Report from the EPS Plasma Physics Divisional Board

Strasbourg EPS Conference 2011

The 38th European Physical Society Conference on Plasma Physics was hosted by the Institute for Magnetic Fusion Research (CEA, France) and was held at the Strasbourg Convention Centre from 27 June to 1 July 2011. The conference was locally organized by a team from CEA, which was coordinated by Alain Bécoulet with Tuong Hoang as Scientific Secretary. The conference attracted a large number of (nearly 750) delegates coming from more than 30 countries. Our French hosts provided an excellent atmosphere for the conference. The objective of the conference was to assemble contributions with depth and high quality from the entire field of plasma physics. The Conference also hosted the satellite meeting EFTSOMP which is a Workshop on Electric Fields, Turbulence and Self-Organisation in Magnetized Plasmas.

In preparing the scientific programme of the conference and to adequately represent the different fields of plasma physics, the Programme Committee chaired by Uli Stroth was divided into four sub-committees, representing the main areas of plasma science. These committees were chaired by Per Helander (Magnetic Confinement Fusion), Leonida A. Gizzi (Beam Plasmas and Inertial Fusion), Ambrogio Fasoli (Basic and Astrophysical Plasmas) and Timo Gans (Low Temperature Plasmas). Proposals from Japan (JSPS) and the US (APS) were coordinated by Mamiko Sasao (Tohuku University) and Cary Forrest (University of Wisconsin). The role of the Scientific Secretary of the Programme Committee was filled by Boudewijn van Milligen (CIEMAT).

Stockholm EPS / ICPP Conference 2012 (http://epsicpp2012.spp.ee.kth.se/)

The 2012 Local Organising Committee is chaired by Lars Blomberg and Svetlana Ratynskaia.

The 2012 Programme Committee (PC) met in December 2011 in Madrid and in March 2012 in Stockholm. The PC was assisted by suggestions received from individual scientists through the EPS / ICPP Open Forum.

2012 PROGRAMME COMMITTEE MEMBERS

Ambrogio Fasoli	Chair PC
Carlos Hidalgo	Chair EPS PPD
George Morales	Chair ICPP IAC
Mamiko Sasao	JSPF, Japan
Fred Skiff	APS, USA

Magnetic Confinement Fusion

Volker Naulin	Denmark / chair
Josef Schweinzer	Germany
Bogdan Hnat	UK
Susanna Cappello	Italy
Taina Kurki-Suonio	Finland
Abhijit Sen	India
Sanae I. Itoh	Japan
Gerald Navratil	USA

Basic, Space and Astrophysical Plasmas

George Morales	USA / chair
Thomas S. Pedersen	Germany
Isabel Tanarro	Spain
Sadruddin Benkadda	France
Ricardo Galvao	Brazil
C. Z. Cheng	Taiwan

Inertial Fusion and Beam Plasmas

Luis Silva	Portugal / chair
Manuel Perlado	Spain
Bruno Le Garrec	France
Sebastien Le Pape	USA
Kunioki Mima	Japan
Michael Tatarakis	Greece
Valentin Smirnov	Russia

Low Temperature and Dusty Plasmas

Padma Shukla	Germany / chair
Remi Dussart	France
Juergen Meichsner	Germany
Cristina Gómez Aleixandre	Spain
Vasco Guerra	Portugal
Sergey Vladimirov	Australia

The Hannes Alfvén Prize 2012

The 2012 divisional **Hannes Alfvén Prize** is awarded to:

Eugene N. Parker (University of Chicago, United States of America)

"for his theoretical discovery of the transonically expanding atmosphere in cool stars as a basic phenomenon in the magnetic astrophysical cosmos".

Professor Eugene N. Parker reported his theoretical discovery of the transonic expansion as the natural state of a magneto-hydrodynamic atmosphere in two fundamental papers on the *Dynamics of Interplanetary Gas and Magnetic Fields* and *The Hydrodynamic Theory of Solar Corpuscular Radiation and Stellar Winds* published in 1958 and 1960. This theory led him to predict the existence of the solar and stellar winds.

A hydrodynamic model is used in these papers to establish the inevitability of the transonic expansion when a corona is maintained at a million-degree temperature. Remarkably ahead of its time, the substantive Appendix of Parker's 1960 paper shows that the heating of the corona must have a magnetohydrodynamic origin, as confirmed by decades of subsequent research. The solar wind is the subject of a whole discipline - space physics, whereas in astronomy observations have revealed a universal occurrence of astrophysical winds, many of them based on the mechanism outlined in Prof Parker's fundamental contributions. The physics of tenuous magnetized plasmas is the basic reason for most of these expanding cosmical atmospheres. Through his prolific seminal publications and four well-read monographs in the past half-century, Professor Parker has led us in the discovery and exploration of nonlinear plasma and magneto-hydrodynamic processes of astrophysics. A brief enumeration of fields to which he has made ground-breaking contributions is: magnetic field generation in astrophysical bodies; theory of reconnection of magnetic fields; the physics of magnetic flux tubes in stellar interiors; the heating of astrophysical coronae; cosmic-ray propagation theory.

These considerations and his fundamental, extensive conceptual influence, as exemplified by his theoretical discovery of the expanding magneto-hydrodynamic atmosphere, are a unique basis for awarding the 2012 EPS Alfven Prize to Professor Parker.

The Plasma Physics Innovation Prize 2012

The 2012 **Plasma Physics Innovation Prize** of the European Physical Society is awarded to

Eugen Stamate (Technical University of Denmark; Denmark)

"for the discovery of the modal and discrete focusing effects associated with three-dimensional plasma-sheath-lenses that contributed to ion beam extraction, mass spectrometry, control of the ion flux on substrates and the development of new sensors for plasma and sheath parameters ".

The plasma sheath, concept first introduced by Langmuir in the 1920´s, is generated by the interaction of the plasma with the boundary material. The research work led by E. Stamate has revealed discrete and modal focussing effects in a tree-dimensional plasma sheath lens with applications to sheath diagnostics, negative and positive ion extraction, mass spectroscopy and control of ion dose in plasma ion implantation. The European Physical Society bestows its 2012 Plasma Physics Innovation Prize for all of these outstanding developments in plasma physics.

Landau-Spitzer Prize 2012

This new award is jointly sponsored by the American Physical Society (APS) and the European Physical Society (EPS) for outstanding contributions to plasma physics. The joint APS-EPS selection committee was comprised of six members: Richard Dendy (Chair), Ricardo Betti (APS), Holger Kersten (EPS), Jürgen Meyer-ter-Vehn (EPS), Ron Parker (APS) and Fred Skiff (APS).

The 2012 Landau-Spitzer prize is awarded to

Sergey I. Anisimov of the Landau Institute for Theoretical Physics (Russian Academy of Sciences)

"for outstanding contributions to plasma physics ranging from fundamental plasma theory to laboratory plasmas, controlled inertial fusion and astrophysical phenomena, particularly in the areas of laser interaction with plasma, plasma dynamics and stability, compressed matter and turbulence."

The American and European Physical Societies bestow their 2012 Landau-Spitzer Prize to Sergey I. Anisimov in recognition of his distinguished contributions to plasma physics and his prominence as an envoy of the Russian school of theoretical physics in Europe, the United States and internationally.

The PhD Research Award 2012

The EPS Plasma Physics Division PhD Research Award has been recently judged by a committee comprising Manfred Thumm and John Allen who examined all the candidatures in a process managed by Dimitri Batani representing the EPS Plasma Physics Division. The EPS PhD prize is a key element of the EPS PPD activities to recognise exceptional quality of the work carried out by young scientists. Based on their conclusions a decision was made to award the EPS-2012 PhD Award to (Alphabetic order):

Bart Hennen (FOM Institute / Eindhoven University of Technology, The Netherlands) has made a thesis on "Feedback control for magnetic island suppression in tokamaks". He developed a new real-time feedback control system which finds, tracks, suppresses and/or stabilizes resistive magnetic instabilities in nuclear fusion plasmas. The system has been implemented on the TEXTOR tokamak. The results show the control of neoclassical tearing mode instabilities employing power modulated electron cyclotron current drive in rotating magnetc islands.

Frédéric Pérez (Laboratoire pour l'Utilisation des Lasers Intenses, Palaiseau, France) submitted a thesis on "Study of supra thermal electron transport in solid or compressed matter for the fast-ignitor scheme". His results show that in some experimental conditions the fast electrons can be collimated due to self-generated magnetic fields produced by resistivity gradients. This may have important implications for the feasibility of the fast ignition approach to inertial fusion.

Jochen Waskoenig (Queen's University Belfast, UK) has made a thesis on "Numerical simulations of the electron dynamics in single and dual radio-frequency driven atmospheric pressure plasmas and associated plasma chemistry in electro-negative He-O_2 mixtures". These include electronegative gases, with as many as sixteen constituents and one hundred and sixteen different reactions taking place. Some comparison with experimental work with dual frequency RF plasmas has been made which establishes the basis for future work in this field.

IUPAP Young Scientist Prize in Plasma Physics

The IUPAP Commission 16 Young Scientist Prize recognizes exceptional achievement in the study of plasma physics by scientists at a relatively junior stage of their career. The 2012 IUPAP Young Scientist Prize is awarded to:

Ian Chapman of the Culham Centre for Fusion Science (UK) for his outstanding experimental work with deep understanding of theory and simulations of plasma instabilities in magnetically confined fusion plasmas.

Espoo EPS Conference 2013

The 2013 EPS Plasma Physics Conference will be held in Espoo (Finland) from July 1 to July 5 2013. The Local Organising Committee is chaired by Taina Kurki-Suonio. The conference organisation will be presented during the 2012 conference closing session, as is traditional. The 2013 Programme Committee is chaired by Volker Naulin and the membership includes:

Basic, Space and Astrophysical Plasmas: Stefaan Poedts (Belgium), Åshild Fredriksen (Norway), Jorge Sánchez-Almeida (Spain), Alessandro Retino (France), Tahar Amari (France), Ivo Furno (Switzerland), Tony Bell (UK)

Magnetic Confinement Fusion: Clemente Angioni (Germany), Peter de Vries (Netherlands), Jef Ongena (Belgium),

Teresa Estrada (Spain), Monica Spolaore (Italy), Thierry Loarer (France), Ian Chapman (UK), Boris Kuteev (Russia)

Inertial Fusion and Beam Plasmas: Marco Borghesi (UK), Olga Rosmej (Germany), Luca Labate (Italy), Gonzalo Figueira (Portugal), Francisco Javier Sanz-Recio (Spain), Jan Badziak (Poland), Daniele Margarone (Chec Republic)

Low Temperature and Dusty Plasmas: Svetlana Ratynskaia (Sweden), Jan Benedikt (Germany), Mirko Cernak (Czech Republic), Tiberiu Minea (France), Nerea Bordel (Spain), Deborah O´Connell (UK), Eva Kovacevic (France)

The EPS PPD Board has approved a two-step process towards the development of a European Conference on Plasmas Diagnostics:

Step 1: Organization of a Plasma Diagnostic Workshop linked to the main EPS-2013 (Espoo) Conference.

Step 2: Based on the experience obtained from the joint EPS-2013 / Plasma Diagnostic Workshop, different options should be explored including: a) Separate EPS Plasma Diagnostic conference b) Bi-annual Joint EPS / Workshop on Plasma Diagnostic (Diagnostic conference within the EPS conference).

The Diagnostics Workshops 2013 PC is composed of: Tony Donné (chair, The Netherlands), Svetlana Ratynskaia (Sweden), Uwe Czarnetzki (Germany), Dimitri Batani (France) and Andrea Murari (UK).

The EPS Plasma Physics Division Board / Elections 2012

In accordance with the statutes of the Plasma Physics Division of the EPS, Carlos Hidalgo will be succeeded by Sylvie Jacquemot who was elected by the EPS PPD Board at its meeting held in Madrid on December 13th 2011. Six members of the present Divisional Board are retiring from it: Dimitri Batani, Pascale Monier-Garbet, Elisabeth Rachlew, Boris Sharkov, Wolfgang Suttrop and Jörg Winter. The Division is grateful for their many contributions. Their replacements have been selected by a process of direct election by the full members of the European Physical Society. The election process for the Board of the EPS Plasma Physics Division was completed by May 18th in a process efficiently managed by Boudewijn van Milligen. Thus, Daniela Farina, Holger Kersten, John Kirk, Piero Martin, Emilia R. Solano and Elisabeth Wolfrum were elected democratically.

The new EPS Plasma Physics Board has the following composition:

Sylvie Jacquemot (chair), Richard Dendy (vice-chair), Dirk Van Eester, Daniela Farina, Leo A. Gizzi, Javier Honrubia, Holger Kersten, John Kirk, Thomas Klinger, Bertrand Lembege, Piero Martin, Emilia R. Solano and Elisabeth Wolfrum.

EPS Plasma Physics Division

Stockholm, July 2012