

IUPAP Commission on Nuclear Physics C12

Report to Commission Chairs and Executive Committee

October 2015- October 2016

1. Membership

C12 officers

Chair: Alinka Lépine-Szily (2008) (2011) (2014), Brazil

Vice-chair: Weiping Liu (2008)(2011)(2014), China

Secretary: Joachim Stroth (2011)(2014), Germany

C12 members:

Ani Aprahamian (2014) USA

Mahananda Dasgupta (2014) Australia

Claes Fahlander (2011)(2014) Sweden

Dominique Guillemaud-Muller (2011)(2014) France

Reiner Krücken (2014) Canada

Eugenio Nappi (2014) Italy

Hirokazu Tamura (2014) (Japan)

Piet Van Duppen (2011)(2014) Belgium

Rauno Julin (2011)(2014) Finland

Milko Jaksic (2014) Croatia

Andrey Fomichev (2014) Russia

Associate members of C12 to other commissions:

C11-Eugenio Nappi

C13-Claes Fahlander

C19-Weiping Liu

Appic Working Group-Ani Aprahamian

2. Annual General Meeting of C12

The Annual General Meeting (AGM) of C12 was held in Australia, SA, at Adelaide Convention Centre, on 10th September 2016, before the International Nuclear Physics Conference (INPC2016), the main conference in the field. Ten commission members out of 14 were present. We also had the pleasure of the presence of Bruce McKellar, IUPAP president, at our meeting. The C12 meeting was held on the same venue and the day before the annual meeting of the IUPAP Working Group 9 on International Collaboration in Nuclear Physics and their participants were invited, as usual, to participate at the C12 meeting as observers.

The major items of the agenda were:

Selection procedure for IUPAP Young Scientist Prize

Nomination: September-November 2015, deadline 1st December 2015. 21 valid nominations received: 9 from Europe, 7 from Asia, 3 from South America, 2 from North America.

Thirteen members out of 14 of the commission C12 actively participated in the process of selecting 3 prize winners. For each nominee 3 members of C12 and an additional external

referee, specialist in the nominee's field, but without any links to the nominee, were assigned for assessment of merits.

Step 1: Rating on the criteria

- (1) Clearly identifiable individual contribution
- (2) Impact on field of nuclear physics
- (3) Publication record and quality (primary authorship, journal and normalized to the number of years since the PhD)
- (4) Record of talks and visibility of the nominee at nuclear physics conferences
- (5) Future prospects of the nominee

Step 2: Each member of C12 was asked to select their top three candidates from the short list of 12, giving 3 points to the first, 2 points to the second and 1 point to the third ranked candidate.

7 nominees selected for next step.

Step 3: It was decided by all members to reexamine all seven candidates by the same criteria.

Step 4: the 3 nominees with highest score were chosen as winners. The gender and geographical balance were respected (1 female, 1 from China, 2 from Europe) but the field was not well balanced, all three are from Nuclear Structure, 2 theory and 1 experimental.

Among 21 candidates, 15 were experimentalists and 5 theorists, 16 working in Nuclear Structure and Astrophysics, 4 in hadron physics and 1 in ultrarelativistic heavy ion collisions.

Confirmation of Super-heavy Elements discoveries and comments on the announcement and naming procedure

The IUPAP/IUPAC- Joint Working Party (JWP) was established in 2012 to consider claims for the discovery of new elements with atomic numbers 113, 115, 117 and 118. The JWP was constituted by 6 members, 3 indicated by IUPAP and 3 by IUPAC, but one member indicated by IUPAP renounced recently due to health problems. They are : Paul J. Karol (chemist, chair), Robert C. Barber (nuclear physicist), Bradley M. Sherrill (nuclear physicist), Emanuele Vardaci (nuclear physicist), Toshimitsu Yamazaki (nuclear physicist). Clearly, the JWP is mainly formed by nuclear physicists, since only they could evaluate and validate the discoveries. Brad Sherrill reported that the JWP worked well. The difficulties arise in its connection to IUPAP and IUPAC. The discoveries were made using characteristic nuclear physics methods: fusion reaction between a heavy target nucleus and a neutron rich projectile, accelerated in a heavy ion accelerator. The fusion product was identified by nuclear physics methods, detection of the alpha-decay chain, or/and identification of fission fragments e.g. The results of these experiments were published in physics journals as e.g. Physical Review Letters, Physical Review C etc. The JWP report which validated and gave priorities of the discovery of the 4 new elements was sent by the chair, only to the IUPAC direction. The JWP report now is posted on the IUPAC site as IUPAC Technical Report. IUPAC announced the 4 new elements in a hurry, on 30th December 2015, before even IUPAP had received the JWP report, counteracting previous agreements about joint announcements. The same happened for the naming: IUPAC announced it alone, without the participation of IUPAP.

All this created strong frustration in the C12 and IUPAP direction. The presidents of IUPAP and IUPAC are negotiating to change the procedure, involving the C12 and the Inorganic Chemistry committee and make the whole process more transparent and with more recognition of the Physics. C12 made recommendations regarding the new procedures.

Presentations and requests for IUPAP sponsorship of conferences

At the annual meeting of C12, the following recommendations for the IUPAP conference sponsorship were suggested after oral presentations from each organizer.

Conferences in 2017

Category A support:

The XXVIth International Conference on Ultrarelativistic Heavy-Ion Collisions (Quark Matter 2017) to be held in Chicago, USA, on February 5-11, 2017.

This is the major international conference on ultrarelativistic heavy-ion collisions and will take place February 5-11, 2017 in Chicago, USA. This conference is happening on a 1.5 year cycle and rotating amongst the continents (2014 in Darmstadt, Germany, 2015 in Kobe, Japan). This will be the 26th edition of this major conference which attracted more than 850 participants in its last two instances. The aim of this conference is to bring together theoretical and experimental physicists from around the world to discuss new developments in high energy heavy-ion physics. The focus of the discussions is on fundamental understanding of strongly interacting matter at the extreme conditions formed in ultrarelativistic heavy-ion collisions, which relates to the state of the early universe.

Venue: Hyatt Regency Chicago

The IAC has 43 members, 11 of them women. LOC has 30 members, 4 women.

A student day will be organized the day before the official opening. Free accommodations and reduced registration fee for 240 students.

The conference fee is US\$ 650,00 (which includes lunch, conference proceedings, coffee breaks),

It has received IUPAP support as category A conference in the past.

Category B Support:

The III International Conference on Advances in Radioactive Isotope Science (ARIS2017) to be held in Keystone, Colorado, U.S.A. May 28- June 2, 2017.

ARIS is the flagship conference for rare isotope science that resulted from a merger a few years ago of the 'International Conference on Exotic Nuclei and Atomic Masses (ENAM)' and the 'International Conference on Radioactive Nuclear Beams (RNB)'. Following the tradition of the ARIS meetings in 2011 (Leuven) and 2014 (Tokyo), ARIS 2017 will facilitate vibrant and extensive information exchange and collaboration among all the researchers in the field. The scientific program will highlight the most recent experimental and theoretical work in the field.

LOC: 10 members, 3 female. IAC: 35 members, 9 female. 40 invited speakers, 80 contributed speakers, 2-3 parallel sessions on 2 days among 5

Fee: US\$ 520,00 (early), US\$ 620,00 (late). Students US \$400,00. Fee includes coffee breaks, and

conference proceedings. ARIS 2011 in Leuven, Belgium (319 participants) and ARIS 2014 in Tokyo, Japan (407 participants) both had IUPAP support in category B, as well as, the previous conferences (ENAM, RNB).

XII Latin American Symposium on Nuclear Physics and Applications (LASNPA 2017) to be held in Havana, Cuba, October 23-27, 2017.

This is a regional conference that brings together a large segment of the nuclear physics community from South America and has attracted participation from North America, Europe, and Asian communities as well. The invited speakers have a broad international distribution. It moves around South America with a 2 years cycle and for the first time it will be held in Havana (Cuba) with strong local support. It attracts ~300 participants from all over South America and is seen as a key promotional event for the rapidly developing countries on the continent. The program has a strong component of applications of nuclear techniques. It was

supported as a category B topical conference in 2015. It is an important element for the growth of the nuclear physics community in South America.

LOC: 16 members, 7 female. IAC: 42 members, 7 female. Expected number of participants: 350.

Registration fee: 300,00 Euro, covers, conference proceedings, coffee breaks, welcome reception, conference concert, and the conference dinner.

The C12 commission received two bids for hosting the next International Nuclear Physics conference (INPC) in 2019

Glasgow, Scotland, United Kingdom presented by David Ireland

Whilst the conference venue is proposed to be Glasgow, the case was made on behalf of Universities in UK and Scotland. The proposed local organizing committee, consisting of 4 women and 8 men, reflected this fact as well.

Outreach program: Public Lecture by Prof. Jim Al-Khalili. Tutorials aimed at Early Career Research and Women in Physics. Careers fund to help members with caring responsibilities to attend the conference. IOP offers students and young researchers financial support up to L300.

Fee: L420 (conference proceedings, coffee breaks, social receptions), L310 for 250 students.

Funding supports: L5,000 from Glasgow City, L5,000 from Scottish Government, free welcome drinks reception (~L4,500).

Venue: Scottish Exhibition and Conference Centre in Glasgow located at walking distance to many hotels. The venue has been used to host conferences of similar size, and the parallel sessions will be located under one roof.

The whole nuclear physics community of UK manifests a great interest in hosting INPC2019, due to the visibility it can give to Nuclear Physics.

iThemba LABS, Cape Town, South Africa presented by Faiçal Azaiez, director of iThemba.

The date of conference was proposed to be either May or October 2019. The progress of inter disciplinary research in iThemba laboratory was presented and the importance of the laboratory in training in accelerator-based science, and its international links were mentioned. The conference is proposed to be co-hosted by iThemba laboratory, six universities and the Nuclear Energy Corporation of South Africa.

The iThemba laboratory will play a major role with 8 out of 15 scientists (2 women) in the local organizing committee (LOC) being from iThemba.

The conference is endorsed by South African Institute of Physics. The financial support to the conference through laboratory resources was mentioned. The organizers were also to approach other national institutions to seek financial support. Venue: Cape Town International Convention Centre. The presentation mentioned that iThemba has experienced conference management team, and that the proposed venue can accommodate all the sessions under one roof. The strong support from government to Astrophysical community was also mentioned.

The C12 commission evaluated these two bids and selected Glasgow as the host for INPC 2019 by an open voting procedure.

Following the recommendation by IUPAP president, the next chair of C12, for mandate 2018-2020, was unanimously elected to be Claes Fahlander experimentalist in the field on Nuclear Structure, from Lund University, Sweden.