for electronic submission of the two page synopses and abstracts through LISA is **3 April 2006**. New or replacement abstracts and synopses will **not** be accepted after 3 April 2006.

(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 2006 web site. 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 25 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 “ β ”, “n(e)” instead of “ n_e ”, etc. The input provided in the text boxes will be used for producing the Book of Abstracts. .

(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, first letter in capitals, first letter of each subsequent word in capitals except for articles and propositions
- 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.