



Report from the EPS Plasma Physics Divisional Board

Introduction Advancing ITER continues to be the primary concern of the magnetic confinement community. In 2007 we heard about the review process in an evening session presented by Günter Janeschitz. This year we hear about the end product of this review process from Paul Thomas.

Warsaw Conference 2007

The 2007 EPS divisional conference on Plasma Physics was once again a great success. The divisional Board expresses its thanks to all the organisers of this conference, including the Local Organising Committee under Dr. Skaladanowski and the Programme Committee under Sibylle Guenter for all the effort made.

Hersonissos Conference 2008

The 2008 Local Organising Committee comprises:

Paraskevas Lalousis (Chair)
Stavros Moustazis (Scientific Secretary)
Basil Duval (CRPP-EPFL, Elise)
Alkis Grecos
Kyriakos Hizanidis
Loukas Vlahos
Giannis Vomvoridis

The 2008 **Programme Committee** met in November 2007 in Lausanne and in March 2008 in Hersonissos. The 2008 PC members are:

2008 PROGRAMME COMMITTEE MEMBERS

Carlos Hidalgo Spain (Chair)

MCF plasmas

Paolo Buratti Italy
Vincent Chan USA (APS)
Ralph Dux Germany
Xavier Garbet France (sub-chair)
Paraskevas Lalousis Greece (Chair LOC)
Jo Lister Switzerland (Chair EPS PPD)
Alberto Loarte EFDA/EU
Fernando Meo Denmark
Maria Puiatti Italy
Howard Wilson United Kingdom

Basic and space plasmas

Fabrice Doveil France
Luis Silva Portugal
Michel Tagger France
Nigel Woolsey United Kingdom (sub-chair)

BP & IF plasmas

Martha Fajardo Portugal
Sylvie Jacquemot France (sub-chair)
Kate Lancaster United Kingdom
Francesco Pegoraro Italy
Manuel Perlado Spain
Kazuo A. Tanaka Japan (JSPF)

Dusty and low temperature plasmas

Mark Bowden United Kingdom
Francoise Massines France
Hubertus Thomas Germany (sub-chair)

Award of the Hannes Alfvén Prize 2008

The Hannes Alfvén Prize is awarded by the Board of the Plasma Physics Division. A large number of international experts were consulted to prepare a short-list of appropriate candidates. A first round of electronic voting by the Board reduced the field to 3 candidates and these candidatures were debated during the winter Divisional Board meeting.

This year, the Hannes Alfvén prize has been awarded to **LIU CHEN** “for his many seminal works on Alfvén wave physics in laboratory and space plasmas and his continuing contribution of new ideas, including: the theories of geomagnetic pulsations, Alfvén wave heating, fishbone oscillations, the formulation of the nonlinear gyrokinetic equations and fundamental contributions to drift wave instabilities and turbulence”

The full laudation reads:

“Friedrich Wagner is awarded the Hannes Alfvén prize for his continuing outstanding contributions to research into fusion by magnetic confinement.

His discovery of the High Confinement mode (H-mode) in the ASDEX tokamak and subsequent work on transport barriers brought on a new era in nuclear fusion research, with consequences for ITER and future fusion reactors. Historically, study of the High Confinement mode led to the discovery of the stabilizing effect of sheared flows on plasma turbulence, implying a revolutionary step forward in the understanding and control of plasma turbulence and transport. The best fusion performance to date has been obtained in plasma conditions involving transport barriers and the concomitant turbulent transport reduction.

The successes achieved by the Wendelstein 7-AS experiment have re-vitalised the stellarator as a viable alternative confinement concept. Thus, although the next major magnetic confinement device ITER is a tokamak, it has become clear that other magnetic confinement concepts offer significant potential advantages, while a single machine concept may not provide a comprehensive solution for all possible applications of fusion energy. Contributions from the Max Planck Institute stellarator team lead by F. Wagner have shown that the performance and physics of confinement in stellarator devices are of general interest to the fusion community.

F. Wagner plays a leading role in both tokamaks and stellarator communities and stands out by his ability to summarize the essence of seemingly complex plasma phenomena. His open-minded approach to promoting the development of plasma physics has stimulated the creation of multi-disciplinary links between different scientific communities.”

The Plasma Physics Innovation Award 2008

The divisional board has created a new prize, the “Plasma Physics Innovation Award”, organised by Bertrand Lembege. Two other Board members, Holger Kersten and Jörg Winter were included to form a jury. In view of two outstanding candidatures which both illustrate the purpose of this award to underline the high added value of plasma physics to industry, the Board agreed to award two prizes in 2008.

The first is awarded to **John Allen and Beatrice Annaratone** “...for the development of a novel RF plasma reactor, based on the phenomenon of plasma-sheath resonance. Extensive experimental and theoretical work led to the design and production of a material processing reactor, with single or dual frequencies, to produce denser plasma at low pressures.”

The fuller laudation reads “... for their invention of a plasma heating scheme used in an RF plasma reactor, where the plasma heating is implemented using the plasma series resonance. This heating scheme is now used by several industrial companies since its concept presents a large amount of advantages. The authors recognized that the plasma sheath resonance could be used to improve by a significant way the coupling of power of capacitive tools. An extensive experimental and theoretical work has led to the design and production of a material processing reactor, with single or dual frequencies, to produce denser plasma at low pressures. Applications are strongly concerning many steps in an Intel duo processor chip's fabrication which depends on plasma..

It is clear that this novel improvement can have a very large impact on several industrial components.”

The second is awarded to **Gregor Morfill** “...for his innovative work in developing and testing low temperature plasma sterilisation in vivo. This novel therapeutic method, using plasmas in the field of “plasma medicine”, overcomes problems with conventional techniques due to the contact-free and direct treatment, and to the ability of plasmas to penetrate even into tiny gaps.”

The fuller laudation reads “for his innovative work in developing and testing low temperature plasma sterilisation “in vivo”. This work permitted to establish a novel therapeutic method in the so called “plasma medicine” field . A special

high-yield plasma device (the micro Plaster), operating at room temperature was developed, tested and certified. Therapy of chronic foot and leg ulcers has been selected as the first clinical application of plasma treatment. Extensive work (i) demonstrated bactericidal efficiency and medical compatibility ex-vivo on different strains of bacteria (some become resistant against most antibiotics and cause big problems in medical care), and (ii) investigated the safety and efficiency of plasma therapy in humans as well as identifying the optimal dose and treatment frequency. In addition, a strong effort is in progress for miniaturisation to an "hand-held plasma torch for 'easy to use" general purpose sterilisation in private households, and for the development of other applications for preventive medicine, bacterial superinfection, and fungal diseases.

This novel sterilisation technique using plasmas overcomes problems with conventional techniques due to the contact-free and direct treatment and the ability of plasmas to penetrate even into tiny gaps.”

The PhD Research Award 2008

An independent Jury composed of **Daan Schram**, **Peter Mulser** and **Jan Weiland**. examined all the candidatures in a process managed by **Wolfgang Suttrop**. The jury nominated 3 award winners from an impressively high quality of candidates. The 2008 citations in alphabetical order are:

Dr. Ivo Classen (NL) for his thesis "Imaging and control of magnetic islands in tokamaks" (carried out at FZJ/Textor)

Dr. Brendan Dromey (Queens University, Belfast, Ireland) for his thesis "Bright soft X-ray harmonic generation" (carried out at RAL, UK)

Dr. Louise Willingale (Imperial College, U.K.) for her thesis entitled "Ion acceleration from high intensity laser plasma interactions: Measurements and applications" (carried out at RAL)

Sofia Conference 2009

The 2009 EPS Plasma Physics Conference will be held in Sofia (Bulgaria) from June 29 – July 3, 2009, in the National Palace of Culture Congress Center.

The Local Organising Committee will be chaired by Matey Mateev, Professor in the Department of Theoretical Physics, University of Sofia. The conference organisation will be presented during the 2008 conference closing session, as is traditional. The 2009 Programme Committee is chaired by Sylvie Jacquemot and the membership, although not fully confirmed, already includes:

EX-OFFICIO

Sylvie Jacquemot (PC Chairman)
Carlos Hidalgo (Chair EPS Plasma Physics Division)
Matey Mateev (Chairman LOC)

MCF

M. Bécoulet
L. Carraro
S. Coda
K. Gibson
I. Hutchinson (APS)
K. McClements
P. Martin
F. Ryter

BPIF

M. Koenig
A. Macchi
S. Mangles
G. Gregori

DUSTY AND LOW TEMPERATURE PLASMAS

P. Chabert
S. Ratynskaia
V. Schultz van de Gathen
D. Uhrlandt

BPASP

T. Mendonça
L. Vlahos

The EPS Plasma Physics Division Board

The Divisional Board currently has the following composition: J. Lister (chair), R. Bingham (vice-chair), J. Ongena (secretary), S. Atzeni, D. Batani, J. Dahlburg (APS), C. Hidalgo, S. Jacquemot, H. Kersten, B. Lembege, P. Monier-Garbet, E. Rachlew, B. Sharkov, W. Suttrop, K. Tanaka (JSPF), J. Winter. The Board met in November 2007 in Lausanne, and is due to meet at Hersonissos in June 2008.

According to the Board statutes, elections were held in May 2008 since 4 Board members, Jo Lister, Bob Bingham, David Campbell and Jef Ongena, reach our sell by date and must leave the Board. New members of the Board, duly elected, are:..... The new Board may co-opt additional members, according to the statutes, if they so choose.

The Chairmanship of the Plasma Physics Division is transferred to Carlos Hidalgo (CIEMAT) following the 2008 conference. The retiring members of the Board wish him well in this new role.

For your board, Jo Lister, Chairman, Hersonissos, June 2008