

# **C16 activities during 2015-2017**

## **0) Introduction**

This report covers activities of the Commission during the 3 years period 2015-2017.

The C16 Commission (Plasma Physics) was elected at the General Assembly 2014. Many of its members were new, but nevertheless, the whole Commission was able to immediately work as an efficient team.

## **1) Activities during 2015 and 2016**

The corresponding reports can be found at

<http://iupap.org/commissions/c16-plasma-physics/reports/>

under **Reports to the IUPAP Council and Commission Chairs: [2015\(Oct\)](#), [2016](#)**

## **2) Activities during 2017**

### **2.1) Commission meeting 2017**

A Commission meeting was organized during the European Physical Society-Plasma Physics Division at Belfast (26-30<sup>th</sup> June 2017). The discussion points were:

- the view of the Commission members on the list of nominees for the next C16 Commission membership
- the request for IUPAP support for conference

### **2.2) C16 IUPAP Young Scientists Awards**

In 2017, no Young Scientist Awards was given since the C16 already awarded the three prizes in 2015 and 2016.

### **2.3.) EPS 2015 Student Poster Prizes**

During the EPS Conference mentioned above, the Plasma Physics and Control Fusion (PPCF) / European Physical Society (EPS) / International Union of Pure and Applied Physics Prize (IUPAP) joint Student Poster Prizes were awarded. The prizes went to (per alphabetic order): Aaron Alejo (Queen's University of Belfast QUB, UK) for his poster entitled “Stabilisation of radiation pressure driven ion acceleration from ultra-thin targets, studied by fast neutron spectroscopy”, Michael Griener (Max-Planck-Institut für Plasmaphysik IPP, Germany) for “Implementation of fast line ratio spectroscopy on helium as plasma edge diagnostic at ASDEX Upgrade”, Giannandrea Inchingolo (Instituto Superior Técnico IST, Portugal) for “Large-scale PIC simulations of high  $\beta$  magnetorotational instability” and Axel Jardin (Institut de Recherche sur la Fusion Magnétique IRFM CEA/, France) for “Investigation of impurity cooling factor robustness against transport for application of GEM detectors to W core density reconstruction on WEST”.

A short note on the EPS meeting and the awards will be published in the Newsletter

#### **2.4) Participation to ICPIG 2017**

The Vice Chair attended the International Conference of on Phenomena in Ionized Gas (ICPIG) in Estoril (Portugal). During the Opening Session, he addressed, on behalf of IUPAP C16 Commission, a few words of welcome.

The Local Organizers have written a short note for the IUPAP News Letter, which is reproduced in an Annex to the report.

#### **2.5) Proposal of support of Conferences in 2018**

The Commission received two request of support:

- 42nd COSPAR Scientific Assembly and Associated Events to be held in Pasadena
- International Congress on Plasma Physics (ICPP) to be held in Vancouver

The Commission recommends not to support the COSPAR

meetings, since its relevancy to Plasma Physics is very weak. The ICPP is a major Plasma Physics Conference and the Commission recommended to support it. It also recommends that the Organizers increase the number of female members in the International Advisory Committee: this recommendation was accepted by the Organizers.

## **2.6) New membership of the Commission**

The Chair consulted the whole Commission on the issue of the membership of the Commission for the next term, as well the name of the Commission Officers. The Vice Chair also held a discussion during the Commission meeting in Belfast.

The Chair has written a recommendation for the membership and the nomination of the new Officers. This recommendation is in agreement with the opinion given by the Commission.

# Annex 1 Report on the ICPIG 2017

## The XXXIII International Conference on Phenomena in Ionized Gases

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Ionized gases are an amalgamation of electrically charged species (electrons and ions), eventually mixed with neutral molecules, that may exhibit significant deviations with respect to thermodynamic equilibrium, with hot electrons stimulating the reactivity of the cold neutrals. This fourth state of matter was termed “plasma” by Irvin Langmuir 90 years ago, and the community immediately perceived its relevance for many applications with societal interest, ranging from the production of energy by fusion plasmas to the processing of both organic and inorganic materials by partially ionized gases.

The International Conference on Phenomena in Ionized Gases (ICPIG) was founded in 1953, only three decades after Langmuir’s identification of plasma, and today ICPIG is one of the oldest and most important international conferences on plasma physics. In its early editions, ICPIG was mostly dedicated to fundamental science (focusing on topics such as elementary processes and fundamental data, plasma diagnostics, wave and instabilities and space physics), but the recent burst of interest in plasma-based applications has pushed the community to follow new research paths, contributing also to enlarge the scope of ICPIG, for example with the addition of topics on plasma processing of surfaces and particles, and medical, biological, environmental and aeronautical applications. Although this diversification led inherently to the foundation of more specialized plasma conferences and workshops, ICPIG kept the role of interconnecting the broad community of low-temperature plasma physics, holding a key position as a “forum for the discussion of nearly all fields of plasma science”.

The XXXIII edition of ICPIG was held in Estoril, Portugal, from 9 to 14 July. The Local Organizing Committee was composed by members of the Instituto de Plasmas e Fusão Nuclear, Instituto Superior Técnico, belonging to the University of Lisbon, the University of Oporto and the University of Minho.

The XXXIII ICPIG has featured a new conference format. Leveraging on the large diversity that characterizes ongoing research in plasma physics, and aiming also on broaden opportunities for the diffusion of scientific results by both young and senior researchers, the International Scientific Committee of ICPIG has decided to reduce the number of general invited talks to introduce, for the first time, oral contributions. The 2017 scientific program was composed by 6 invited general lectures, 29 invited topical lectures and 36 oral contributions, organized in two parallel sessions, in addition to 4 poster sessions and 1 special session on “Challenges in the modelling of low-temperature plasmas” (in honour of our late and distinguished colleague Carlos Matos Ferreira), corresponding to a total of 416 submissions presented by 387 participants from 36 countries. One of the important scientific highlight is the growing importance of the physics and applications of atmospheric plasma .

ICPIG awards the ‘von Engel and Franklin Prize’, established in 1998. It is sponsored by the ‘Hans von Engel and Gordon Francis Fund’ and is administered by the Board of Physical Sciences, University of Oxford. The prize is named in honor of two distinguished colleagues who had a major role in ICPIG and its community since the first meeting in 1953. The 2017 von Engel & Franklin Prize was awarded to Prof. Uwe Czarnetzki (Ruhr Universität – Bochum) for his long-standing and important contributions to the field.

ICPIG is organized in accordance with IUPAP principles, regarding the free circulation of scientists for international purposes, as stated in the declaration of the International Council of Science, adopted at the 26th General Assembly in 2008 and endorsed by the 27th General Assembly in 2011. In particular, no *bona fide* scientist is excluded from participation on grounds of origin, nationality or political considerations unrelated to science. ICPIG XXXIII is indebted to IUPAP for its generous financial support, that allowed to support the travel expenses of several participants from developing countries.

The XXXIII edition of ICPIG was very successful, since it brought together a large number of researchers that could discuss plasma physics for 5 days, in a relaxed atmosphere, enjoying a high-quality scientific program.

Figures

**Figure 1.** View of the main auditorium during the Opening session



**Figure 2.** Group photo of ICPIG participants in front of the Estoril Conference Center

