

TCABRJE - Joint Experiment on TCABR – Host Laboratory Experiment  
04th to 15th May 2009  
Laboratory of Plasma Physics  
Institute of Physics – University of São Paulo  
São Paulo – SP – Brazil

## Second Announcement

The 4<sup>th</sup> 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 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.

Physicists in charge: I. C. Nascimento, Y. Kuznetsov, I. L. Caldas and J. H. F. Severo

## Programme

SCHEDULE OF EXPERIMENTS							
FIRST WEEK – May 04-09							
	Monday		Tuesday	Wednesday	Thursday	Friday	Saturday
10:00 to 12:00	Opening Ceremony to Visit to TCABR Tokamak	09:00 to 12:00	Diagnostics and Planning of the Experiments	Planning of the Experiments	Planning of the Experiments	Planning of the Experiments	Standby
15:00 to 15:50	<i>Open physics and technology issues towards fusion energy</i> Dr. C. Varandas	13:00 to 18:00	Experimental Session 1	Experimental Session 2	Experimental Session 3	Experimental Session 4	
16:10 to 16:50	<i>New results in the Iranian IR-TI Tokamak</i> Dr. M. Ghoranneviss						
17:00 to 18:00	Introduction to TCABR to Tokamak and Data Acquisition System						

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

Physicist in charge: *Dr. L. Ruchko*

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

SCHEDULE OF EXPERIMENTS					
SECOND WEEK – May 11-15					
	Monday	Tuesday	Wednesday	Thursday	Friday
09:00 to 12:00	Diagnostics and Planning of the Experiments  <i>Non-linear Methods of analysis on the study of turbulence</i> Dr. I. L. Caldas	Planning of the Experiments	Planning of the Experiments	Planning of the Experiments	Overview and Closing
14:00 to 18:00	Experimental Session 5	Experimental Session 6	Experimental Session 7	Experimental Session 8	

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 Monday H<sub>α</sub> array*

## **Accomodations**

Hotel booking will be confirmed by e-mail from [tcabrje@if.usp.br](mailto: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 accomodation 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**

Designated participants who still have problem with visa to enter Brazil should contact urgently the chair of TCABR **JE**:

Prof. Dr. Ivan Cunha Nascimento

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## 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**

*Chair:* Prof. Ivan Cunha Nascimento

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Prof. Iberê Luiz Caldas

Dr. Yurii K. Kuznetsov

Prof. Munemasa Machida

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

*Members:*

Prof. Aluísio Fagundes

Dr. Leonid Ruchko

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**Contact information**

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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 Acquisition and Remote Control:*

Prof. Aluísio 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 Elizondo (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)  
Ablicio 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)