



## Report from the EPS Plasma Physics Divisional Board

### Development of the Division

In accordance with the statutes of the EPS Plasma Physics Division, the Board – renewed in 2012 – will serve until mid 2016. Elections will be organized spring 2016. Please contact the chair of the Division ([sylvie.jacquemot@polytechnique.fr](mailto:sylvie.jacquemot@polytechnique.fr)) if you are an EPS member ready to serve (a short CV attached to your application will be appreciated). For more information, connect to <http://plasma.ciemat.es/eps/board/>.

### Board meetings

The Board met twice in 2014, the 22<sup>nd</sup> of June in Berlin (Germany) and the 9<sup>th</sup> of December in Paris (France).

### Berlin EPS PP Conference 2014 (<http://eps2014-berlin.de/>)

The 41<sup>st</sup> EPS Conference on Plasma Physics was held at the Berlin Congress Centre in Berlin (Germany) from the 23<sup>rd</sup> to the 27<sup>th</sup> of June, 2014 and attracted about 649 delegates coming from 40 countries, amongst them 133 students. It was hosted by the Max Planck Institute for Plasma Physics and supported by the Deutsche Forschungsgemeinschaft and by MAN Diesel & Turbo. The dedicated work of the Local Organizing Committee, chaired by Thomas Klinger, with the help of Andreas Dinklage as Scientific Secretary and Matthias Hirsch as Webmaster, led to five flawless conference days. The enthusiastic scientific program reflected the diversity and the richness of plasma physics, thanks to the expertise and the dedication of the Program Committee chaired by Svetlana Ratynskaia. The four sub-committees coordinated by Paola Mantica (*Magnetic Confinement Fusion - MCF*), Alessandra Benuzzi-Mounaix (*Beam Plasma and Inertial Fusion - BPIF*), Robert Bingham (*Basic, Space and Astrophysical Plasmas - BSAP*) and Giorgio Dilecce (*Low Temperature and Dusty Plasmas - LTDP*) did really a great job.

For the first time the App conference4me, provided by the Poznan Supercomputing and Networking Center (PSNC), was used and allowed the conference to be widely paperless.

The proceedings, covering contributed orals and posters, were published in the Europhysics Conference Abstracts (ECA) Series (vol. 38F) and are available online at <http://ocs.ciemat.es/EPS2014PAP/html/>, or through the EPS website thanks to the PC Scientific Secretary Boudewijn van Milligen (Spain). The invited papers were published in the January 2015 special issue of Plasma Physics and Controlled Fusion (vol. 57(1)) and can be consulted online at <http://iopscience.iop.org/0741-3335/57/1>.

### Lisbon EPS PP Conference 2015 (<http://www.ipfn.ist.utl.pt/EPS2015/>)

The 42<sup>nd</sup> EPS Conference on Plasma Physics is hosted by the Instituto de Plasmas e Fusão Nuclear from the 22<sup>nd</sup> to the 26<sup>th</sup> of June, 2015, in Lisbon at the Centro Cultural de Belem (Portugal). The Local Organising Committee is chaired by Bruno Gonçalves, with the help of Carlos Silva (co-chair) and Rui Coelho (scientific secretary). The Programme Committee, chaired by Robert Bingham with the help of Wolfgang Suttrop (MCF), Kenneth McClements (BSAP), Stefano Atzeni (BPIF) and Rüdiger Foest (LTDP), met twice, in December 2014 in Paris and in March 2015 in Lisbon. Its detailed composition is given on the conference website at <http://www.ipfn.ist.utl.pt/EPS2015/Committees.html>. Fruitful suggestions were received from individual scientists and institutional laboratories, through the EPS/PPD Open Forum, and from the American and Japanese Physical Societies.

The EFTSOMP workshop (*workshop on Electric Fields, Turbulence and Self-Organization in Magnetised Plasmas*), chaired by U. Stroth, IPP, and organised by C. Silva, IST, is held as a satellite meeting of the conference the 29<sup>th</sup> and 30<sup>th</sup> of June.

### Leuven EPS PP Conference 2016

The 43<sup>rd</sup> EPS Plasma Physics Conference will be held in Leuven (Belgium) from the 4<sup>th</sup> to the 8<sup>th</sup> of July, 2016 and hosted by the Catholic University (KU Leuven). The Local Organising Committee will be chaired by Stefaan Poedts. The Programme Committee, as for it, will be chaired by Paola Mantica (IT) and will include:

- MCF: G. Giruzzi (FR – sub-chair), T. Baelmans (BE), V. Igochine (DE), S. Lebedev (RU), M. Mantsinen (SP), H. Meyer (UK), T.S. Pedersen (DE), P. Ricci (CH), G. Sips (EU) and M. Valisa (IT),
- BPIF: M. Fajardo (PT – sub-chair), D. Neely (UK), R. Piriz (SP), V. Tikhonchuk (FR), S. Weber (CZ) and U. Zastra (DE),
- BSAP: E. Amato (IT – sub-chair), A. Ciardi (FR), T. Neukirch (UK), V. Stenson (DE) and A. Stockem (DE),
- LTDP: T. Gans (UK – sub-chair), P. Awakowicz (DE), O. Kylian (CZ), E. Stamate (DK) and A.L. Thomann (FR).

Suggestions from the community for invited and plenary speakers will be welcome through the Open Forum to be open by the end of the year on the conference website. See announcements on the divisional website.

## Prizes

The EPS Plasma Physics Division took the opportunity of its annual conference to reward researchers who have achieved outstanding scientific or technological results, thus reinforcing excellence in science.

The **2015 Hannes Alfvén Prize** is awarded to **Nathaniel Fisch** (Princeton University, USA) “for fundamental studies of wave-particle interactions, thereby predicting new plasma phenomena, including ways of driving currents efficiently with radio-frequency waves”.

The predictions of current drive effects by Nat Fisch changed the course of research in magnetically confined plasmas. His work overturned two major paradigms. In a 1978 paper predicting the lower hybrid current drive (LHCD) effect, he overturned the paradigm that RF-driven currents would be governed by Spitzer resistivity. Two years later, in a paper with Allen Boozer predicting the electron cyclotron current drive (ECCD) effect, he overturned the paradigm that momentum input was necessary for current drive. He also predicted the minority-ion-species current drive effect. Each new current drive effect predicted by Nat Fisch came as a surprise, but all were ultimately demonstrated experimentally. The technological developments that flowed from Fisch’s theoretical insights were critical not only in enabling steady-state operation of tokamaks, but also in improving energy confinement, for example by establishing internal transport barriers or by stabilizing sawtooth oscillations. One recent endorsement of the continuing impact of his work in enabling these further advances came in the awarding of the 2014 John Dawson Award for Excellence in Plasma Physics Research to a team of US and European researchers for using ECCD to stabilize neoclassical tearing modes. Together with Jean-Marcel Rax, Nat Fisch also predicted the alpha channeling effect. Here the objective is to transfer energy from the fusion-born  $\alpha$ -particle population to the background plasma, in ways more advantageous than by the collisional slowing-down. The alpha channeling effect relies on wave-particle interactions that constrain the alpha-particle movement jointly in velocity space and in real space. Brought to fruition, this effect would significantly reduce the cost of fusion power from magnetically confined plasmas. More recently, Nat Fisch has also been highly creative in advancing different nonlinear mechanisms for compressing high-power laser pulses and developing critical auxiliary methods to tune out unwanted noise, thereby opening new avenues for physics at extreme electromagnetic field intensities, and perhaps establishing the successor technology to today’s CPA lasers. Nat Fisch has made, and is still making, many huge contributions to plasma physics.

The **2015 EPS Plasma Physics Division PhD Research Award** has been judged by an external committee, comprising Patrick Mora (FR), Gérard Bonhomme (FR), Guy Pelletier (FR) and Christoph Hollenstein (CH), who examined all the candidatures in a process managed by Elisabeth Wolfrum representing the EPS Plasma Physics Division. Based on their conclusions, this year’s award goes to: **Bruno Albertazzi** (LULI, FR) for his PhD thesis on “Plasmas Lasers et Champs Magnétiques”, **Joaquim Loizu** (EPFL, CH) for his PhD thesis on “The role of the sheath in magnetized plasma turbulence and flows” and **Michael Rack** (Düsseldorf Univ., DE) for his PhD thesis on “Influence of resonant magnetic perturbations on transient heat load deposition and fast ion losses”.

The **2015 EPS/PPCF/IUPAP Poster Prizes** and the **2015 Itoh Project Prize**, sponsored by the Kyushu University (Japan) and supported by IoP, will be awarded during the conference and their recipients announced during the closing session.

Finally, the *Beam Plasma & Inertial Fusion* section of the Division will take the opportunity of the conference to announce the **2015 Edouard Fabre Prize** supported by the COST action MP1208



S. Jacquemot  
on behalf of the EPS Plasma Physics Division Board  
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