Second Announcement

The 4th Joint Experiment – Host Laboratory will take place on the Tokamak TCABR of the Instituto de Física of the Universidade de São Paulo, São Paulo, Brazil, from May 04 to May 15. The JOINT EXPERIMENTS are international events organized in cooperation with the IAEA – International Atomic Energy Agency in the framework of the Coordinated Research Project on Joint Research Using Small Tokamaks whose main objective is to enhance the collaboration between research groups and laboratories of several countries aiming to increase the development of fusion research science for the goal of creating an inexhaustible and ecologically acceptable source of energy: the nuclear fusion reactor. Previous events were held on the tokamaks: CASTOR of the Plasma Physics Institute, Prague, Czech Republic; T-10 of the Kurchatov Institute, Moscow, Russian Federation and ISTTOK of the Instituto de Pesquisas de Fusão Nuclear, Lisboa, Portugal. The event is supported by the RNF – Rede Nacional de Fusão/Ministério de Ciência e Tecnologia/Comissão Nacional de Energia Nuclear and the IAEA – International Atomic Energy Agency

The scientific programme to be addressed during the 4th Joint Experiment will be the following:

**Interaction of electromagnetic waves with plasmas in the Alfvén wavelength region**
- Comparative studies of the antenna phasing on Alfvén wave absorption, in particular regarding resonant radial deposition profiles and minimization of plasma edge absorption and uncontrollable density rise;
- Application of Alfvén waves associated with reflectometry for plasma diagnostics;
- Effect of the excited Alfvén wave spectrum on plasma peripheral transport and turbulence;
- Application of Alfvén waves associated with reflectometry for plasma diagnostics.

Physicists in charge: R. M. O Galvao, A. Elfimov and L. Ruchko

**Physics of the SOL (Scrape-Off-Layer) and plasma edge in ohmic and improved confinement regimes**
- Search for zonal flow and GAM;
- Study of improved regimes of energy confinement with biasing;
- Measurement of edge and SOL plasma intermittency;
- Characterization of edge fluctuations and transport;
- Investigation of turbulence driven transport in tokamaks;
- Toroidal and Poloidal Plasma Rotation under the influence of biasing.

## Programme

### SCHEDULE OF EXPERIMENTS

**FIRST WEEK – May 04-09**

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<tr>
<th>Time</th>
<th>Monday</th>
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<th>Saturday</th>
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<tr>
<td>10:00</td>
<td>Opening Ceremony Visit to TCABR Tokamak</td>
<td>09:00 to 12:00</td>
<td>Planning of the Experiments</td>
<td>Planning of the Experiments</td>
<td>Planning of the Experiments</td>
<td>Standby</td>
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| 15:00  | **Open physics and technology issues towards fusion energy**
Dr. C. Varandas
Instituto de Plasmas e Fusão Nuclear – IST – Portugal

15:00 to 16:50

16:10 to 17:00

17:00 to 18:00
| 13:00 to 18:00 | Experimental Session 1 | Experimental Session 2 | Experimental Session 3 | Experimental Session 4 | Standby |

Experimental Session 1 to 4: *Interaction of electromagnetic waves with plasma in the Alfvèn wavelength region*

Physicist in charge: **Dr. L. Ruchko**

Introduction to Diagnostics: *Reflectometer, Thomson, Probes and Soft x-rays*

*Tuesday*
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<tr>
<td>09:00 - 12:00</td>
<td>Diagnostics and Planning of the Experiments</td>
<td>Planning of the Experiments</td>
<td>Planning of the Experiments</td>
<td>Planning of the Experiments</td>
<td>Overview and Closing</td>
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<td><em>Non-linear Methods of analysis on the study of turbulence</em></td>
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<td>by Dr. I. L. Caldas</td>
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<td>14:00 - 18:00</td>
<td>Experimental Session 5</td>
<td>Experimental Session 6</td>
<td>Experimental Session 7</td>
<td>Experimental Session 8</td>
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Experimental Session 5 to 8: *Physics of the SOL (Scrape-Off-Layer) and plasma edge in ohmic and improved confinement regimes (biasing)*

Physicist in charge: Dr. Y. Kuznetsov

Introduction to Diagnostics: *Probes, Spectrometer for Plasma Rotation Measurements and $H_a$ array*
Accomodations

Hotel booking will be confirmed by e-mail from tcabrje@if.usp.br.

Arrival in São Paulo

There are two airports in São Paulo: Guarulhos and Congonhas. International flights arrive in Guarulhos. The best choice to reach the Howard Jhonson hotel and CEPEUSP accommodation is to take a taxi that will cost about R$ 100.00 (45.00 dollars or 35 euros). The other option is to take the Airport Bus (about 15.00 dollars) which will take you to final stop at Av. Faria Lima corner with Av. Pres. Juscelino Kubitschek and then to take a taxi to the hotel or CEPEUSP at a cost of about 15.00 dollars.

Visa

Participants who still need visa to enter Brazil contact the Local Organising Committee:
tcabrje@if.usp.br
Phone: +55-11-3091-7067
Fax: +55-11-3091-7014
Committees and Contacts

**Chair of the Joint Experiment:** Prof. Ivan Cunha Nascimento

**Co-Chairs of Joint Experiment:**
Prof. Ricardo M.O. Galvão  
Dr. Gunter Mank (IAEA)

**CRP International Scientific Committee:**
Dr. Mikhail Gryaznevich (Chair, Culham Laboratory, UK)  
Prof. Guido Van Oost (Gent University, Belgium)  
Dr. Edson Del Bosco (National Space Research Institute (INPE), Brazil)

**Local Organising Committee**
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[mail: icunhanascimento@gmail.com]

*Co-Chairs:*
Prof. Artour Elfimov  
Prof. Iberê Luiz Caldas  
Dr. Yurii K. Kuznetsoy  
Prof. Munemasa Machida

*Scientific Secretary:* Dr. Wanderley Pires de Sá (pires@if.usp.br)

*Members:*
Prof. Aluísio Fagundes  
Dr. Leonid Ruchko  
Prof. Ruy Pepe da Silva

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**Key Persons**
*Alfven:*
Prof. Artour Elfimov  
Dr. Leonid Ruchko
Prof. Ricardo M.O Galvão

*Edge and SOL Physics*:  
  Prof. Ivan Cunha Nascimento  
  Dr. Yurii K. Kuznetsov  
  Prof. Iberê Luiz Caldas  
  Dr. Carlos Silva (ISTTOK)  
  Humberto Figueiredo (ISTTOK)

*Plasma Rotation*:  
  Prof. Ivan Cunha Nascimento  
  Dr. José H. F. Severo

*Data Acquistion and Remote Control*:  
  Prof. Aluídio Fagundes  
  Dr. André Neto (ISTTOK – Data Acquisition)  
  Prof. Horácio Fernandes (ISTTOK – Remote Control)  
  Dr. Wanderley Pires de Sá

*Diagnostics*:  
  Dr. Fábio Borges (Thomson)  
  Dr. José H. F. Severo (Spectroscopy)  
  Dr. Juan Iraburu Elisondo (Probes, Interferometry)  
  Dr. Leonid Ruchko (Reflectometry)  
  Dr. Luiz Ângelo Berni (Thomson)  
  Dr. Manuel Peres Alonso (ISTTOK – Thomson)  
  Prof. Munemasa Machida (Spectroscopy)  
  Dr. Omar Usuriaga (ECE)  
  Prof. Ruy Pepe da Silva (ECE)  
  Dr. Yurii K. Kuznetsov (Probes)  
  Dr. Wanderley Pires de Sá (Probes)

*TCABR Machine Support*:  
  Dr. Juan Iraburu Elizondo (Head)  
  Abílio Pires dos Reis (Engineer, Reflectometry)  
  Edson Kenzo Sanada (Tokamak Operation)  
  Nelson A.M. Cuevas (Chief Engineer)  
  Tarsis Germano (Soft X-Ray, Bolometry)  
  Ivan Cardoso (Technician)  
  Nélio Nunes (Technician)  
  Rogério Eduardo Capucci (Technician)