

Report of WG14 on Accelerator Science 2015-2017

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Introduction

IUPAP Working Group 14 (WG14) on Accelerator Science, was created in 2015, in response to a resolution of the XXVIIIth General Assembly of IUPAP to form a new Working Group on Accelerator Science.

The goal of WG14 is to promote the exchange of information and views among the members of the international scientific community in the field of Accelerator Science on topics related, but not limited, to:

- the theory and experiments concerned with the nature and properties of particle accelerators and beam physics
- the improvement of international communication in Accelerator Science through the sponsorship of professional meetings
- the future of accelerator facilities for various fields that benefit science and society
- the industrial, medical, energy production and environmental applications of relevant accelerator technologies

The membership of WG14 is given in the Appendix.

WG14 has held two face-to-face meetings so far, and a third one is scheduled in November 2017. The first meeting was held on May 9, 2016, in conjunction with the 2016 International Particle Accelerator Conference, in Busan, Korea. The second meeting took place on May 15, 2017 during the IUPAP-sponsored International Particle Accelerator Conference 2017 in Copenhagen.

Both meetings made audio facilities available to enable remote participation of members who could not travel to the meetings. In addition, teleconferences were held with the entire working group, or with subsets, focused on specific topics.

This report to IUPAP highlights progress, issues, and future activities of WG14.

Mission of WG14

There is broad and strong agreement that an importance element of our mission is to promote accelerator science as a distinct discipline in its own right, and to encourage R&D and publications. It was pointed out that the lack of a publications culture is a major issue in our field, and international recognition for major prizes is weak or lacking due to poor publication record.

Membership

During the first meeting of WG14, we noted that certain regions and disciplines are under-represented in the initial membership of WG14. These include: South America, Africa, Australia/New Zealand as well as Industry, Energy and Radioisotope production.

At the second meeting we welcomed three new members of WG14: Director of Budker: Dr. Logatchov, BINP, Russia (excused), Dr. Liu Lin, Brazilian Synchrotron Light Laboratory - LNLS (present), and Dr. Simon Mullins, ITHEMBA LABS - South Africa (joined via teleconference).

SESAME will represent collectively the Middle East region, and the new accelerator director, when he/she is identified, will be the representative in our WG. In the interim, Rolf Heuer, as President of the SESAME Council, will fulfill that role.

Regarding a representative from industry, we agreed to nominate a senior accelerator scientist who has experience interacting with industry rather than an industrial representative, as the latter may be perceived as not-equitable by other industries.

Nikolai Lobanov was selected to represent Australia/New Zealand on the recommendation of IUPAP President, Prof. Bruce McKellar, and Australian colleagues.

We agreed to invite Jon Samseth, Chair of WG on Energy, to attend our meetings as an associate member, and act as the liaison with the IUPAP WG12 on Energy.

A Canadian representative will be added. Recommendations will be solicited from the Director of TRIUMF and the Director of the Canadian Institute of Particle Physics (IPP).

Working Group or Commission?

At the present time, the consensus is to continue as a Working Group, and later evaluate becoming a Commission. The flexibility of having more than one member from any IUPAP member serves our mission well at this early stage of the group. We decided not to submit a resolution to become a Commission to the 2017 GA. We will revisit the subject at the 2019 timeframe, and at that time decide if we want to propose a resolution for consideration at the GA in 2020.

Connections with related WGs: ICFA, ICUIL, C12, C16

We identified the following closely connected WGs, and ways to connect:

WG1: ICFA, involved with construction and exploitation of High Energy colliders. ICFA has several panels (<http://icfa.fnal.gov/panels/>) including a newly formed Panel on Sustainable Accelerators and Colliders, with Lenny Rivkin as Co-Chair. Clear communication and working

synergistically with ICFA are important and part of the mandate of WG14. With the encouragement of IUPAP President, Prof. McKellar, the chair of the WG14 is invited to give reports at the ICFA meetings and vice versa. At the February ICFA meeting in Valencia, Mike Seidel of PSI reported on behalf of Lia Merminga, Chair of the WG14. Some ICFA panels are expected to serve as a bridge to the WG.

Yong Ho Chin of KEK, Chair of the ICFA Beam Dynamics panel, attended the second WG14 meeting and gave a presentation on “ICFA Beams Dynamics Panel Activities and Collaboration with IUPAP.” He summarized latest activities, upcoming ICFA Advanced Beam Dynamics Workshops and presented ideas on long-term plan and collaboration with IUPAP. He proposed that the Future Light Sources Workshops, which are being “re-booted,” can be co-sponsored or supported by IUPAP. FLS2018 could be a pilot study for our collaboration. We accepted Yong-Ho’s proposal for the time being, and continue to think about the relationship with the ICFA BD Panel: short term vs. long-term concepts, HEP accelerators vs. Light Sources, and clarify the demarcation between ICFA and WG14.

Mike Seidel of PSI, Chair of the new ICFA Panel on Sustainable Accelerators and Colliders, also gave a presentation at the 2nd meeting of WG14, on the mandate of the panel. We noted that Energy Management will become increasingly important, as it is a societal challenge. We are engaging the Energy working group WG12, as discussed earlier.

WG7: International Committee on Ultrahigh Intensity Lasers (ICUIL), co-chaired by Chris Barty, who is also a member of the Working Group on Accelerator Science. Chris participated in both meetings of WG14 via teleconference, and provided insights with respect to generic issues faced upon formation in 2004 of the ICUIL working group. After the second meeting, he sent us a number of thoughtful comments and ideas towards connecting WG14 with WG7 (ICUIL). We will follow up on Chris’ ideas during the upcoming face-to-face meeting.

C12 - Commission on Nuclear Physics: Lia Merminga and Alinka Lépine-Szily, Chair of C12, will meet to discuss connecting WG14 with C12, in the IUPAP meeting of Commission Chairs and General Assembly on 9-13 October, in São Paulo.

C16: Plasma Physics: No action yet.

International Particle Accelerator Conferences (IPAC) and WG14

WG14 discussed extensively the closer connection between IPAC and WG14. We concluded that IPAC should be an IUPAP-sponsored conference, and thus a truly international conference. Tangible benefits include the IUPAP Young Scientist Prize to individuals up to 10 years after PhD (WG14 would have to convert to a Commission to get access to them), and limits on the conference registration fee.

As a matter of fact, the 2017 IPAC did apply to IUPAP and with the support of C11, IPAC’ 17 was held as an IUPAP conference. See the IUPAP webpage <http://iupap.org/sponsored-conferences/approved-conferences-2017/>.

A sub-committee of WG14 has been tasked with leading the implementation of the connection between IPACs and WG14. The subcommittee comprises Gianluigi Arduini, Caterina Biscari, Lenny Rivkin, Lia Meringa, Bob Bingham and Qing Qin. A prerequisite is that IPAC conferences are organized consistently in the three regions (Americas; Europe & Africa; Asia & Australia). However, the existing MOU for the coordination of IPACs held in Asia, Europe and the Americas contains discrepancies in the way IPAC conferences are organized in the 3 regions, which need to be resolved. Some of the discrepancies are related to membership of organizing committees; the fact that American IPACs are IEEE conferences; asymmetry in the number of student grants; and profit/loss being handled differently. Moreover, in the case of the Americas, there is a PAC-OC committee which is responsible for both IPAC and NA-PAC, and as a result financials, venues and other aspects of the conference organization are entangled. We believe these need to be separated.

The next step is to propose revisions to the MOU, and meet with the PAC-OC to discuss the changes and path forward.

Future Activities

The next WG14 meeting will be held on November 20 at PSI, Switzerland. Lenny Rivkin is the host, and the meeting will include tours of the PSI accelerator facilities, including the SLS, SwissFEL and proton therapy facility.

In addition to the IPAC conferences in connection to WG14, and following up on Chris Barty's ideas, we will cover the topics of:

- strengthening visibility of accelerator research through revision of publication policies & habits, and hear a report of discussions by EPS-AG and IPAC Coordination Committee
- Education and training as one of the primary initiatives of WG14, and how to engage representatives of the main international accelerator schools: CAS, USPAS, JUAS.

Appendix

WG14 Membership – October 2017

USA

Chris Barty
Swapan Chattopadhyay
Stuart Henderson
Lia Meringa (Chair)

Switzerland

Gianluigi Arduini
Lenny Rivkin

Spain

Caterina Biscari

UK

Bob Bingham

Sweden

Mats Lindroos

Russia

Logatchov

Canada

TBD

Middle East

SESAME Accelerator Director (Rolf Heuer interim)

Japan

Seiya Yamaguchi

China

Qing Qin
Michael Moyers

Taiwan

Di-Jing Huang

South America

Liu Lin

South Africa

Simon Mullins

Australia/New Zealand

Nikolai Lobanov

WG1 (ICFA)

Joachim Mnich

WG12 (Energy)

Jon Samseth

Industry

TBD