

## **C2–Commission Report 2018 Report to IUPAP Council**

Commission on Symbols, Units, Nomenclature, Atomic Masses, and Fundamental Constants

Chair: Peter Mohr, Vice-Chair: Marc Himbert, Secretary: Michael de Podesta

Members: Xing ZHU, Kazuhiko Sugiyama, Michael Krystek, Alexander Potekhin, Antti Manninen, Anna (Ania) Kwiatkowski, Isabel Godinho, Kyong Hon Kim, Daniel Varela Magalhaes, Dinesh Kumar Aswal, Martin Milton (ex-officio)

### **Activities of Commission C2**

#### **1. Publicize the new SI.**

It is expected that the International System of Units (SI) will be redefined on 20 May 2019 based on fixed values of certain physical constants. Commission C2 is carrying out a publicity campaign designed to familiarize the wider scientific community with the upcoming changes. Videos for this purpose have been made by former Chair and Vice Chair Vanderlei Bagnato and William Phillips which explain the new SI for a general audience. These videos were presented to the IUPAP General Assembly in October of 2017. These C2 resources will be made available to members of IUPAP who wish to carry out publicity for the changes. Additional material will be developed and made available to the community.

#### **2. Revise the Red Book.**

The 1987 revision of the SUNAMCO ‘Red Book’ has for nearly a quarter of a century provided physicists with authoritative guidance on the use of symbols, units and nomenclature. As such, it is cited as a primary reference by the IUPAC ‘Green Book’ (*Quantities, Units and Symbols in Physical Chemistry*, 3rd edition, E. R. Cohen et al., RSC Publishing, Cambridge, 2007) and the SI Brochure (*The International System of Units (SI)*, 8th edition, BIPM, Sevres, 2006). Commission C2 is in the process of revising this publication to bring it up to date. This is particularly timely in view of the upcoming redefinition of the SI which will be taken into account and explained.

#### **3. Continue discussion of the SI, e.g., questions about how to treat the radian and other so-called dimensionless units.**

The SI was originally recommended to be an international system of units by IUPAP in 1960, and Commission C2 has maintained a role in recommending further improvements, including IUPAP General Assembly (GA) resolutions supporting the

choice of constants to define the new SI and supporting the decision to proceed with the redefinition in May 2019. Other issues for possible resolutions to be considered by the IUPAP GA include the role of the radian in the SI, the nature of frequency units, and the treatment of counting quantities. These questions have been under discussion by the members of C2 and the discussions will continue in order to arrive at an agreeable resolution of the problems from a physics perspective.

#### **4. Organize in-person or possibly video meetings of C2.**

It has been realized that in-person meetings of the members of Commission C2 would be of considerable value toward reaching the goals of the commission. In the recent past, this has been difficult due to the diversity of the membership which means that there is no natural international conference where many members are likely to attend. One meeting that might be suitable is the *Conference on Precision Electromagnetic Measurements* (GPEM). Another possibility is to hold video meetings where all members can participate if desired. These options are being explored and will be tested as possible solutions to the problem.

#### **5. Recommend suitable appointments for members of the various committees that seek IUPAP representation.**

Various organizations seek representation of IUPAP on their committees, particularly those associated with the International Bureau of Weights and Measures (BIPM) and certain standards organizations. Many of these committees are concerned with issues that are in close relation to the purview of Commission C2, so traditionally this commission is asked to recommend people to serve as representatives. We expect to continue to provide such recommendations and at the same time, we have made such representatives associate members of C2 if they are not already members. This means that there is a good number of such members due to the significant number of requests for IUPAP representation. The associate membership is done to provide lines of communication between the requesting committees and IUPAP.

#### **6. Recommend Conferences for IUPAP support.**

Commission C2 has and will continue to recommend conferences that warrant IUPAP endorsement and/or support. C2 recommended conferences taking place in the near future are the conference on *Physics of Simple Atomic Systems* (PSAS) to be held in May 2018 and the *Conference on Precision Electrical Measurements* (GPEM) to be held in July 2018.

#### **7. Seek candidates for prize nominations.**

Commission C2 will seek suitable candidates for the early career researcher award and the SUNAMCO medal award.



## **Report for the C3 Commission (Statistical Physics) to the IUPAP on 12 April 2018**

The C3 Commission for Statistical Physics is responsible for running the IUPAP STATPHYS Conference, which has been held 26 times so far; the average participation of about 800-1000 statistical physicists in each such Conference. The last such meeting, STATPHYS 26, was held in Lyon, France. This Conference is moved every three years from continent to continent; the next one, STATPHYS 27, is scheduled from 8-12 July 2019 in Buenos Aires. During such STATPHYS conferences the C3 Commission meets, the Boltzmann Medal is awarded to outstanding Statistical Physicists (chosen by votes of the members of the C3 Commission, the former Chair of the C3 Commission, the Chair of the Organizing Committee for the STATPHYS Conference, and previous Boltzmann Medalists). In addition, in the last four meetings, Young Scientists Prizes have been awarded to highly promising young Statistical Physicists.

The 29<sup>th</sup> General Assembly of the International Union of Pure and Applied Physics was held in Sao Paulo from 11 - 13 October 2017. On its last day, the 29<sup>th</sup> General Assembly, confirmed the Commission on Statistical Physics (C.3) for the term 2018 - 2020, to serve from the 1<sup>st</sup> of January 2018 to the 31<sup>st</sup> of December 2020.

As soon as this new C3 Commission was confirmed, its members started working on the plans for STATPHYS 27, which will be held in Buenos Aires, Argentina, from 8-12 July 2019. They worked with the Chair of STATPHYS 27, Professor Sylvia Ponce Dawson, to set up the International Advisory Committee and the Steering Committee for STATPHYS 27. Professor Dawson then sought nominations for speakers, for both plenary and invited talks, from the members of the International Advisory Committee, the Steering Committee, and the members of the C3 Commission. Nearly 600 excellent nominations were received for such talks. These nominations were then discussed in the meeting of the Steering Committee that was held in Buenos Aires from 10-12 April 2018.

We are very happy to report that this Committee has put together a short list of excellent statistical physicists, who will now be invited to lecture at STATPHYS 27. In the list of speakers all continents are represented; and the Steering Committee has taken special care in ensuring that at least 20 percent of the speakers are women. This Committee has also put together lists of experts who will be asked to serve on Topics Committees (there are 8 Topics in STATPHYS Meetings) that will be responsible for selecting oral presentations from the contributed abstracts. The proposals for Satellite meetings, in Brazil, Chile, Uruguay, Bolivia, and Argentina were also discussed.

Other organizational details, such as abstract-submission deadlines and the Proceedings of STATPHYS 27 were discussed with Professor Dawson and other members of the Local Organising Committee for STATPHYS 27. The members of the Steering Committee also visited the conference venue, in downtown Buenos Aires, which will be used for STATPHYS 27.

The Chair, the Vice Chair, and the Secretary of the C3 Commission were present at the meeting of the Steering Committee; all of them are members of this Steering Committee.

In response to a call for nominations from IUPAP, The Chair, the Vice Chair, and the Secretary of the C3 Commission presented the nomination of Professor Itamar Procaccia, former Chair of the C3 Commission, for the ISC's Governing Board.

We list below some upcoming conferences in the area of Statistical Physics that will receive support from IUPAP.

### **Upcoming Sponsored Commission Conferences**

#### **C3: Commission on Statistical Physics**

[Unifying Concepts in Glass Physics \(UCGP 2018\)](#)

11 - 15 June 2018, Bristol, UK

### **Upcoming Endorsed Commission Conferences**

#### **C3: Commission on Statistical Physics**

- [Active Matter and Non-Equilibrium Statistical Physics \(AMNSP 2018\)](#)  
27 August - 21 September 2018, Les Houches, France
- [Dynamics and thermodynamics of interacting systems from classical to quantum \(DTISCO 2018\)](#)  
7 - 10 May 2018, Trieste, Italy
- [Workshop on Complex Biological Oscillations \(WCBO 2018\)](#)  
9 - 13 September 2018, Buckinghamshire, UK
- [New Trends in nonequilibrium statistical mechanics: classical and quantum systems \(NTNSMCQ 2018\)](#)  
25 - 31 July 2018, Palermo, Italy
- [Conference of Middle-European Cooperation in Statistical Physics, the 43th edition \(MECO-43\)](#)  
1 - 4 May 2018, Krakow, Poland

**Rahul Pandit, Chair, C3 Commission (Statistical Physics) of the IUPAP**

**Maxi San Miguel, Vice Chair, C3 Commission (Statistical Physics) of the IUPAP**

**Lucilla de Arcangelis, Secretary, C3 Commission (Statistical Physics) of the IUPAP**

## **C4 Activity Report – May 2018**

Commission on Astroparticle Physics

During the past four months at C4 we have discussed the following issues,

(1) Four level B conferences are being organized by C4 community and supported by IUPAP during 2018.

- (a) International Symposium on Very High Energy Cosmic Ray Interactions ISVHECRI-2018 in Nagoya 21-25 May 2018.
- (b) Identification of Dark Matter 2018 in Brown University 23-27 July 2018.
- (c) Tera electron Volt Particle Astrophysics TeVPA-2018 in Berlin 27-31 August 2018
- (d) 8<sup>th</sup> International Symposium on Very Large Volume Neutrino Telescope (VLVNT 2018)

(2) Members have been alerted about deadline of 1 June 2018 for IUPAP support for conferences to be held during 2019. It was agreed that the 36th International Cosmic Ray Conference to be held in Madison, Wisconsin, USA 25 July -1 August 2019 may be supported as a level A conference. The organizers have been alerted to fill in the necessary IUPAP forms as soon as possible.

(3) Discussions were held to nominate names of members to serve on the International Neutrino Panel. Discussions are ongoing with C11, C12, WG1, and WG10 for finalization of names.

(4) Efforts are on to digitize the past proceedings of the International Cosmic Ray Conferences, dating back to 1947, and hosting them on ADS server.

## **C5 Activity Report for the IUPAP Council and Commission Chairs Meeting October 2017-April 2018**

### **Officers/Members 2017-2020**

Chair	William P. Halperin	USA
Vice-Chair	Pertti Hakonen	Finland
Secretary	Naoto Nagaosa	Japan
Members:	Xianhui Chen	China
	Juhn-Jong Lin	Taiwan
	Hermann Suderow	Spain
	Viktoria Bekeris	Argentina
	Maxim Kagan	Russia
	Philipp Gegenwart	Germany
	Richard P. Haley	UK
	Peter Skyba	Slovakia
	Floriana Lombardi	Sweden
	Ok Hee Chung	Korea
	Pratap Raychaudhuri	India
Assoc. Mem.	Darius Kaczorowski	Poland

### **Activity Report**

This review covers the period October 2017 – April 2018 with a summary of the immediate previous six month period.

#### **1.0 Activity Previous Period April 2017 – October 2017**

##### **1.1 Conferences Organized and Endorsed**

###### **Type A**

28th International Conference on Low Temperature Physics (LT28), Gothenburg, 9-16 August 2017.

Preliminary data available at this time:

904 registrants, 800 abstracts submitted, 25 exhibitors, and 2 major sponsors. The demographics for the largest registrations include 270 from Japan, 80 from Germany, 80 from USA, and 65 from Sweden. At least 10% of delegates were women: this fraction was similar for senior delegates and student delegates. 8 Plenary talks (0 women), 25 half-plenary talks (5 women), 64 Invited talks (>9 women).

Chair: P. Delsing, Co-Chairs: M. Fogelström, J Bylander, F Lombardi (one woman). For more details see <http://www.lt28.se/> The Programme Committee was 28% women, and the International Advisory Committee 14.5% women. Financial support was received by 13 delegates (4 women). IUPAP C5 also sponsored poster awards at the meeting.

A scientific summary of the meeting was prepared by IUPAP C5 and is included in the conference proceedings: Journal of Physics: Conference Series.

###### **Type B**

ULT2017, Frontiers of Low Temperature Physics. August 17-21 2017, Heidelberg, Germany.

180 registrants (21 women) from 21 countries. 27 invited talks (2 women), 28 contributed talks (1 woman), 106 posters. Three poster awards (1 woman).

Chair: C. Enss, Heidelberg

This conference, which was a satellite of LT28, brought together a broad community of researchers to forge links between different experimental communities, with a common interest in ultralow temperature physics, from fundamental science to techniques and applications. Topics included; superfluid  $^3\text{He}$  and topological matter; heavy fermions; disordered quantum systems; low dimensional systems; model systems for quantum turbulence; superconducting quantum technology; nanomechanical systems; cooling nanoelectronics into the microkelvin regime; cryogenic detectors for far-infra-red astronomy, determination of neutrino mass, dark matter searches.

### **Endorsed Conference**

Mesoscopic Transport and Quantum Coherence 2017 (QTC 2017). August 5-8 2017, Espoo, Finland. 175 registrants (14 women) from 20 countries, 22 invited talks (1 woman).

Chair: Mika Sillanpaa.

This conference, which was a satellite of LT28, presented the latest research, ongoing development and applications related to quantum effects in electron transport, superconducting qubits and hybrid circuits, quantum thermodynamics, circuit QED, cavity optomechanics, topological and two dimensional materials.

### **1.2 Commission Meetings**

Commission C5 met at LT28 in August 2017. Subsequent business has been conducted by e-mail.

Work is beginning to identify the organisers/site of LT29 in 2020. By geographical rotation this should be in Asia.

### **1.3 C5 Sponsored Prizes Awarded**

IUPAP C5 Young Investigator Prize:

Dr. Clifford Hicks (Max-Planck Institute for Chemical Physics of Solids, Dresden, Germany),

Vlad Pribiag (University of Minnesota, Minneapolis, USA)

Fritz London Memorial Prize:

William Halperin (Northwestern University, Evanston, Illinois USA), James Sauls (Northwestern University, Evanston, Illinois USA), Jeevak Parpia (Cornell University, Ithaca, NY USA)

Simon Memorial Prize:

Professor Louis Taillefer (University of Sherbrooke and the Canadian Institute for Advanced Research, Sherbrooke Canada)

## **2.0 Activity Current Period**

### **2.1 Anticipated Sponsored Conferences**

#### **Type A**

29th International Conference on Low Temperature Physics (LT28) August 16-22, 2020, Sapporo, Japan

About 1,200 participants

Chair: Naoto Nagaosa, Yoshiteru Maeno

This proposal was approved by C5 at its meeting at LT28. It will be submitted for approval of Type A sponsorship to IUPAP in due course.

#### **Type B**

International Conference on Quantum Fluids and Solids (QFS 2018)

July 25-31, 2018, Ito International Research Center, University of Tokyo, Japan

About 310 participants

Chair: Hiroshi Fukuyama

This conference has been approved by IUPAP for Type B sponsorship.



**Type B**

International Conference on Quantum Fluids and Solids (QFS 2019)

August 7-13, 2019, University of Alberta, Edmonton, Canada

Chairs: John Beamish, John Davis

This proposal has been approved by the QFS steering committee (in August 2017) and will receive consideration for support by C5 in due course.

Submitted by

William Halperin, C5 chair

April 2018

## IUPAP Commission on Biological Physics (C6)

### Report on Activities from October 2017 to March 2018

Ramin Golestanian, C6 Chair

Jeff Gore, C6 Vice Chair

Masaki Sasai, C6 Secretary

#### 1. C6 Membership (2017-2020)

Name	Country	Roles	Terms
Ramin Golestanian	United Kingdom	Chair	(2017)(2014)(2011)
Jeff Gore	United States	Vice Chair	(2017)(2014)
Masaki Sasai	Japan	Secretary	(2017)(2014)
Marcia Barbosa	Brazil	Member	(2017)
Debashish Chowdhury	India	Member	(2017)
Mohammad Reza Ejtehadi	Iran	Member	(2017)
Hans-Joachim Galla	Germany	Member	(2017)
Ming Li	China	Member	(2017)(2014)
Suliana Manley	Switzerland	Member	(2017)
Vladimir Nekorkin	Russian	Member	(2017)
Juan Manuel Rodríguez Parrondo	Spain	Member	(2017)
Bryan Trevor Sewell	South Africa	Member	(2017)(2014)
Joanna Trylska	Poland	Member	(2017)
Francoise Brochard Wyart	France	Member	(2017)(2014)

#### 2. The IUPAP C6 Newsletter

The main purpose of the Newsletters is to promote and facilitate communications among biological physics communities worldwide and to foster international cooperation in biological physics. The second IUPAP C6 e-Newsletter was issued in December 2017 with editors being the former C6 Chair Aihua Xie (US) and Masaki Sasai (Japan). A copy of this second issue of Newsletter is attached to this report. A special article was on “The commissions on Medical Physics (AC4) and Biological Physics (C6) -strengthening the

cooperation between two neighbour sciences under the roof of the IUPAP” written by AC4 Chair Dr. Fridtjof Nüsslin.

### **3. ICBP2019 in Madrid, Spain**

Preparation for the 10th IUPAP International Conference on Biological Physics (ICBP2019) was started. ICBP is the major event of the Commission on Biological Physics, covering the entire field of Biological Physics. The ICBP2019 is jointly organized with the European Biophysical Societies Association (EBSA) and will take place in 20-24th July 2019 in Madrid, Spain. More than 1000 participants from diverse world-wide areas are expected. The C6 member, Professor Juan Manuel Rodríguez Parrondo from Universidad Complutense in Madrid, is organizing ICBP2019, and the scientific program was started to be discussed through collaborative efforts of C6 Chair Ramin Golestanian and EBSA Vice President Prof. Jesus Perez-Gil. Plans for the satellite conferences were also discussed among C6 members. We are currently in the process of finalizing the symposia and finding representative members of both communities to act as chairs, to ensure a good synergy between the two organizations. This is a very exciting development as it is the first time that two historically separated communities that represent different parts of the spectrum of this interdisciplinary field join up forces to have an active participation in bridging the barriers amongst them.

# IUPAP

International Union of Pure and Applied Physics

## Commission on Biological Physics Newsletter

Editors: Masaki Sasai, Aihua Xie  
Guest Editor: Bramwell G. Lambrus

No. 2 – December 2017



## ICBP2019 & EBSA2019 in Madrid, Spain



<https://stock.adobe.com>

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## IUPAP General Assembly and newly elected C6 Commission

by Aihua Xie, C6 Chair (2015-2017)

The first IUPAP Commission on Biological Physics (IUPAP C6) was formally created at the 20th IUPAP General Assembly, held in Dresden in 1990. Over the past 27 years, the field of biological physics has experienced tremendous growth. IUPAP C6 has been playing an active role in promoting the worldwide exchange in biological physics, including organizing International Conferences on Biological Physics and recognizing outstanding young scientists in biological physics with the prestigious IUPAP C6 Young Scientist Prizes (YSP).



2017 IUPAP C&CC

In October, the IUPAP C&CC Meeting (Councils & Commission Chairs) (see the group photo) was first held in Sao Paulo, Brazil (October 9-10). Delegates from IUPAP member countries joined IUPAP councils and commission chairs to attend the triennial 29<sup>th</sup> IUPAP General Assembly also in Sao Paulo (October 11-13). Among many activities, one highlight was that Nobel Laureate William D. Phillips delivered a mesmerizing public lecture on laser cooling with really cool demonstrations to a large thrilled audience including hundreds of young students. Among many decisions, we discussed and voted for new Resolutions and elected new officers and members of 18 IUPAP commissions, including the new Commission on Biological Physics. Resolution 8 is closely related to C6 on establishing an IUPAP Working Group on Soft Matter. The new IUPAP President is Kennedy Reed from Lawrence Livermore National Laboratory (USA). (Please visit <http://iupap.org/> for further information on IUPAP GA.)

The newly elected 10<sup>th</sup> C6 commission (2018-2020) will be led by Ramin Golestanian as the Chair (United Kingdom), together with Jeff Gore (vice chair, United States) and Masaki Sasai (secretary, Japan). The new C6 members are: Marcia Barbosa (Brazil), Debashish Chowdhury (India), Reza Eftehadi (Iran), Hans-Joachim Galla (Germany), Ming Li (China), Suliana Manley (Switzerland), Vladimir Nekorkin (Russian), Juan Manuel Rodriguez (Spain), Bryan Trevor Sewell (South Africa), Joanna Trylska (Poland), Françoise Brochard Wyart (France).

## ICBP2019 in Madrid, Spain

The joint EBSA-IUPAP  
conference

July 20-24, 2019 in Madrid



## ICBP2019, Madrid, Spain

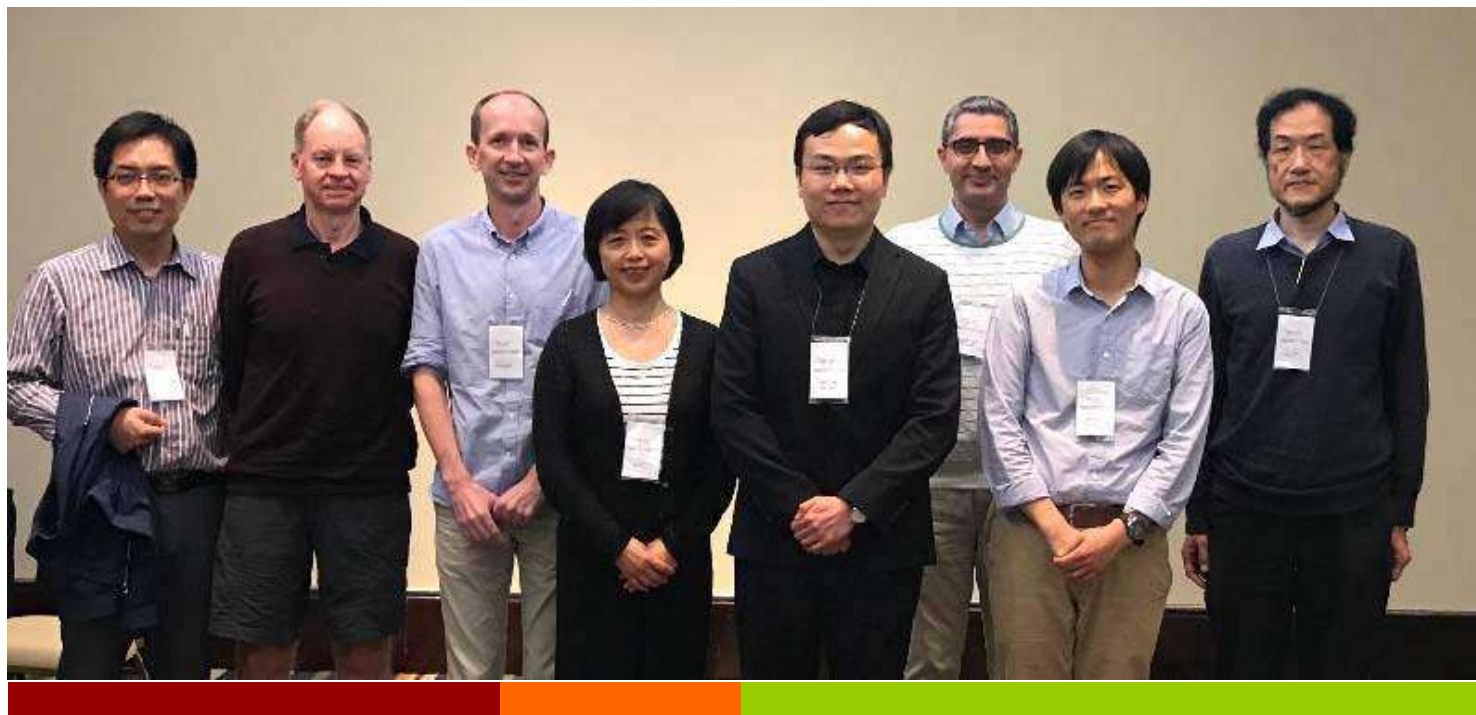
by Ramin Golestanian, C6 Chair (2018-2020)

After the successful organization of the ICBP2014 in Beijing and the ICBP2017 in Rio de Janeiro, it was felt by the C6 committee of IUPAP that the conference series has now reached the level of maturity that it needs in order to bring researchers from the field of biological physics together, and it might be a good time to start reaching out to other communities who are involved with similar type of interdisciplinary research. Therefore, it was decided to team up with the European Biophysical Societies' Association (EBSA) and hold the next conference jointly. The discussions between the two societies have been very positive and productive, and the joint conference is now planned for 2019.

The joint EBSA-IUPAP conference will be held during 20-24 July 2019 in Madrid, at the IFEMA congress centre

[[http://www.ifema.es/Institucional\\_06/](http://www.ifema.es/Institucional_06/)]. The venue is large enough to house 1000 delegates, which is our target number. The conference has an organizing committee, on which the C6 committee of IUPAP will be represented by Juan Parrondo (Madrid) and Felix Ritort (Barcelona), and a scientific committee, on which there is equal representation from the two societies (members have now been contacted and appointed). The scientific committee will discuss the topics of the Symposia and the Plenary speakers. It is envisaged that the conference will have 10 plenary speakers and around 30 Symposia.

We look forward to what promises to be a fantastic event for the field of biological physics. I hope to see you all in Madrid in July 2019.



## IUPAP C6 Young Scientist Prize (2015-2017)

by Helmut Grubmüller (C6 Vice Chair) and Petra Kellers

In February 2017, the IUPAP C6 Commission invited nominations for the Young Scientist Prizes in Biological Physics (2015-2017) to recognize exceptional achievements of scientists in the field. The award is dedicated to scientists at a relatively junior stage of their career displaying a promising innovative future prospect. The collection of nominations and the selection process was coordinated by Helmut Grubmüller, vice chair of C6, Aihua Xie, Chair of C6, and Ria Maria Cunha de Almeida, Secretary of C6.

Nominations of strong candidates were received from all over the world, including USA, UK, Hungary, Italy, Germany, Canada, France, China, Australia, Ireland, the Netherlands, Portugal and Japan. The nomination documents were distributed to C6 commission members to collectively agree on the three YSP Recipients:

**Dr. Jiajie Diao** (the University of Cincinnati, USA) (2015 YSP)

“For his significant contributions to the area of single-molecule biophysics. He pioneered the development of single vesicle fusion assays based on FRET, which enables addressing many fundamental questions about biological systems involving membranes.”

**Dr. Siyuan Steven Wang** (Harvard University, USA) (2016 YSP)

“For his significant contributions to the development of novel methods for imaging the spatial organization of chromatin and to advancing the understanding of chromosome organization using these methods and for his significant contributions to bacterial cytoskeleton and cell wall research.”

**Dr. Hyun Youk** (the Delft University of Technology, NL) (2017 YSP)

“For his elegant demonstration of how statistical physics, dynamical systems theory and experiments can be combined to address fundamental questions in cell biology, and his recent work that shows how cell-cell communication can shape the spatio-temporal dynamics of living cells.”

A YSP Award Ceremony was held on June 8, 2017 at the 9th International Conference on Biological Physics (ICBP2017) in Rio de Janeiro. Above is a group photo of two YSP winners with six C6 members: Ming Li (China), Trevor Sewell (South Africa), Imre Derenyi (Hungary), Aihua Xie (USA), Siyuan S Wang (2016 YSP winner), Ramin Glostania (UK), Hyun Youk (2017 YSP winner, NL), and Masaki Sasai (Japan).

## The commissions on Medical Physics (AC<sub>4</sub>) and Biological Physics (C<sub>6</sub>) – strengthening the cooperation between two neighbour sciences under the roof of the IUPAP

by Fridtjof Nüsslin, Technical University Munich,  
Chair AC<sub>4</sub> “Medical Physics”



The International Organization for Medical Physics (IOMP) has been founded in 1963 and represents over 25,000 medical physicists worldwide and has 86 national member organizations. The mission of IOMP is to advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physicists, and promoting the highest quality medical services for patients. IOMP works together with international organizations such as IAEA, WHO and ILO to strengthen the role of Medical Physicists.

In the medical physics community there are two major groups of individuals; the first group is people mainly working as health care professionals. These medical physicists are typically found in hospitals with departments for Radiology, Nuclear Medicine, Radiation Oncology, Radiation Protection, Medical Imaging, Physiology, furthermore in many other clinical branches. The second group has a scope with major focus on the application of physics principles and methods in biosciences such as biomedicine, biology, and bioinformatics. This field is more generally termed Biomedical Physics. Of course, there are smooth transitions between both groups, mainly those persons who are working in academia with responsibilities both in patient care and research.

In order to advance medical physics science and practice worldwide, IOMP felt it essential to strengthen the interaction of medical physics with other branches of physics. Hence, in accordance with the mission of IUPAP (“...to help in the application of physics toward solving problems of concern to humanity”) the IOMP formed the International Committee on Medical Physics (ICoMMP)

which has been recognized by the IUPAP as the Affiliate Commission on Medical Physics (AC<sub>4</sub>). It is a well-established tradition to invite the Chair of the C<sub>6</sub> Biological Physics to join AC<sub>4</sub> as an associate member.

We can illustrate the mutual relation and the potential of interaction of sciences with an example particularly relevant for Biomedical and Biological Physics, i.e. Cancer. From my own experience and involvement in cancer research, I want to address a few topics which challenge the physicists to look beyond the fences of their own playground (see **Box** in the next page). These examples are just a limited number of activities of Biomedical Physicists working in the large field of cancer research. I am sure that the colleagues from Biological Physics for instance relevant for the rather new field “Physics of Cancer” would find quite a few areas which might complement those examples of Biomedical Physics in Cancer.

Finally, as good neighbours we should think about some joined activities. In the past, Biomedical Physicists and Biological Physicists exchanged ideas at conferences (ICBP, IOMP) and organized three joint symposia, beginning 2007 in Montevideo (“*Cellular & Tissue Imaging: challenges for modern radiotherapy*”). Commissions AC<sub>4</sub> and C<sub>6</sub> may consider this kind of mutual exchange and look out for opportunities.

### Box. Examples of Biomedical and Biological Physics Research on Cancer.

**Biological aspects of laser based radiotherapy:** Radiotherapy is together with surgery the most frequently used modality in cancer treatment. Medical electron linear accelerators deliver X-ray beams in the energy range up to about 20 MeV. To optimize the dose distribution, increasing interest arises in the use of particle beams, primarily protons with energies up to 250 MeV. Particle beam generation however is a rather complicated and expensive technology. As an alternative, laser driven ion acceleration is considered a potentially more compact and in the long run cheaper method. Questions arise on the biological response and molecular mechanism of such particle bunch dose rates of  $10^{10}$  Gy/s compared to about 100 Gy/min in conventional medical linear accelerators.

**Impact of hypoxia on cancer treatment:** The impact of hypoxia on the outcome of cancer treatment is well established. As hypoxic tumor cells are resistant to radiotherapy and many anticancer drugs, it is essential for the treatment planning to precisely localize the hypoxic subvolumes of the tumor using radioisotope imaging and to modulate properly the dose distribution for the radiation treatment.

**Biomedical and Biological Imaging:** Medical Physicists are increasingly involved in all imaging methods used in cancer diagnosis. Beyond this health care aspect, Biomedical Physicists work in cancer research to advance imaging techniques such as optical and opto-acoustic imaging, nuclear magnetic resonance (NMR), MR-spectroscopy, photoacoustic and molecular ultrasonography, elastography and others.

**Radiomics, Radiogenomics:** The diagnosis, treatment and follow-up phases are based on an ever increasing number of images for each individual patient. Recently, a new approach has been introduced to convert these clinical images into minable data which are associated with patient demographic, outcome and gene expression databases. Deep learning may be applied to personalize. Optimization of the treatment and health care by means of comprehensive individual data analysis including genomic data is envisaged.

## International and Multinational Conferences in Biological Physics

***The 10th IUPAP International Conference on Biological Physics (ICBP2019), the joint EBSA-IUPAP conference***  
Madrid, Spain, July 20-24, 2019

***The 3rd International Conference on Proton Coupled Electron Transfer***  
Blowing Rock, North Carolina, USA, June 10-14, 2018  
<http://www.rsc.org/events/detail/29600/3rd-international-conference-on-proton-coupled-electron-transfer>

***The 62nd Annual Meeting of Biophysical Society (USA)***  
San Francisco, USA, February 17-21, 2018.  
<http://www.biophysics.org/2018meeting/GeneralInfo/Overview/tabid/7118/Default.aspx>

***Genome Biophysics: Integrating Genomics and Biophysics to Understand Structural and Functional Aspects of Genomes***  
Santa Cruz, CA, USA, August 19-24, 2018  
<http://www.biophysics.org/2018santacruz/Home/tabid/7386/Default.aspx>

***The 2018 American Physical Society March Meeting (with a broad range of programs in biological physics)***  
Los Angeles, USA, March 5-9, 2018  
<https://www.aps.org/meetings/meeting.cfm?name=MAR18>

***The 56th Annual Meeting of the Biophysical Society of Japan***  
Okayama, Japan, September 15-17, 2018  
<http://www2.aeplan.co.jp/bsj2018/english/index.html>

***Gordon Research Conference — Lasers in Medicine and Biology***  
Bates College, Lewiston, ME, United States, July 8-13, 2018  
<https://www.grc.org/lasers-in-medicine-and-biology-conference/2018/>

***10th Edition of International Conference on Structural Biology 2018***  
Barcelona, Spain, March 15-16, 2018  
<http://structuralbiology.euroscicon.com/>



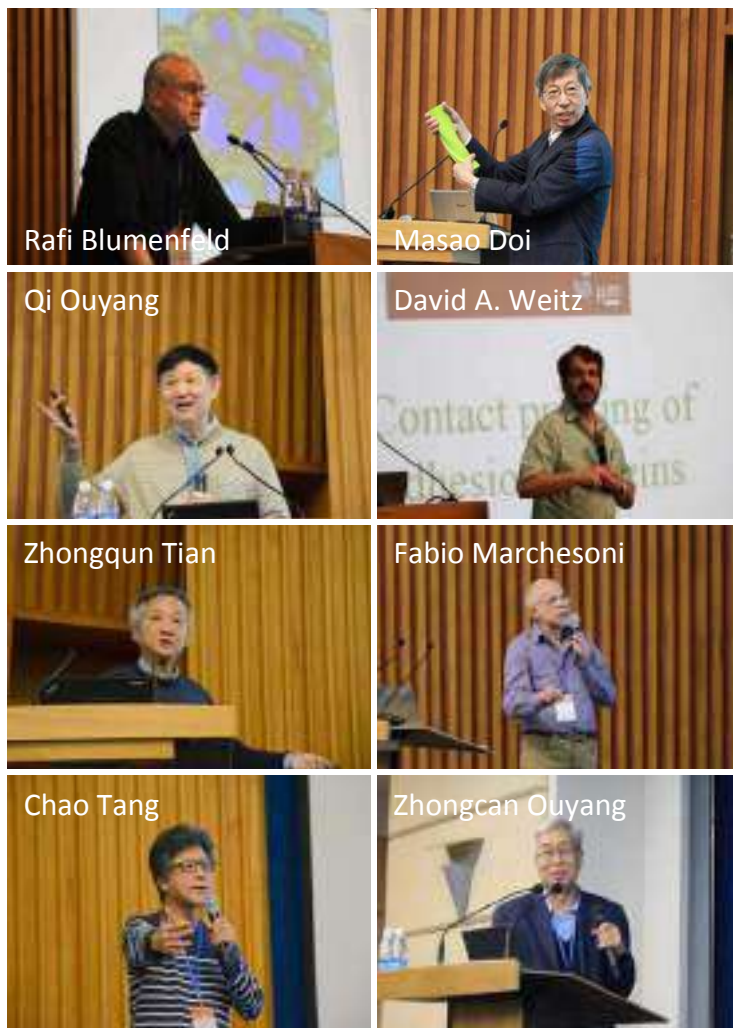
## Conference Report: The 10th National Conference on Soft Matter and Biophysics Xiamen University

by Ming Li, C6 Member

Sponsored by the College of Physical Science and Technology and the Research Institute for Biomimetics and Soft Matter, Xiamen University, the 10th National Conference on Soft Matter and Biophysics was held from March 24th to 27th, 2017 in Xiamen. Prof. Zhongcan Ouyang served as the general chair, and Prof. Ming Li served as the conference secretary. The executive chairs were Prof. Chenxu Wu and Prof. Xiang Yang Liu from Xiamen University.

The conference attracted over 450 delegates from more than 100 universities and research institutes at home and abroad. Profs. Rafi Blumenfeld, Masao Doi, Qi Ouyang, David Weitz, Zhongqun Tian, Fabio Marchesoni and Chao Tang delivered keynote lectures. In four parallel sessions, 160 papers were reported in the areas of the soft matter, living matter, discrete particles, continuum systems and complex systems.

During the conference, the Organizing Committee have reached the agreement that the 11th National Conference on Soft Matter and Biophysics will be held in the Chongqing University in 2019.



## News from APS:

### New Honorees in Biological Physics from American Physical Society

by Yuhai Tu, Chair of APS Division of Biological Physics

#### 2018 Max Delbruck Prize in Biological Physics Recipient

##### William S. Bialek (Princeton University)

Citation: *"for the application of general theoretical principles of physics and information theory to help understand and predict how biological systems function across a variety of scales, from molecules and cells, to brains and animal collectives."*

#### New DBIO APS Fellows (class of 2018)

**Chris Adami (Michigan State University):** For the development of novel methods to study evolution using digital experimentation, as well as contributions to the use of information theory to understand biological systems

**Jun Song (University of Illinois):** For the development of advanced signal processing methods to reveal patterns in genomic data and study chromatin structure

**Paul A Janmey (UPenn):** For pioneering work on fundamental properties of biopolymers and their implications for mechanobiology

**Thomas T Perkins (JILA):** For innovations in precision measurement of dynamic biological systems at the smallest scales.

**William Ryu (University of Toronto):** For establishing and advancing the field of the physics of behavior of microorganisms.

**Wolfgang Losert (University of Maryland):** For numerous contributions to understanding dynamical properties of complex systems at the convergence of physics, materials science, and biology.

**Yang Xia (Oakland University):** For his contributions to nuclear magnetic resonance microscopy, and particularly for his use of this and other techniques to study the structure of articular cartilage, with applications to osteoarthritis.

#### 2017 Award for Outstanding Doctoral Thesis Research in Biological Physics Recipients

##### David Reid Jacobson (JILA, NIST/University of Colorado, Boulder)

Citation: *"for pioneering studies of the electrostatic, elastic, and conformational behavior of single-stranded nucleic acids."*

##### Pierre Alexandre Haas (DAMTP/University of Cambridge)

Citation: *"for outstanding theoretical work on the description of embryonic inversion in the alga Volvox, incorporating novel generalizations of elasticity theory and applied mathematics."*

**IUPAP Commission on Semiconductor Physics (C8)**  
**Report on Activities in 2017/2018 for the May, 2018 C&CC Meeting**

Chair	Rolf Haug	Germany	haug@nano.uni-hannover.de
Vice-Chair	Amalia Patanè	United Kingdom	amalia.patane@nottingham.ac.uk
Secretary	Young Dong Kim	Korea	ydkim@khu.ac.kr
Member	Qi-Kun Xue	China	qkxue@mail.tsinghua.edu.cn
Member	Gloria Platero	Spain	gplatero@icmm.csic.es
Member	Yasuhiko Arakawa	Japan	arakawa@iis.u-tokyo.ac.jp
Member	Håkan Pettersson	Sweden	hakan.pettersson@hh.se
Member	Maria Grazia Grimaldi	Italy	mariagrazia.grimaldi@ct.infn.it
Member	Mikhael M. Glazov	Russia	glazov@coherent.ioffe.ru
Member	Uli Zülicke	New Zealand	uli.zuelicke@vuw.ac.nz
Member	Yong P. Chen	United States	yongchen@purdue.edu
Member	Rodorigo B. Capaz	Brazil	capaz@if.ufrj.br
Member	Andrew Sachrajda	Canada	andy.sachrajda@nrc.ca
Member	Elvira Fortunato	Portugal	emf@fct.unl.pt
Observer	Michael Thewalt	Canada	thewalt@sfu.ca

The last report about the activities of C8 was submitted in September 2017 by Michael Thewalt.

At the 29<sup>th</sup> General Assembly of IUPAP in October 2017 the new C8 commission was elected which started serving January 1<sup>st</sup> 2018. The new members were welcomed and the departing members were thanked for their work.

The commission being in office until December 31<sup>st</sup> 2017 published the call for the two 2018 IUPAP young scientist prizes (YSP) in semiconductor physics with the deadline being end of December 2017. By December 31<sup>st</sup> 2017 11 valid nominations were received. These were more nominations than received in previous calls. Apparently the deadline of end of December encourages people to think about possible nominations and to submit them on time. The new commission was constantly kept informed about the whole process of the call.

A further nomination was received on January 4<sup>th</sup> 2018 and the new commission, then being in office, decided to reject it as an invalid nomination for the 2018 call but to retain it for the next call.

The secretary of C8 organized the voting to select the two prize winners during February 2018. A lot of really strong nominations were submitted, so it was a difficult task to select the winners. The final voting of the commission led to the result that the two YSP winners in semiconductor physics of 2018 will be

*Dr. Jean-Christophe Blancon*, Los Alamos National Laboratory, USA, and  
*Prof. Heejun Yang*, Sungkyunkwan University, Suwon, Korea.

The prizes will be awarded during the closing session of the 34<sup>th</sup> International Conference on the Physics of Semiconductors (ICPS) which will be held in Montpellier, France, from July 29<sup>th</sup> until August 3<sup>rd</sup> 2018.

As IUPAP sponsored conferences in 2018 there will be the 34<sup>th</sup> ICPS in Montpellier and the 20<sup>th</sup> International Conference of Superlattices, Nanostructures, and Nanodevices (ICSNN 2018), which will be held in Madrid from July 23<sup>rd</sup> until July 27<sup>th</sup> 2018.

The next meeting of the C8 commission where the new commission will meet in person for the first time will take place in Montpellier, France, on Tuesday, July 31<sup>st</sup> 2018 during the 34<sup>th</sup> ICPS.



## C9. Commission on Magnetism - Report 2018

### Officers 2018

Chair: **Burkard Hillebrands**, Germany (2014) (2017)  
Vice Chair: **YoshiChika Otani**, Japan (2011) (2014) (2017)  
Secretary: **Kai Liu**, U.S.A. (2014) (2017)

### Members 2018-2020

Elisabetta Agostinelli, Italy (2017)  
Fernando Luís Araujo Machado, Brazil (2017)  
Joël Cibert, France (2014) (2017)  
Luis Miguel García Vinuesa, Spain (2014) (2017)  
Can-Ming Hu, Canada (2014) (2017)  
Jae Il Lee, Korea (2014) (2017)  
Minn-Tsong Lin, Taiwan (2017)  
Nikolay Mushnikov, Russian Federation (2017)  
Arun Kumar Nigam, India (2017)  
Oksana Zaharko, Switzerland (2017)  
Jianhua Zhao, China (2017)

### Meetings

#### 2018:

No C.9 Commission Meeting has been held so far in 2018. The next meeting will be held during the ICM Conference in San Francisco, July 15-20, 2018.

### Conferences

The main event sponsored by C.9 in 2018 will be the International Conference on Magnetism (ICM) in San Francisco, July 15-20, 2018 (<http://icm2018sf.org>)

ICM is a major international conference series with more than 2000 attendees expected from all over the world. It continues a series of meetings held every three years, most

recently in Barcelona, Busan, Karlsruhe, and Kyoto. ICM2018 addresses fundamental and applied research related to magnetism. Conference Chair is Allan MacDonald, Secretary General is Liesl Folks, and Program Chair is Mark Stiles.

Furthermore C.9 sponsors the 23<sup>rd</sup> International Colloquium on Magnetic Films and Surfaces (ICMFS-2018), which will be held during July 22-27, 2018 on the campus of the University of California in Santa Cruz CA, USA (<https://icmfs2018.physics.ucsc.edu>). Conference Chair is Peter Fischer.

## **Magnetism Awards**

The **IUPAP Magnetism Award and Néel Medal** is awarded every third year on the occasion of the ICM conference. The next Magnetism Award and Néel Medal will be given in 2018 at the ICM in San Francisco. The selection process is underway and near completion.

The **IUPAP Young Scientist Prize in the field of Magnetism** is awarded every year. The 2018 selection process is underway and near completion.

Both the 2018 IUPAP Magnetism Award and Néel Medal and the 2016, 2017, and 2018 IUPAP Young Scientist Prizes in the field of Magnetism will be awarded at the upcoming ICM conference.

**Update to previous report:** The 2017 Young Scientist Prize in the field of Magnetism is awarded to Dr. Luqiao Liu, MIT, U.S.A. The citation reads: *For the pioneering demonstrations of the spin Hall effect excitation of ferromagnetic resonance, and of the surprisingly large spin Hall angles of particular heavy metals as determined by spin-torque ferromagnetic resonance, for seminal experiments and analysis of magnetic switching and auto-oscillation driven by that spin Hall effect, and for continuing research advancing the understanding and applicability of spin-orbit torques.* The winner has been announced on the IUPAP website. Dr. Liu will receive the award at the next ICM conference, which will be in July 2018 in San Francisco.

# **C10: The Structure and Dynamics of Condensed Matter**

## **Activity Report for 2018 IUPAP C&CC Meeting**

**April 17, 2018**

(Submitted by Laura H Greene, Chair C-10)

### **C10: MEMBERS 2017-2020**

#### Officers

**Chair: Laura H. Greene** (2011) (2014) (2017)

Email: [lhgreene@magnet.fsu.edu](mailto:lhgreene@magnet.fsu.edu)

**Vice-Chair: Hartmut S. Leipner** (2011) (2014) (2017)

Email: [hartmut.leipner@cmat.uni-halle.de](mailto:hartmut.leipner@cmat.uni-halle.de)

**Secretary: Tae Won Noh** (2014) (2017)

Email: [twnoh@snu.ac.kr](mailto:twnoh@snu.ac.kr)

#### Members

**Shuyun Zhou** (2017)

Email: [syzhou@mail.tsinghua.edu.cn](mailto:syzhou@mail.tsinghua.edu.cn)

**Dominik Schaniel** (2014) (2017)

Email: [Dominik.schaniel@univ-lorraine.fr](mailto:Dominik.schaniel@univ-lorraine.fr)

**Vladimir Kulakovskii** (2014) (2017)

Email: [kulakovs@issp.ac.ru](mailto:kulakovs@issp.ac.ru)

**Li-Chyong Chen** (2017)

Email: [chenlc@ntu.edu.tw](mailto:chenlc@ntu.edu.tw)

**Youichi Murakami** (2014) (2017)

Email: [youichi.murakami@kek.jp](mailto:youichi.murakami@kek.jp)

**Ulrike Diebold** (2017)

Email: [ulrike.diebold@tuwien.ac.at](mailto:ulrike.diebold@tuwien.ac.at)

**Maria Antonietta Ricci** (2017)

Email: [mariaantonieta.ricci@uniroma3.it](mailto:mariaantonieta.ricci@uniroma3.it)

**Wilson A. Ortiz** (2017)

Email: [wortiz@df.ufscar.br](mailto:wortiz@df.ufscar.br)

**Peter Svec B** (2017)

Email: [fyzisvec@savba.sk](mailto:fyzisvec@savba.sk)

**Graeme M Luke B** (2017)

Email: [luke@mcmaster.ca](mailto:luke@mcmaster.ca)

**Umesh V WAGHMARE** (2017)

Email: [waghmare@jncasr.ac.in](mailto:waghmare@jncasr.ac.in); [umeshkruti@gmail.com](mailto:umeshkruti@gmail.com)

## Activity report:

1. The C 10 YSP 2018 award ceremony was held at the 2018 March meeting of the American Physical Society (APS) in Los Angeles, CA, USA, March 5, 2018. The Prize winner was **Dr Michele Ceriotti** from the Institute of Materials, École Polytechnique, Switzerland with citation: *“For his work on the development of novel and original algorithms to extend the scope and accuracy of molecular dynamics simulations, and to rationalize and predict the structure-property relations in complex materials.”* His presented invited talk was outstanding.



C10 Chair Greene presenting the C10 YSP Certificate and Medal to Michele Ceriotti at the 2018 APS March Meeting

2. We will be publically announcing on the IUPAP web site, and other sites, the C 10 2019 YSP to start the nomination process, which will go from 5/1 till 7/15/2019.
3. Given the diversity of fields in C 10, the commission members have rarely been able to meet face to face. The conference of *“Materials and Mechanism of Superconductivity”* is a C 10 sponsored conference, and the 12<sup>th</sup> conference (M2S 2018) will be held 19-24 August of this year in Beijing, China. The C10 Chair will be attending, as will some of the C10 commissioners. We will take this opportunity to meet at this conference and discuss C10 agenda items.
4. The US National Academy of Science, Engineering, and Medicine is presently doing a Decadal Survey of Materials Research that should be out this year. Greene, the C10 Chair is a co-chair of this Survey and when released, will notify the relevant IUPAP Commissions.
5. The C10 Commission will discuss a name change. From *“Structure and Dynamics of Condensed Matter Physics”* to *“Quantum Materials.”* which is closer to what the Commission actually does. Note there are five Commissions that encompass condensed matter physics:
  - C 5: Low Temperature
  - C6: Biological
  - C 8: Semiconductors



C 9: Magnetism

C 10: Structure and Dynamics of Condensed Matter

We believe such a name change will more accurately reflect C 10 and will not impinge on the other condensed matter commissions. We will keep Council and other Commissions abreast of our discussions and progress.

## **C11 Report to IUPAP Commission Chairs and Executive Committee**

*April 2018*

*Heidi Schellman, Chair IUPAP-C11 Commission*

### **C11 Officers:**

**Chair: Heidi Schellman** (2011) (2014) (2017) United States

**Vice-Chair: Mihoko Nojiri** (2014) (2017) Canada

**Secretary: Florencia Canelli** (2014) (2017) Switzerland

### **C11 Members:**

**Zhi-Zhong Xing** (2014) (2017) China

**Srubabati Goswami** (2017) India

**Dezso Horvath** (2014) (2017) Hungary

**Azwinndini Muronga** (2017) South Africa

**Johan Rathsmann** (2014)(2017) Sweden

**Antonio Zoccoli** (2017) Italy

**Raymond Volkas** (2014) (2017) Australia

**Marie-Helene Schune** (2017) France

**Sergio F. Novaes** (2011) (2014)(2017) Brazil

**Alexander Sorin** (2017) Russian Federation

**Brigitte Vachon** (2017) Canada

### **C11 Associate members:**

Appointment waiting for formation of Neutrino Panel

Since the General Assembly in October, 2017, the Commission has concentrated on 3 efforts.

- 1) Selection of the recipients for the C11 Young Scientist Prize
- 2) Engagement with conference organizers to implement the motions on diversity enacted at the General Assembly
- 3) Formation of the Neutrino Panel mandated by the General Assembly.

The Commission has met multiple times by phone and will meet in person at the ICHEP2018 meeting in Seoul, Korea the week of July 4-11 2018.

## **Selection of Young Scientist Prize Recipients**

The Young Scientist Prize competition was run by incoming Commission Secretary Florencia Canelli with substantial technical assistance from CERN. Thanks to the existence of an efficient web interface and advertising to national and international organizations, we received 65 applications, up from 32 two years ago. Two young scientists have been selected and will be asked to give short presentations at the awards session of ICHEP2018 in July.

## **Implementation of General Assembly Resolution on Diversity**

The ICHEP2016 conference set a benchmark for our field, with 50% of plenary speakers being female and an extremely well attended session on inclusion in HEP. This and the General Assembly resolution have been communicated to the organizers of future conferences, along with recommendations on best practices. In particular, proper reporting on gender and national balance requires that that data be acquired at registration.

We note that several 2017 conferences have not yet filed their conference reports and are now pursuing them. It would be helpful if the Vice-chair and Secretary received all conference reports as well as the Chair to assure orderly transitions at the triennial leadership transition.

## **Implementation of the General Assembly Resolution Implementing a Neutrino Panel**

The 29<sup>th</sup> General Assembly RESOLVED to establish the Neutrino Panel, composed of nominees of C4, C11, C12, WG1, WG9 and WG10, under the supervision of those Commissions and Working Groups and coordinated by C11. The Neutrino Panel has a 3-year mandate “ to promote international cooperation in the development of an experimental program to study the properties of neutrinos and to promote international collaboration in the development of future neutrino experiments to establish the properties of neutrinos.” The Commissions and working groups have met by phone and composed a roster of neutrino physicists spanning the full range of neutrino physics. Appointment of Chairs and a formal charge is in progress.

## **Upcoming Conferences**

### **Category A:**

- International Conference on High Energy Physics (ICHEP 2018).

### **Category B:**

- XXVIII Conference on Neutrino Physics and Astrophysics (Neutrino 2018).
- LHC Physics (LHCP) Conference.

### Category C:

- History of the Neutrino.
- The XXIV International Baldin Seminar on High Energy Physics Problems "Relativistic Nuclear Physics and Quantum Chromodynamics".
- 10<sup>th</sup> International Workshop on Ring Imaging Cherenkov Counters.

Future upcoming conferences under C11 supervision in 2018 and beyond are:

- 2019 XXIX International Symposium on Lepton Photon Interactions at High Energies (LP) in Toronto (Canada).
- 2020, The 39<sup>th</sup> International Conference on High Energy Physics (ICHEP 2018) in Prague (Czech Republic).

We also expect future proposals from several other conference series. The Neutrino conference and the Baldin Seminar occur biannually and have been sponsored by C11 for many years. Technology and Instrumentation in Particle Physics (TIPP) occurs every 3 years while the International Conference on Particle Physics (IPAC) occurs annually. They are usually endorsed but do not receive financial support. LHCP was supported for the first time this year as a Category B conference.

# **IUPAP Commission on Nuclear Physics C12**

**Report to IUPAP Executive Committee and Commission Chairs**

**March 2018**

***Claes Fahlander, Chair of C12***

## **Members of C12**

The C12 commission has a new composition as of January 1 2018. We are 14 members, seven of which are new from this year, seven are women and seven are men. We cover, both in experiment and theory, most fields of nuclear physics such as nuclear reactions, nuclear structure, nuclear astrophysics, nuclear instrumentation, hadron physics and QCD matter physics. The C12 members are:

Chair: Claes Fahlander (2011)(2014) (2017) Sweden  
Vice-chair: Joachim Stroth (2011)(2014) (2017) Germany  
Secretary: Ani Aprahamian (2014) (2017) USA  
Mahananda Dasgupta (2014) (2017) Australia  
Andrey Fomichev (2014) (2017) Russia  
Eugenio Nappi (2014) (2017) Italy  
Hirokazu Tamura (2014) (2017) Japan  
Anna Mackova (2017) Czech Republic  
Debora Peres Menezes (2017) Brazil  
Eberhard Widmann (2017) Austria  
Fanny Farget (2017) France  
Iris Dillmann (2017) Canada  
Maria Jose Garcia Borge (2017) Spain  
Yanlin Ye (2017) China

## **Annual general meeting of C12**

The last annual general meeting of C12 was held at the RIKEN offices in Tokyo Japan on August 28 2017. As usual our C12 meeting was followed the day after by the annual meeting of IUPAP's Working Group 9, WG9. The members of WG9 are welcomed as observers to attend the meeting of C12, and vice versa. Together matters of forefront nuclear science research were addressed, as well as discussions on upgrading of current large-scale accelerator facilities for nuclear physics and planning of new such accelerator facilities in the world. In Tokyo, a third day was devoted to a Nuclear Science Symposium on these issues. The former chair of C12, Alinka Lépine-Szily, has already reported to IUPAP of that meeting and of the activities of C12 up till October 2018.

The next meeting of C12 will take place on September 7 2018 in connection to the European Nuclear Physics Conference which will be held in Bologna in Italy that same week.

## **IUPAP sponsorship of nuclear physics conferences**

For 2018 C12 asked support for three conferences in category B, and one conference in category C. For one conference we asked for IUPAP endorsement. This activity has also been reported to IUPAP by Alinka Lépine-Szily.

## **IUPAP Young Scientist Prize in Nuclear Physics**

The IUPAP Young Scientist Prize in Nuclear Physics is awarded every third year. The award ceremony takes place at the International Nuclear Physics Conference, INPC, a tri-annual conference, the largest in nuclear physics, which until now have been sponsored by IUPAP as category A. The last time the Young Scientist Prize was awarded was at the INPC meeting in Adelaide in Australia in 2016. Next time will be at the INPC conference in Glasgow in Scotland in 2019. Therefore, we have started the process of finding the successful candidates with the following timetable:

- a) March 2018: sending out the call for nominations via relevant e-mail lists available to the C12 members in their respective countries and continents, and via e-mail lists at various laboratories and organisations such as for example NuPECC, AnPhA, ALAFNA. The announcement can be found also on the IUPAP C12 webpage.
- b) September 1 2018: deadline to receive nominations.
- c) September 7 2018: first discussion of incoming nominations at the C12 meeting in Bologna.
- d) September 7 2018: discussion of the evaluation procedure at the C12 meeting in Bologna.
- e) September – December 2018: evaluation of the nominees.
- f) Spring 2019: IUPAP Secretary-General to approve the suggested winners and the citations.
- g) Spring 2019: inform the winners.
- h) July 2018: award of the prize to the winners at the INPC conference in Glasgow.

## **IUPAP Neutrino Panel**

IUPAP has taken the initiative to create a Neutrino Panel as a combined effort under the supervision of the C4, C11 and C12 commissions together with the working groups WG1, WG9 and WG10. The suggested mission of the panel is – quote from mail from Bruce McKellar, past president of IUPAP: "***to promote international cooperation in the development of an experimental program to study the properties of neutrinos and to promote international collaboration in the development of future neutrino experiments to establish the properties of neutrinos***".

The panel is thought to be composed of about 15 members in total. During early 2018 we have discussed, within C12, several experts which we believe could contribute to such a panel by looking at neutrinos from a nuclear physics point of view, e.g. neutrino-less double-beta decay, neutrino-nucleon scattering etc. We came up with a list of six persons that I presented to the chair of C11, Heidi Schellman. She has taken the initiative to two telephone meetings with the chairs of C4, C11, C12, WG1, WG9 and WG10 to discuss the full list of experts suggested by all of the commissions and working groups. We will have one more telephone meeting in April 2018, and I believe that Heidi Schellman will present the result of our discussions at the C&CC meeting in Singapore in May.

## Issues related to the discovery of new superheavy elements

### *Joint Working Party – JWP*

It is the important task of IUPAC and IUPAP to validate claims of discovery of new superheavy elements. To this end IUPAC and IUPAP jointly elect, when needed, a Joint Working Party, JWP, which consists of experts with a deep knowledge of the field, typically three physicists indicated by IUPAP and three chemists indicated by IUPAC, but which themselves are not involved in the superheavy element research being validated. The last JWP was established in 2012 to consider claims for the discovery of the new elements with atomic numbers 113, 115, 117 and 118. The claims were accepted by the JWP in their report published in December 2015, and the four new elements subsequently got their names in 2016.

On the initiative of the past president of IUPAP, Bruce McKellar, it was decided, in 2016, that it was time to overlook the rules related to the validation of claims of discovery; how should the next JWP be constituted, how should it operate, what should be the procedure for the announcement of new elements and the nomination of their names, and how should the publication of the JWP report be done. In fact, it was decided to overlook the whole validation process and a first draft of the document "*IUPAC and IUPAP Procedures for Validating Claims for the Discovery of New Elements and Naming those Elements*" was written. The draft was presented by Bruce McKellar to C12 at our meeting in Adelaide in September 2016. We discussed it and we made suggestions for changes and additions to the draft. As I understand it, the presidents of IUPAP and IUPAC are presently discussing the content of the document, to come to a joint agreement about this new terms of reference. The document will then be published on the IUPAP homepage.

There are many important changes in that document. It will make the process more transparent and with more recognition to the physicists involved in superheavy element research, and it will involve the C12 commission of IUPAP as an expert committee to a larger extent than before. This will give C12 more visibility in issues related to superheavy element research, but also, of course, more responsibilities.

### *Joint Working Group – JWG*

When the JWP is to validate claims for the discovery of a new superheavy element they need a rulebook where they can find which is the most important criteria for the discovery, which criteria are necessary to look at in more detail, what parameters have been measured in the respective claimant experiments, on what grounds do the different experiments build their evidence for the discovery, etc. Such a rule book was presented in 1991 by the Transfermium Working Group, TWG, and it was published that same year. The Presidents of IUPAP and IUPAC decided in early 2017 that these criteria also needed to be overlooked and probably revised. To that end they jointly appointed a new group, the Joint Working Group, JWG, to review these rules and produce a new document. The group consists of three physicists appointed by IUPAP and three chemists appointed by IUPAC. I'm one of the members in the JWG. We have met two times during 2017, the first time in May 2017 in Egelsbach near the GSI laboratory outside Darmstadt in Germany, and second time in September 2017 in connection to the superheavy element conference held in Kazimierz in Poland. In between meetings we communicate via e-mail. We are currently writing on the document, which has been processed to a next-to-final version. It will be presented to the presidents of IUPAP and IUPAC in 2018 after which it will be submitted for publication.

### ***International Year of the Periodic Table – IYPT***

The year 2019 will be the International Year of the Periodic Table, IYPT. The past chair of C12, Alinka Lépine-Szily, is a member of the IYPT Advisory Board. She will be IUPAP's and C12's spokesperson at the IYPT organisation when it comes to plans of actions, financial questions, etc.

IYPT will give us the possibility to increase the visibility of nuclear physics when it comes to superheavy elements; to clarify the notion of these very heavy elements and the production and identification of them, which mainly is by means of nuclear physics methods and techniques. C12 is the natural place within IUPAP to discuss actions as to what to do with respect to this matter, and for the IUPAP council to consult with when questions arise. Thus, it gives the possibility also to increase visibility to C12 and to IUPAP.

C12 members are encouraged to use the IYPT to make public lectures wherever we are. Other ideas how to implement this will be discussed at the next C12 meeting in Bologna later this year.



# **IUPAP C13 COMMISSION REPORT**

**Prepared by Sekazi K. Mtingwa (C13 Chair)**

**for the**

**Meeting of the IUPAP Executive Council and  
Commission Chairs**

**April 2018**

## **Officers**

**Chair: Sekazi Mtingwa, United States**

**Vice-Chair: Kuijuan Jin, China**

**Secretary: Joseph Niemela, Italy**

## **Members**

**Carlo Saverio Iorio, Belgium**

**Mmantsae Diale, South Africa**

**Aba Bentil Andam, Ghana**

**Kevin McGuigan, Ireland**

**François Piuzzi, France**

**Dmitri Wiebe, Russia**

**Michael Steinitz, Canada**

**Samia Charfi Kaddour, Tunisia**

**Andreas Buchleitner, Germany**

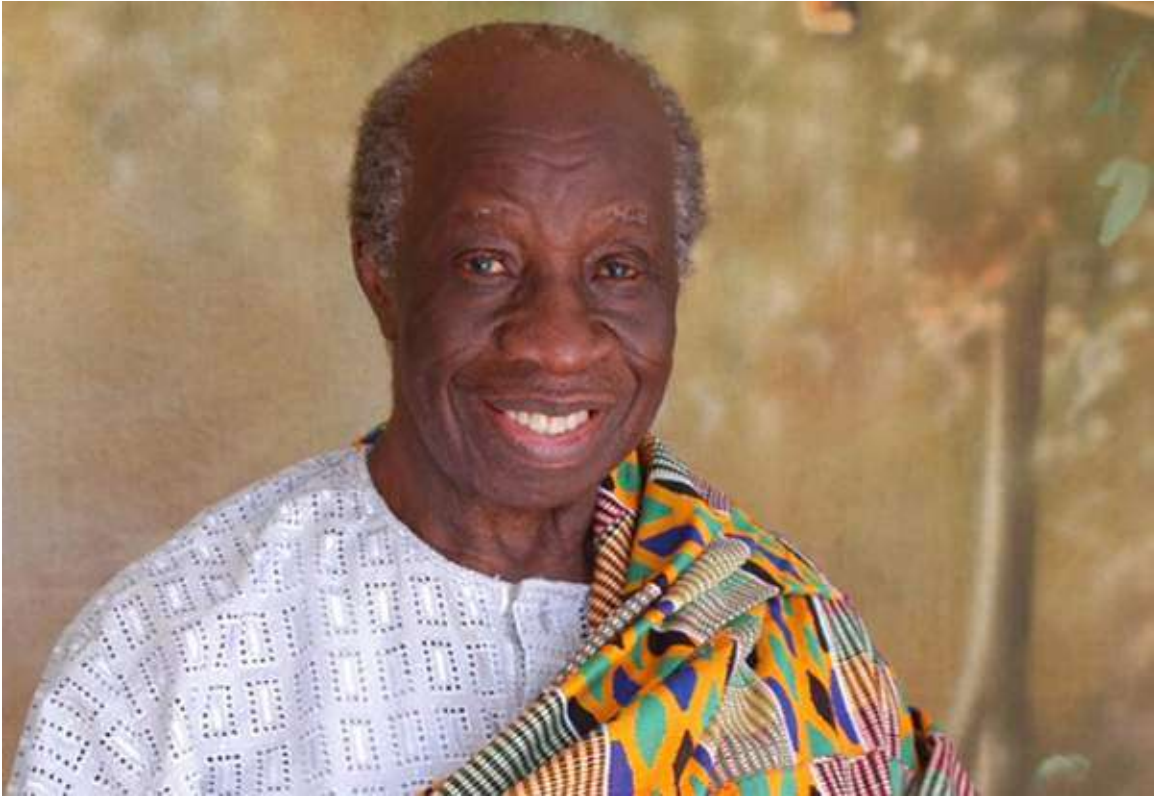
**Ajith Kumar Parambath, India**

**Jose Daniel Muñoz Castaño, Colombia**

## **Associate Members**

**(To be decided.)**

## I. Celebrating the Life of Francis Kofi Ampenyin Allotey (1932-2017)



**Professor Francis Allotey**

The C13 Commission salutes the life of our dear colleague and former IUPAP Vice-President, Francis Kofi Ampenyin Allotey, who passed away on 2 November 2017 at the age of 85. He was truly a GIANT on the world stage and did more than anyone to boost the development of science and technology in Africa and other developing countries.

Francis received his early education at the Ghana National College in Cape Coast. He pursued further studies in London at the University Tutorial College, Borough Polytechnic Institute (now called London South Bank University), and Imperial College where he obtained the Diploma. He proceeded to obtain his physics Master's degree and then Ph.D. from Princeton University in 1966, being the first African person to receive a physics Ph.D. from that institution. Francis' research specialty was in theoretical studies of soft X-ray scattering on metals, and he received the Ghana Academy of Arts and Sciences' Prince Philip Gold Medal for his contributions.

In addition to serving as Professor and Head of the Department of Mathematics at the Kwame Nkrumah University of Science and Technology (KNUST), he also served as KNUST's Dean of the Faculty of Science and Pro-Vice Chancellor. For decades, Francis was a true leader of science and technology in Ghana, having served in many capacities, including Chair of Ghana's Atomic Energy Commission, Chair of Ghana's Council for

Scientific and Industrial Research, and President of the Mathematical Association of Ghana.

Over the years, Francis was instrumental in founding a number of organizations, including the African Physical Society in 2010, African Optics and Photonics Society in 2014, and African Institute for Mathematical Sciences (AIMS-Ghana) in the town of Biriwa in 2012. He served as President of AIMS-Ghana until his passing. In another important initiative, Francis took a leading role in influencing UNESCO to declare 2015 the International Year of Light, which was celebrated around the world.

Francis was a quiet, soft-spoken man, but a true revolutionary for science. He will continue to inspire generations.



**Commencement at AIMS-Ghana**

## **II. Inaugural IUPAP Medal for Outstanding Contributions to the Enhancement of Physics in Developing Countries**

Professor Flores Valdes of Mexico received the inaugural 2014-2017 Medal during the 29<sup>th</sup> General Assembly in Sao Paulo with the citation:

*For his outstanding work over 50 years towards the development of physics and scientific institutions and the popularization of science in Mexico.*

As reported in the December 2017 IUPAP Newsletter,

*He is considered 'the towering figure in Mexican physics of his generation'. He has excelled in all academic activities: research, teaching, outreach and the creation and consolidation of institutions.*

*As a researcher he has many major contributions in nuclear physics, and as an important contribution, he has the Brody, Flores et al. paper in Reviews of Modern Physics (1981) that has received close to 2,000 references in specialized literature.*

*He is one of the most motivating teachers and has directed 30 theses at different levels. Many of his students are now key players in Mexican science. He was one of the first important researchers who started emphasizing the importance of popularization and outreach at a time (the 1970s) when these activities were considered to be more of a liability than an asset in Mexico. He has given a large number of lectures and published several popular books that have reached a vast non-specialized audience.*

The C13 Commission salutes the many lifetime achievements of Professor Valdes.

### **III. C13 Annual Meeting Activities (ICTP, Trieste, 25-26 August 2017)**

At its Annual Meeting, the C13 Commission did the following:

1. Awarded 21,000 Euros to support conferences in Namibia (7K), Tanzania (4K), Ethiopia (7K), and Vietnam (3K).
2. Visited the synchrotron light source and X-ray free-electron laser facilities at Elettra.
3. Visited the University of Trieste and discussed with faculty and administrators the doctoral program and recruitment of foreign students.



**Group Photo of C13 Commission at Annual Meeting**

#### **IV. Lightsources for Africa, the Americas, Asia and Middle East Project (LAAAMP)**

ICSU awarded a team led by IUPAP and IUCr a € 300,000 grant to fund *LAAAMP* ([laaamp.iucr.org](http://laaamp.iucr.org)) with the goal of enhancing Advanced Light Source (AdLS) science and crystallography in Africa, the Caribbean, Mexico, Southeast Asia and Middle East. *LAAAMP*'s tasks are the following:

- Task 1.        Develop a ***Strategic Plan*** for each region to grow and enhance its AdLS and crystallography user communities.
  
- Task 2.        Establish a **Colloquium Programme** for each region to recruit new AdLS and crystallography users and to advertise *LAAAMP* projects via invited talks at targeted venues. Also, launch a series of new *IUCr-UNESCO OpenLabs*, which is a network of operational crystallography laboratories in developing countries aimed at increasing the access to, and utilization of, crystallography in all regions of the world.

- Task 3. Publish an **Informational Brochure** that describes AdLSs, crystallography, and the many fields that they impact.
- Task 4. Facilitate **researchers' visits** to AdLS and crystallography facilities.
- Task 5. Convene a **meeting at UNESCO** to present the regions' *Strategic Plans* and define the charge for more detailed *Business Plans* that include feasibility studies of constructing AdLSs in regions where they do not yet exist.

To accomplish these objectives, IUPAP and IUCr took the lead in partnership with fourteen world AdLSs and over fifteen international organizations, including the Association of Asia Pacific Physical Societies, European Physical Society, Mexican Physical Society, UNESCO, TWAS, ICSU Regional Offices, and ICTP. The *LAAAMP* Executive Committee consists of Sandro Scandolo (Chair during 2017), Sekazi Mtingwa (Chair for 2018-2021), and Michele Zema. They work closely with the Budget Manager, Maitri Bobbi, who is in the IUPAP Secretariat in Singapore. Much of the on-the-ground work is performed by the AdLS Usage and Strategic Plan Committees in each of the four regions, chaired by Simon Connell (University of Johannesburg) for Africa, Carlos Cabrera (University of Puerto Rico at Río Piedras) for the Caribbean, Matías Moreno (Universidad Nacional Autónoma de México) for Mexico, Rungrueang Phatthanakun (Synchrotron Light Research Institute in Thailand) for Southeast Asia, and Özgül Öztürk (Universität Siegen, originally from Turkey), for the Middle East. The expansion to Southeast Asia was concluded in early 2018.

**Progress to Date**

The first element of **Task 1** is the development of a database of AdLS and crystallography users in the regions. Lawrence Norris in the USA has developed a survey of instrumentation availability and usage, which can be accessed on the *LAAAMP* Website. Once completed, the database will form the basis for the development of a *Strategic Plan* in each region that will describe the present state of AdLS and crystallographic sciences in the region and short-, medium- and long-term goals for enhancing them. This will lead to the development of more detailed ***Business Plans***, which will include studying the possibility of constructing an AdLS in each region if one does not already exist there. The experience of SESAME will be crucial for such studies.

**Task 2** is being fully implemented. Prosper Ngabonziza, who is an AdLS user employed at the Max-Planck-Institute for Solid State Research, spent several days in his hometown of Kigali, Rwanda. He gave Colloquium presentations at AIMS-Rwanda and at the ICTP-affiliated East African Institute for Fundamental Research, which is located in the College of Science and Technology (CST) at the University of Rwanda (UR). In addition to interacting with many students who were excited about the possibility of training at AdLSs under the *LAAAMP* initiative, Ngabonziza held discussions with a number of top university and governmental officials, including UR's Deputy Vice-Chancellor for Academic Affairs and Research, the Principal of its CST, and the Director-General for

Science, Technology and Research in the Rwandan Ministry of Education. Rwanda has been making tremendous strides in science and technology in recent years and it will be important for *LAAAMP* to follow up on the doors that Ngabonziza was able to open.

*LAAAMP* established its first *OpenLab* in San José, Costa Rica during 4-9 December 2017, led by Executive Committee member, Michele Zema, with approximately 80 students in attendance. There was a Colloquium on the first day introduced by Zema and given by Diego G. Lamas from Universidad Nacional del Comahue in Argentina on *Técnicas de luz sincrotrón para caracterización avanzada de materiales*. The Director of Scientific and Technological Development of Costa Rica's Ministry of Science and Technology; the Director of the Natural Science sector from UNESCO's Office for Costa Rica, El Salvador, Honduras, Nicaragua and Panama; the President of the National Research Council; and top officials from local universities and other academic institutions were among those attending the Colloquium and providing welcomes. Starting on the second day, the students were split into two courses, one on single crystal diffraction and the other on powder diffraction. Many countries, especially from throughout Central America, were represented.

Other *LAAAMP* events held during 2017 were the following:

1. Two *LAAAMP* Kick-Off events during the *24th Congress and General Assembly of the IUCr* (Hyderabad, India, 21-28 August 2017) organized by Michele Zema and the *29th IUPAP General Assembly* (São Paulo, Brazil, 11-13 October 2017) organized by Sandro Scandolo;
2. A thematic session entitled "*Light Sources and Crystallographic Sciences for Sustainable Development*", proposed and sponsored by *LAAAMP* in collaboration with UNESCO, at the *World Science Forum 2017*, Jordan, 7-11 November 2017, with the *LAAAMP* lead being Michele Zema, who partnered with UNESCO's Juste Jean-Paul Ngome Abiaga from its Division of Science Policy and Capacity-Building. Sekazi Mtingwa co-chaired the session and was among the speakers.

For **Task 3**, a 24-page *LAAAMP* Brochure entitled *Advanced Light Sources and Crystallography: Tools of Discovery and Innovation* has undergone its first printing of 500 copies in addition to being posted on the *LAAAMP* and partner organizations' Websites. The Editor is Ernie Malamud, a retired researcher from Fermilab and the University of Nevada in Reno, who has extensive experience producing high quality publications, including one for the American Physical Society entitled *Accelerators and Beams, Tools of Discovery and Innovation*, which is currently in its 4<sup>th</sup> Edition. Malamud has received feedback from the initial printing and soon will produce a larger printing and distribution during 2018. Moreover, Spanish and French versions will be made available later this year as a contribution from the International Atomic Energy Agency.

**Task 4** also has enjoyed tremendous success. The first *Call for Applications* for Faculty-STudent (FAST) Teams, consisting of one faculty and one graduate student to spend two months at participating AdLSs, was closed on 21 April 2017. To be eligible,

the applicants had to have less than a year's experience in conducting research at an AdLS. Each of the four regions was awarded grants for two teams, for a total of eight teams, namely 16 individual grants of approximately € 2,000 each, mainly for airline travel expenses, which were arranged through ICTP. The host AdLSs provided all lodging and meal expenses not covered by the *LAAAMP* grant. All visits were successfully completed. In particular, the ESRF published an interesting newsletter article about its FAST Team visitors that can be viewed at <http://www.esrf.eu/sites/www/home/news/general/content-news/general/esrf-trains-synchrotron-scientists-from-africa-the-americas-and-the-middle-east.html>. A new *Call for Applications* for 2018 FAST Teams ended on 15 November 2017 and the new awardees have been announced on the *LAAAMP* Website. They consist of a total of 16 FAST Teams, or 32 individual grantees. With the current expansion of *LAAAMP* to Southeast Asia, a new *Call for Applications* has been issued for three additional FAST Teams from that region, bringing the total number of individual trainees to 38.

Finally for **Task 5**, discussions have begun with UNESCO to convene a meeting in December 2019 at UNESCO Headquarters in Paris consisting of the *LAAAMP* team; Ministers of Science, Technology, Health, Education, Energy and Natural Resources; representatives from each region's research community; and other international stakeholders and interested parties. The purpose of the meeting will be to present the *Strategic Plan* for each region; set the charge for more detailed *Business Plans* with short-, medium- and long-term goals, including the charge to ascertain the feasibility of constructing an AdLS in each region that does not have one; and finalize a roadmap for moving the *Business Plan* forward.

## V. Upcoming Activities

C13 plans to pursue the following during the current year:

1. Provide funding for international conferences.
2. Explore an initiative to increase the availability of scientific instruments in developing countries, and possibly collaborate with the nonprofit *Seeding Labs* ([seedinglabs.org](http://seedinglabs.org)) to facilitate such donations of equipment.
3. Continue pursuing the five *LAAAMP* tasks enumerated above.
4. Host a *LAAAMP* Midterm Workshop on 24 August 2018 at ICTP in Trieste.
5. Collaborate with the American Physical Society's new *Physics in Africa* project. Joseph Niemela, the C13 Secretary, is one of the leaders of that project.



6. Assist with the 29th General Assembly's resolution to pursue and strongly support the plan to establish 2022 as the International Year of Basic Sciences for Development.
7. Participate in the International Conference on Physics Education (ICPE2018), Johannesburg, South Africa, 1-5 October 2018.
8. Address the problem of plagiarism in scholarly publications, perhaps with an educational campaign made available to students in developing countries.



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# IUPAP

INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS  
C<sub>14</sub> COMMISSION – PHYSICS EDUCATION

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## REPORT

2013 -2018

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**PROF. DR. ROBERTO NARDI**  
**C14 Commission – Chair (2018-2020)**  
UNESP – State University of São Paulo, School of Sciences  
Education Department - Bauru Campus

**Brazilian Society of Physics (SBF)**  
São Paulo, 18/04/2018.

## INTRODUCTION

This document is a report of the main activities in which Prof. Dr. Roberto Nardi participated, as a member of the C<sub>14</sub> Commission – Physics Education, representing the Brazilian Society of Physics (SBF) in this Commission.

From 2018-2020 Prof. Nardi was indicated as a chair of the C<sub>14</sub> Commission.

The main subjects of this report are:

1. The C<sub>14</sub> Commission and its members
2. International Conferences and events organized by the Commission and held in this period and the presence of Brazilian researchers and teachers in these events
3. Publication of the ICPE Newsletter
4. Looking forward

# C14: PHYSICS EDUCATION

<http://iupap.org/commissions/>

The C14 Commission is one of the 20 IUPAP's commissions. It was established by the IUPAP in 1960, to promote the exchange of information and views among the members of the international scientific community in Physics Education. The officers in the period considered (2013-2017) were:

**Hideo Nitta** (Chair)  
Tokyo Gakugei University,  
**Japan**

**Leoš Dvorač** (Vice-Chair)  
Department of Physics Education - Charles University - Faculty of Mathematics and Physics  
**Czech Republic**

**Zulma Gangoso** (Secretary)  
Facultad de Matemática, Astronomía y Física - Universidad Nacional de Córdoba  
**Argentina**

**Qiang Chen**  
Department of Physics - Beihang University - Beijing  
**China**

**Jayashree Ramadas**  
Homi Bhabha Centre for Science Education - Tata Institute of Fundamental Research  
**India**

**David Sands**  
Department of Physics and Mathematics - University of Hull  
**United Kingdom**

**Eilish McLoughlin**  
School of Physical Sciences - Dublin City University – Glasnevin - Dublin  
**Ireland**

**Dmitry Khokhlov**  
Physics Department - Lomonosov Moscow State University - Moscow  
**Russian Federation**

**Deena Naidoo**  
School of Physics - University of the Witwatersrand  
**South Africa**

**Roberto Nardi**  
School of Sciences – Education Department – State University of São Paulo (UNESP)  
**Brazil**

**Lotten Glans**  
Mittuniversitetet,  
Sweden

**Priscilla Laws**  
Department of Physics and Astronomy - Dickinson College - Carlisle, Pennsylvania  
**United States**

**Ian Bearden**  
Niels Bohr Institute - University of Copenhagen  
**Denmark**

**Gorazd Planinšič**  
Faculty of Mathematics and Physics - University of Ljubljana  
**Slovenia**

The Associate Members are:

**Sarojiny Saddul-Hauzaree**

Department of Science Education - Mauritius Institute of Education,  
**Mauritius**

**Mehmet Fatih Taşar**

Gazi Üniversitesi - Gazi Eğitim Fakültesi – Ankara  
**Turkey**

**Manjula Sharma**

School of Physics - Faculty of Science - The University of Sydney  
**Australia**

**Alex Mazzolini**

**Australia**

# **International Conferences and events**

Organized by the C<sub>14</sub> Commission (2013-2017)

## **The International Conference on Physics Education (ICPE-EPEC-2013)**

Praga - República Tcheca

<http://www.icpe2013.org/>

## **International Conference on Physics Education - ICPE 2014**

Córdoba – Argentina

[www.icpe2014.org](http://www.icpe2014.org)

## **2nd World Conference on Physics Education – WCPE 2016**

São Paulo – Brazil

<http://www.wcpe2016.org/en/>

## **The International Conference on Physics Education (ICPE-GIREP-EPEC-2017)**

Dublin – Ireland

<http://www.girep2017.org/ehome/index.php?eventid=129432&>

# The International Conference on Physics Education (ICPE-EPEC-2013)

Charles University, Prague, Czech Republic – August 05 to 09, 2013

<http://www.icpe2013.org/>

The purpose of this conference was to bring together people working in physics educational research and in physics education at all types of schools from the whole world to enable us to share and exchange our experiences.

The general conference theme: Active learning – in a changing world of new technologies. Oral presentation, posters, workshops were held, from a broad range of topics aiming help to improve physics teaching and learning (especially active learning) and to extend our understanding of this important area.

The conference was organized by:

- The International Commission on Physics Education (ICPE) - Commission C14 of the International Union of Pure and Applied Physics (IUPAP)
- The European Physical Society Physics Educational Division (EPS PED)
- The Faculty of Mathematics and Physics, Charles University in Prague.

## Scientific Advisory Committee

Leoš Dvořák, Charles University, Czech Republic

Pratibha Jolly, University of Delhi, India

Robert Lambourne, Open University, UK

Priscilla Laws, Dickinson College, USA

Marisa Michelini, University of Udine, Italy

Cesar Mora, Instituto Politécnico Nacional, Mexico

Deena Naidoo, University of the Witwatersrand, South Africa

**Roberto Nardi, State University of São Paulo, Brazil**

Hideo Nitta, Tokyo Gakugei University, Japan

Gorazd Planinšič, University of Ljubljana, Slovenia

Elena Sassi, University of Naples "Federico II", Italy

Laurence Viennot, Université Paris 7 - Denis Diderot, France

Michael Vollmer, Brandenburg University of Applied Sciences, Germany

## ICPE-EPEC 2013 Program Committee

Leoš Dvořák, Charles University, Czech Republic

Robert Lambourne, Open University, UK

Hideo Nitta, Tokyo Gakugei University, Japan

Gorazd Planinšič, University of Ljubljana, Slovenia

Laurence Viennot, Université Paris 7 - Denis Diderot, France

## The Local Organizing and Program Committee

Leoš Dvořák, Irena Dvořáková, Věra Koudelková, Marie Snětinová and Vojtěch Žák,  
Department of Physics Education, Faculty of Mathematics and Physics, Charles University, Czech Republic.

As a member of the IUPAP Physics Teaching Commission (C<sub>14</sub>), we participated of the scientific committee and as chair of one of the sessions (1A).

We also participated as presenter of five oral communications of research works in co-authorship with other researchers (Session 3B and 6C) and with orientations of the PhD of the Graduate Program in Science Education (Session 3B). [See 'Certificate of Attendance' - Annex IV and parts of the 'Conference Program'.

About 150 physicists from different countries of the world participated in the event:

Argentina, Brazil, China, Ecuador, Slovenia, Spain, France, Israel, India, England, Ireland, Italy, Japan, Mexico, Argentina , Pakistan, the Czech Republic, Russia and Sweden.

In addition to our participation as a member of the Scientific Committee and in the presentation of communications related to our ongoing research, we took the opportunity to disseminate the Science & Education journal edited by the UNESP' Science Education Program, as well other Brazilian Physics and Science Education journals . We also maintained contacts with international researchers inviting them to be part of the Editorial and Opinion Board of the Ciência & Educação Journal.



# International Conference on Physics Education - ICPE 2014

Córdoba – Argentina – Universidad Nacional de Córdoba, august 18 to 22, 2014

[www.icpe2014.org](http://www.icpe2014.org)

The International Conference on Physics Education was held from August 18 to 22, 2014, at the Dr. César Carman Hotel Conference Center, in the city of Córdoba, Argentina. It had as central theme: Physics Teaching before a world complex. ICPE 2014 was the first conference of the series to be held in South America.

The main objective was the exchange of scientific information and points of view among members of the international scientific community in the area of Physics Teaching.

Following its tradition, ICPE 2014 was composed of lectures on relevant subjects in Physics Teaching given by prominent representatives of the field, as well as oral contributions and posters in the different areas.

The event was organized by the C<sub>14</sub> Commission of the International Union of Pure and Applied Physics.

Locally, the Conference was organized by the Physics Department of the University of Córdoba (one of the oldest in the Americas) and by the Enrique Gaviola Institute of Physics (CONICET, Argentina), which together constitute an important research centre in physics in this region of Argentina.

Dozens of physicists, including researchers, professors and postgraduate students interested in the subject, from different countries around the world participated in the event. The Scientific Committee was composed of the following researchers:

- Prof. Robert Lambourne (UK) (Chair)
- Marisa Michelini (President of GIREP)
- Prof. Hideo Nitta (Japan)
- Prof. Leos Dvorak (Czech Republic)
- Prof. Zulma Gangoso (Argentina)
- Prof. Julio Benegas (Argentina)
- Prof. Francisco Tamarit (Argentina)
- **Prof. Roberto Nardi (Brazil)**
- Prof. Nianle Wu (China)
- Prof. Gorazd Planinsic (Slovenia)
- Prof. Deena Naido (South Africa)
- Prof. Jayashree Ramadas (India)
- Prof. Dmitry Khokhlov (Russia)
- Prof. Lotten Glans (Sweden)
- Prof. Priscilla Laws (USA)
- Prof. César Mora (México)

The program of the event was constituted of official opening, conferences, symposium, workshops, oral presentations and in the form of poster, as it appears in the program of the event that can be accessed at: <http://www.icpe2014.org/program/>

Also included in the program was a dinner party and there was space for the visitation of the participants to tourist attractions of interest such as museums and cultural centres of the region.

Two of the keynote speakers, indicated by us, were Brazilians:

**Keynote IX: Isabel Martins**

*The potential of curriculum approaches related to socio-scientific issues (SSI) and socially acute questions (SAQs) for promoting scientific literacy*

**Keynote VII: Marcia Cristina Bernardes Barbosa**

*Water a complex fluid*

Our participation, besides the activities as a member of the Scientific Committee, was given as a chair of one of the oral communication sessions (Session II) of the event and in the presentation of works, both in oral and poster form, derived from the project titled: O dialogue between the academic production in Science Teaching and the knowledge and teaching practices in different levels of education and educational spaces. This research project is supported by CNPq and is being developed by the Research Group on Science Teaching (GPEC) linked to the Department of Education and the Postgraduate Program in Science Education of Unesp, Campus of Bauru. The project aims to "Develop articulated investigations that generate a set of subsidies for the reflection on the processes of teacher education in the area of natural science and mathematics education, especially in what concerns to the ways in which the pre and in-service teachers interact with theory (academic production in education and related areas) and how they benefit (or not) from it in their professional practice. "

The report of part of the activities developed resulted in the following communications:

- KUSSUDA, S.R. e NARDI, R. A quantitative study on the teaching of physics in São Paulo State, Brazil: universities, teachers and schools.
- GATTI, S.R.T. e NARDI, R. Contributions of the History and Philosophy of Science to teachers' education: what really arrives to the high school classrooms?
- LIMA, S.C.L. e NARDI, R. A proposal for continuing education for teachers of science early years of basic education.
- SOUZA DE JESUS, A.C. The presence of physics education research outcomes in supervised teaching practice activities.
- CARVALHO, A.V. e NARDI, R. The use of "Student Notebooks" in the Teaching of Physics in the State of São Paulo, Brazil: the official discourse, teaching practice and reality in the classroom.
- CORTELA, B.S.C. e NARDI, R. Relationships between the construction of a curriculum identity and the professional choices of students graduated from a physics teachers' education program.

Our participation in the event also allowed exchanges with researchers from different institutions in Brazil and abroad, such as China, Colombia, Ecuador, United States, Fiji, England, Israel, Japan, Mexico, New Zealand, Russia, Switzerland. These exchanges may in the future be important to the Department of Education of the Faculty of Science and to the Graduate Program in Education for Science. The exchanges allowed:

- Contacts with post-graduate students interested in studying for a PhD or postdoctoral degree in Brazilian programs.
- Dissemination of the Science & Education and other Brazilian journals with other counterparts in the participating countries.
- Invitation to researchers present to join the International Committee and of Evaluators of the Science & Education Journal;
- Possibility of teachers coming from other countries as visiting professors in Brazilian post-graduate programs;
- Dissemination of activities and research in progress in the Department of Education, in the Faculty of Sciences and, particularly, in the Group of Research in Science Teaching, under our coordination.

The wide dissemination of the event with members of the Brazilian Society of Physics, as well as between teachers of basic education and the geographical proximity of Argentina with Brazil contributed to the presence of dozens of Brazilian participants.

## 2nd World Conference on Physics Education – WCPE 2016

São Paulo – Brazil – 11 to 15 July, 2016.

<http://www.wcpe2016.org/en/>

This Conference was sponsored by GIREP and ICPE C<sub>14</sub> Commission. The committee were the following:

### Local Organizing Committee:

Chair: Maurício Pietrocola

Vice-chair: Ivã Gurgel

Review Commission: Cristina Leite and Giselle Watanabe (Coord.)

Lúcio Costa, Erika Mozena, Ivanilda Higa, Renata Ribeiro, Elrismar Auxiliadora, Marta de Souza, Nilva Sales, Nobuko Ueta, Guilherme Brockington, Thaís Forato, Breno Arsioli Moura, Winston Schmiedecke

### International Advisory Committee

Marisa Michelini, Università di Udine, Italy (GIREP)

Dagmara Sokolowska, Institute of Physics, Poland (GIREP)

Claudia Haagen-Schuetzenhoefer, University of Graz, Austria (GIREP)

Wim Peeters, PBDKO vzw (work) and PONTOn vzw (ceo), Belgium (GIREP)

Leoš Dvořák Charles University, Czech Republic, (ICPE/GIREP)

Hideo Nitta, Tokyo (Gakugei University, Japan (ICPE)

Zulma Gangoso, Universidad Nacional de Córdoba, Argentina (ICPE)

Ian Bearden, University of Copenhagen, Denmark (ICPE)

Qiang Chen, Beihang University, China (ICPE)

Lotten Glans, Mittuniversitetet, Sweden (ICPE)

Dmitry Khokhlov, M.V. Lomonosov Moscow State University, Russia (ICPE)

Priscilla Laws, Dickinson College, USA (ICPE)

Eilish McLoughlin, Dublin City University, Ireland (ICPE)

Deena Naidoo, University of Witwatersrand, South Africa (ICPE)

**Roberto Nardi, Universidade Estadual Paulista Julio de Mesquita Filho, Brazil (ICPE)**

Gorazd Planinc, University of Ljubljana, Slovenia (ICPE)

Jayashree Ramadas, Tata Institute of Fundamental Research, India (ICPE)

David Sands, University of Hull, United Kingdom (ICPE)

Raimund Girwidz, University Ludwig-Maximilians- (MPTL)

Francisco Esquembre, Universidad de Murcia- (MPTL)

Orlando Aguiar, Federal University of Minas Gerais (SBF)

Maurício Pietrocola, University of São Paulo, Brazil (chair)

### Associate International Committee

Alex Mazzolini, Swinburne University of Technology, Australia

André Ferrer - Federal University of Rio Grande do Norte, Brazil

Anna Maria Pessoa de Carvalho - University of São Paulo, Brazil

Antonia Candela, Centro de Investigación y de Estudios Avanzados del I.P.N, Mexico

Arnaldo Vaz - Federal University of Minas Gerais, Brazil

Cibelle Silva - University of São Paulo, Brazil

Cristiano Mattos, University of São Paulo, Brazil

Costas Constantinou, University of Cyprus, Cyprus

David Sokoloff (AAPT)/University of Oregon, USA

Diane Grayson, Andromeda Science Education, South Africa

Dietmar Höttecke, University of Hamburg Faculty of Education, Germany

Gesh Pospiech - Technical University of Dresden, Germany

Ian Lawrence, Institute of Physics, UK

Ideu Moreira - Federal University of Rio de Janeiro, Brazil

Ives Araujo - Federal University of Rio Grande do Sul, Brazil

Jenaro Guisasola, Universidad del País Vasco, Spain

Jose Custódio Filho - Federal University of Santa Catarina, Brazil

Julio Benegas, University of Sao Luis, Argentina

Olivia Levrini, Università di Bologna, Italy, Brazil

Olival Freire - Federal University of Bahia

M. Fatih Taşar, Gazi Üniversitesi, Turkey

Maarten Pieters, Netherlands Institute for Curriculum Development, Nederland  
Minella Alarcon, University of Manilla, Philippines  
Pratibha Jolly, University of Delhi, India  
Robert Lambourne - Open University, UK  
Ricardo Karam, University of Copenhagen, DK  
Roser Pinto, Universitat Autònoma de Barcelona, Spain  
Wanda Kaminski, University of Paris Denis Diderot, France

The presence of Brazilian researches in the program was important.

A. Plenary Conference:

**1) Dialogic development of children's ideas using computation in the classroom: keeping it simple**

*Ian Laurence, Institute of Physics, UK*

**2) Benefits and Challenges of Technology in Teaching Physics**

*Prof. Ton Ellermeijer, Foundation CMA, Amsterdam, Netherlands*

**3) Thinking Like a Physicist" about Physics Education**

*Prof. Paula Heron, University of Washington, USA*

**4) Simple experiments in physics teaching and learning – do they have any perspectives?**

*Prof. Leoš Dvořák, Dept. of Physics Education, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic*

**5) Conceptual development and critical attitude in physics education: a pathway in the search for coherence**

*Laurence Viennot, PRES Sorbonne Paris Cité, Université Paris Diderot, LDAR - France*

B. Invited Conference:

**Making of Manga Guide to Physics**

*Hideo Nitta, Tokyo Gakugei University, Japan*

5. Round Tables:

**1- Women in Physics and Physics Education**

**Marcia Barbosa, Federal University of Rio Grande do Sul, Brazil**

**Pratibha Joly, University of Delhi, India**

**2- Physics education and diversity in society**

*Antonia Candela Martin, INP, México*

*Tanja Tajmel, Professional School of Education, Germany*

**Katemari Rosa, State University of Paraíba, Brazil**

**3 - Research-based Alternatives to Traditional Physics Teaching at University and College**

*Jenaro Guisasola, University of the Basque Country (UPV/EHU). Spain*

*Cristiano R. Mattos, University of São Paulo, Brazil*

*Genaro Zabala (Tecnológico de Monterrey, Mexico); Ruben Limaña (Universitat de Alicante, Spain); Marisa Michelini & Alberto Stefanel (University of Udine, Italy) ; M. Kryjevskaja (North Dakota State University, USA)*

**4 - Professional development of Physics teachers**

**Deise Vianna (abstract), Federal University of Rio de Janeiro, Brazil**

*Zulma Gangoso, Universidad De Cordoba, Argentina*

**5 - Cern Masterclass courses and the impact on school physics**

*Uta Bilow, Technological University of Dresden, Germany*

**Marcia Begali, State University of Rio de Janeiro, Brazil**

**6 - Perspectives from WCPE 2016 in physics education: Where have we been and where would we like to be?**

*Chair Ian Lawrence - Institute of Physics, UK*

*Paula Heron - University of Washington, USA*

*Hideo Nitta - Tokyo Gakugei University, Japan*

*Peter Hubber - Deakin University, Australia*

*Prof. Ton Ellermeijer - Foundation CMA, Amsterdam, Netherlands*

*Laurence Viennot - PRES Sorbonne Paris Cité, Université Paris Diderot, LDAR - France*

## Workshops: total of 8

**1) Shaping the interplay of physics and mathematics**

Authors: Gesche Pospiech, Dresden - Technische Universität, Dresden

**2) Simple and Beautiful Experiments IX by LADY CATS and Science Teachers' Group**

Authors: Masako TANEMURA, Kyoko ISHII, Jun-ichiro YASUDA, Naoshi TAKAHASHI, Nobue MASUDA. OKU - Osaka Kyoiku University. JAPAN. Tamagawa University. Machida, Tokyo, JAPAN. Yamagata University. Yamagata, JAPAN. Kagawa University, Saiwaicho, Kagawa, JAPAN. Ochanomizu University Elementary School. Ootsuka, Bunkyo, Tokyo, JAPAN.

**3) Do's and don'ts of large scale curriculum development: exploring the case of physics education in the Netherlands since 1970, and your own cases.**

Authors: Maarten Pieters. Netherlands Institute for Curriculum Development. Netherlands.

**4) coach 7 - New version of Unique Environment for STEM Education and how to integrate Technology in Physics Education ; Role at Examinations.**

Authors: Kedzierska Ewa, Ton Ellermeijer, Pieter Smeets. CMA, Amsterdam (Amsterdam)

**5) Physics Everywhere: Experiments with Smartphones**

Authors: Cecilia Stari, Arturo Marti, UdelaR - Instituto de Fisica, Universidad de la Republica (Uruguay)

**6) Didactic sequence on particle detectors for medium level students in São Paulo state ( high school ) : An interdisciplinary view.**

Authors: Armando Massao Tagiku, Guaraciaba Tetzner, Nobuko Ueta, Lapef - Laboratório de pesquisa em ensino de Física – FEUSP. Brazil

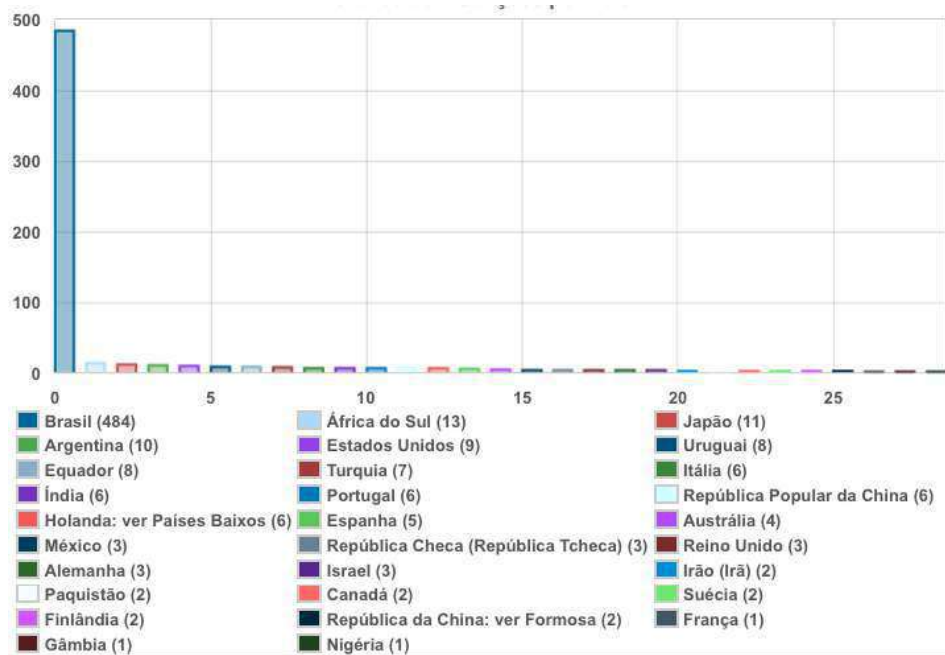
**7) "GUESS THE COLOUR!": A MYSTERY TO APPROACH THE VISION OF COLOURS**

Authors: Marco Giliberti, Sara Roberta Barbieri. Phys Dep. University of Milan (Via Celoria 16, 20133, Milano, Italy)

**8) School Bag Physics Laboratory**

Authors: Vijaykumar Verenkar. V P Goa - Vidnyan Prabodhini. Goa

The communication present in the event were distributed by countries, according this proportion:



# The International Conference on Physics Education (ICPE-GIREP-EPEC-2017)

Dublin – Ireland – 3rd to 7th July, 2017

<http://www.girep2017.org/ehome/index.php?eventid=129432&>

The GIREP-ICPE-EPEC 2017 conference was held in Dublin City University, Ireland. The conference theme was "Bridging Research and Practice in Physics Teaching and Learning".

This conference was hosted by the Centre for the Advancement of Science and Mathematics Teaching and Learning (CASTeL) at Dublin City University (DCU), Ireland and is jointly organised by:

- **The Conference of International Research Group on Physics Teaching (GIREP)**
- **European Physical Society - Physics Education Division (EPS PED) and**
- **International Conference on Physics Education (ICPE) of the Commission C14 of the International Union of Pure and Applied Physics (IUPAP).**

The Organising Committee was chaired by Eilish McLoughlin and Paul van Kampen

The committees were the following:

## Scientific Advisory Committee

Leoš Dvořák, Charles University in Prague, Czech Republic, GIREP and ICPE Committee Member

Ton Ellermeijer, CMA, Amsterdam, The Netherlands, former GIREP President

Zulma Gangoso, Córdoba, Argentina, ICPE Secretary

Claudia Haagen-Schuetzenhoefer, University of Graz, Austria, GIREP Vice-President

Eilish McLoughlin, Dublin City University, Ireland, Chair GIREP-ICPE-EPEC 2017

Marisa Michellini, University of Udine, Italy, GIREP President

Andreas Mueller, University of Geneva, Switzerland, EPS-PED Committee

Hideo Nitta, Tokyo Gakugei University, Japan, ICPE President

Wim Peeters, DKO (vzw) and PONTon vzw, Belgium, GIREP Vice-President

David Sands, University of Hull, United Kingdom, EPS-PED Chair

Dagmara Sokolowska, Jagiellonian University, Cracow, Poland, GIREP Secretary

Dean Zollman, Kansas State University, USA, AAPT Representative

## Local Organising Committee

Eilish McLoughlin, Dublin City University, Ireland, Chair

Paul van Kampen, Dublin City University, Ireland, Co-Chair

Eamonn Cunningham, Dublin City University, Ireland

Arlene O Neill, Trinity College Dublin, Ireland

Veronica McCauley, National University of Ireland Galway, Ireland

Leah Wallace, Limerick Institute of Technology, Ireland

Shane Bergin, University College Dublin, Ireland

Sheila Gilheany, Institute of Physics in Ireland

Paul Nugent, IOPI Teacher Co-ordinator, Ireland

David Keenahan, IOPI teacher Co-ordinator, Ireland

Siobhan Daly, Dublin Institute of Technology, Ireland

The Plenary speakers were the following researchers:

## Plenary Speakers



### Prof. Dr. Claudia Haagen-Schützenhöfer

Professor at the institute of Physics at the University of Graz. Austria

Austrian national Physics Curriculum for secondary schools.

Vice-President of the GIREP Committee.



**Prof Kevin G. McGuigan**

Director of the RCSI Solar Disinfection Research Group  
Adjunct Professor of Medical Physics with the School of  
Physical Sciences in Dublin City University, Ireland



**Prof. Marco Antonio Moreira**

Emeritus Professor of Physics of the Federal University of Rio  
Grande do Sul (UFRGS), Brazil and Senior Researcher of the  
Brazilian National Research Council. Porto Alegre. Brazil



**Dr. David Sands**

Director of Learning and Teaching for the School of  
Mathematics and Physical Sciences at Hull, United Kingdom.  
IOP Higher Education Group and the Physics Education  
Division of the European Physical Society  
C14 of IUPAP (ICPE).



**Professor Paul van Kampen**

School of Physical Sciences and the Centre for the  
Advancement of STEM Teaching and Learning (CASTeL) at  
Dublin City University, Ireland.



**Dr. Bethany R. Wilcox**

Department of Physics at Colorado School of Mines  
U.S.A.

**ICPE Medal** ICPE Medal for the year 2017 was conferred on Marco Antonio Moreira (above), Professor Emeritus at Federal University of Rio Grande do Sul, Porto Alegre, Brazil. The C14 Commission nominated Prof. Moreira among other professors. Prof. Moreira was the first Latin America research to be honoured with the ICPE Medal.

Some photos of the ceremony are shown below.

Prof. Marco Antonio Moreira (Brazil) and Hideo Nitta (Japan) – Chair of the C14 Commission



Prof. Marco Antonio Moreira (Brazil) – ICPE Medal 2017 among members of the ICPE Commission: left: Eilish McLoughlin (Ireland), Manjula Sharma (Australia); right: Hideo Nitta (Japan) and Roberto Nardi (Brazil),





## Publication of the ICPE Newsletter

The C<sub>14</sub> Commission publishes its newsletter with regularity, twice a year, primarily in electronic form. A small number of copies are printed and distributed at conferences. Professor Manjula Sharma (Australia) is the actual editor. Prof. Zulma Gangoso, University of Cordoba, Argentina was the former editor.

The Newsletter is published twice a year Issues back to 1995. The three last editions are available at:

<http://iupap-icpe.org/publications/newsletters/n64.pdf>

<http://iupap-icpe.org/publications/newsletters/n63.pdf>

<http://iupap-icpe.org/publications/newsletters/n62.pdf>

The # 64 (first link above) May 2013, was the last number edited by Prof. Zulma Gangoso (Argentina).

The number 63 (May 2012) Prof. Ian D. Johnston (University of Sydney, Australia) the Editor, welcome the new members of the C<sub>14</sub> Commission.

**Also, there is a matter, entitled “Physics Education Research in Brazil”, the paper, is adapted from a chapter called “Research in Physics Teaching” written by the authors, members of the Brazilian Society of Physics (SBF) Physics Research Commission, in the following book edited by SBF: S. Nogueira; T. Romero (Orgs.). Física 2011: Estado da Arte, desafios e perspectivas para os próximos anos (Physics 2011: State of art, challenges and perspectives for the next years). Sociedade Brasileira de Física, São Paulo: Chris MCHillard Editora Ltda., 2011, p. 115-126. The authors are ther Brazilian researchers, Anna Maria Pessoa de Carvalho – School of Education - São Paulo University, Deise Miranda Vianna – Physics Institute - Rio de Janeiro Federal University, Laércio Ferracioli – Physics Institute - Espirito Santo Federal University, Maria José P. M. de Almeida – School of Education - Campinas State University and Roberto Nardi – School of Sciences - São Paulo State University.**

# Looking forward

The last C14 Commission' Annual Meeting was held at Dublin, right after the GIREP-EPEC-ICPE Conference, on 7<sup>th</sup> of July 2017.

Below are the minutes of this meeting.

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## International Commission on Physics Education (C14)

**Record of the minutes of the International Commission on Physics Education (C14) Annual Meeting held on Friday, 07 July 2017 from 2:30 to 6:30 PM at the Stokes Building, Dublin City University Campus.**

### PRESENT:

Professor Hideo Nitta (Japan), Chair IUPAP C14 Commission  
David Sands (United Kingdom)  
Eilish Mcloughlin (Ireland)  
Ian Beardan (Denmark)  
Leoš Dvořák (Czech Republic)  
Roberto Nardi (Brazil)

### VIA SKYPE

Deena Naidoo (South Africa)  
Jayashree Ramadas (India)  
Zulma Gangoso (Argentina) participated via skype.

### APOLOGIES:

Qiang Chen (China)  
Priscilla Laws (USA)  
Dmitry Khokhlov (Russia)  
Lotten Glans (Sweden)  
Gorazd Planinsic (Slovenia)

The associate members Alexander Mazzolini (Australia), Manjula Sharma (Australia), Mehmet Fatih Taşar (Turkey) and Sarojiny Saddul-Hauzaree (Mauritius) did not participate in the meeting.

### WELCOME:

Professor Nitta welcomed and thanked all present at the meeting and the members who participated via Skype.

### AGENDA:

Professor Nitta presented the agenda and was approved by all participants.

#### 1. Introduction

The following items as per the agenda were discussed.

#### 2. Conferences

##### 2.1 GIREP-ICPE-EPEC 2017

Professors Eilish Mcloughlin (Ireland) and David Sands (United Kingdom) gave an account of the GIREP-ICPE-EPEC 2017 conference held during this week at the Dublin City University. The event was jointly organized by the International Research Group on Physics Teaching (GIREP), International Conference on Physics Education (ICPE) of the Commission 14 (C14) of the International Union of Pure and Applied Physics (IUPAP) and The European Physics Society - Physics Education Division (EPS PED). An overview of the various activities that took place during the week, such as keynote speakers, single and symposium oral presentations, poster presentations and workshops were given. Approximately 250 researchers from 21 countries took part in the event, in descending order of number of participants: Ireland, Italy, UK, USA, Czech Republic,

Netherlands, Mexico, Brazil, Germany, Japan, Belgium, Poland, Austria, Hungary, Switzerland, Portugal, Ecuador, France, Israel, Malta and Spain. The chairs (Eilish - ICPE and David - EPEC) will forward a detailed report of the activities for sharing with all interested parties, as shown during the Closing Ceremony. The colleagues wished congratulations to Eilish, the other organizers, and the whole team for organizing a successful GIREP-ICPE-EPEC.

## **2.2 ICPE 2018 (ICPE-SAIP-WITS), Johannesburg, South Africa**

Professor Nitta reported that, during the closing ceremony of the ICPE-GIREP-EPEC, the next International Conference on Physics Education will take place in Johannesburg, South Africa during the period 1-5 October 2018. Professor Deena Naidoo, who will organize the conference thanked Professor Nitta for advertising the conference and informed the committee that a website has been created and necessary information has been enabled. The link for the homepage is: <http://events.saip.org.za/conferenceDisplay.py?confId=93>. The Local Organizing Committee has also been established and an IUPAP Conference sponsorship application has been submitted. The conference will interact with the Working Group on Women in Physics (WG5) and Physics for Development (C13) to be an integral part of the conference and will invite industrial partners. In addition, to the normal mainstream plenary talks, oral and poster presentations, teacher workshops will be one of the main focuses of the conference. The Scientific Advisory Committee will be formulated once the final C14 members are ratified at the IUPAP General Assembly in Brazil during the month of October 2017. A request will be made to previous ICPE and WCPE conference chairs to forward a database of conference attendees. A further call will be made to the current and new C14 committee members for potential invited speakers.

## **2.3 ICPE 2019 and beyond**

Professor Nitta informed the committee that GIREP-ICPE-EPEC 2019 will be held in Budapest, Hungary, 1-5 July; Beata Jarosievitz (GIREP representative) and Csaba Sukosd (Budapest University of Technology and Economics) will chair the event. The Institute for Computer Sciences and Control and Hungarian Academy of Sciences will sponsor the conference. The Commission agreed to endorse GIREP-ICPE-EPEC 2019 as the IUPAP supported conference. It was also reported that the WCPE 2020 will be held in Vietnam. A presentation was made by Professors Jarosievitz and Sukosd at the GIREP-ICPE-EPEC Closing Ceremony in Dublin.

## **3. ICPE MEMBER/OFFICERS 2018-2020 (Appendix A)**

**Professor Nitta suggested the names of Roberto Nardi (Brazil) and Deena Naidoo (South Africa), respectively as Chair and Vice-Chair of the Commission for the next term and David Sands (UK) as Secretary.** He informed the committee that these names were agreed by the current Chair, Vice-Chair and Secretary (Professor Zulma Gangoso - Argentina) and followed IUPAP procedures. This proposal was accepted by the Commission members. He also suggested Manjula Sharma (Australia) for the next Commission. Professor Sharma as Editor of the Newsletter and the name of Professor Gangoso (Argentina) to contribute as an Associated Editor. He recalled the names suggested by the physics societies of several countries (Appendix A). This list includes names that should be replaced with a view to the departure of members who have completed the mandates according to IUPAP rule (Professors Qiang, Jayashree, Zulma, Hideo, Dmitry, Priscilla, Leoš and Gorazd). He also recalled the balance that should exist in the Commission, in terms of gender and countries from different continents. The Commission has examined the names indicated by scientific societies (Appendix A); most of the names were recognized for the significant contribution to Physics Teaching and Research in their respective countries. The names of Zuzana Jeskova (Slovak Republic), Jenaro Guisasaola (Spain), Naoshi Takahashi (Japan), Dmitry Bisikalo (Russia), Nathalie Lebrun (France), David Sokoloff (USA), Tjanaana Antimirova (Canada) and others. Professor McLoughlin (Ireland) pointed out the importance that one person linked to the industry could participate as a member. It was decided that the next Commission should examine this possibility. Professor Nitta recalled, however, that the 14 suggested names (Appendix A) will be the object of analysis and decision, during the 29th IUPAP General Assembly, which will be held in Sao Paulo, Brazil, from 11 to 13 October 2017 (<http://iupap.org/general-assembly/29th-general-assembly/>).

#### **4. ICPE MEDAL**

Professor Nitta commented on the ICPE Medal Ceremony held this week for Professor Marco Antônio Moreira, from the Federal University of Rio Grande do Sul, Brazil, during GIREP-ICPE-EPEC in this week. Professor Nitta thanked Professor Nardi (Brazil) for the commitment in the preparation of new 20 medals in a Brazilian industry and for the purchase of the case and the recording of the name of Professor Moreira on the medal. He recalled the need for the members of the Commission to suggest names for the presentation of the next medals. He presented the list of 25 names (Appendix B) that have already been awarded the medal since 1980 (Prof. Eric Rogers) until 2017 (Prof. Marco Antonio Moreira). He recalled that the medal aims to recognize "outstanding contributions to physics teaching of a kind that transcends national boundaries" and that the ICPE medal has fulfilled two criteria: the contributions to physics education must be over considerable number of years, and the contributions should be international in their scope and influence. The winners of the medals between 1980 and 2017 are listed in Appendix B. Members of the Commission have been requested to recommend, at least, one name for the next ICPE Medal award. Professor Nitta suggested that the new C14 Commission take care of this task and mentioned that the end of November, or early December, is the deadline for nomination of the future winner.

#### **5. PUBLICATIONS AND WEBSITE**

Professor Nitta thanked Professor Manjula Sharma (Editor - Australia) and Gabriel Ha Nguyen (Assistant Editor - University of Sydney) for the recent publication of Newsletter number 64. He mentioned that the next issue, which should be completed by December 2017. Professor Nardi informed the committee Professor Sharma conducted an interview with Professor Moreira, winner of the ICPE Medal 2017 in Dublin and this transcript should be published in this next issue of the Newsletter. Professor Nardi also suggested a subject on Physics teaching for blind students, which he may be forwarded, in view of studies at the postdoctoral level, which have been carried out by Professor Éder Camargo (Unesp) in Brazil, under his supervision. Professor Nitta thanked and praised the work done by Professor Leoš Dvořák for the preparation and maintenance of the homepage of the C14 Commission. Professor Dvořák reported that the site was provisionally located at <http://iupap-icpe.org/>, and also on the IUPAP website: <http://iupap.org/commissions/physics-education/>. Also discussed were issues related to funding for editing the homepage and the new newsletter, since IUPAP has funds for these expenses. Professor Dvořák suggested that these issues need to be addressed by the new C14 Commission that will be defined at the IUPAP General Assembly in October 2017, São Paulo.

#### **6. COOPERATION OF ICPE WITH OTHER BODIES/ORGANIZATIONS**

The following organisations were suggested as collaboration with C14.

##### **6.1 Women in Physics (Workshop)**

Professor Nardi suggested that the commission make contact with Professor Katemari Rosa (Federal University of Bahia), who has been developing studies on black women in physics. It has been suggested that she been invited to attend ICPE 2018 in South Africa.

##### **6.2 IoP (Africa Project)**

Professor David Sands briefed the committee on the successful IoP (Africa) meeting held in Dublin. Professor Deena Naidoo requested that a report be circulated and then will evaluate whether South Africa can partner in any new ventures and possibly expand during the ICPE2018 conference. Professor Nitta suggested that African people should be more involved and it was decided that Professor Sands will interact with Professor Naidoo to think more about this subject.

##### **6.3 GIREP**

Professor Nittawondered if the GIREP collaboration/MPTL not would be compete with the conferences of the UNION. It was noted that GIREP-MPTL 2018 in San Sebastian and the ICPE 2018 of South Africa will be held in July and October, respectively. Professor Sands recalled that the GIREP is in Europe, but it is international. Professor Nitta recalled that every two years the Conference should be held in an underdeveloped

country. Professor Naidoo suggested that we have to discuss with GIREP. Professor Nitta recalled that the WCPE 2020 will be in Vietnam, means, outside Europe.

#### **6.4 Other possible cooperations**

Lapen/Aspen and Africa, Professor Naidoo mention there exist AfPEN, a network driven for sharing of information.

#### **7. ACCOUNTING 2015-2017**

Professor Nitta presented an income and outgoing balance spreadsheet (Appendix C), detailing the finances of the Commission, during the period of 26 June 2015, when he assumed the presidency of C14, until 26 September 2016, with expenses incurred until the WCPE in São Paulo. He recorded that in this balance should include expenses for Professor's. Moreira travel (2017 medallist), expenses with the preparation of the medal made by Professor Nardi and the dinner with the C14 Commission in Dublin. It was also explained the expenses incurred by Professor Zulma Gangoso, who should be further compensated by IUPAP. On this question, Professor Gangoso reported that, on the occasion of the ICPE 2014 organization, in the City of Cordoba, Argentina, IUPAP granted a subsidy of 5,000 Euros. At that time, there were strong restrictions in Argentina to send or receive money from abroad. One could lose more than 50% of the subsidy when you send and change official. For this reason, it was decided to use this subsidy for expenses incurred abroad. Thus, the ticket of the invited guest Professor Edith Yerushalmi from Israel to Cordoba was paid. To cover the rest, personal subsidies were used by Professor Gangoso. This left a credit in her favour that she would use to attend future meetings. For this reason, in the account of the ICPE there is a balance - a difference of 5,000 euros and the cost of the ticket for Yerushalmi - that will be transferred to the new presidency. Such money will be available to Zulma. Prof. Hideo confirmed these details and the Commission approved the balance.

#### **8. VARIA**

It was also reminded of the YOUNG SCIENTIST AWARD. Professor Nitta questioned the possibility of having candidates for the coming years. Professor Ian Beardan asked about the criteria. It was recalled that the candidate must have up to 8 years after completion of his PhD. Professor Sands gave some suggestions. The question will be taken up by the new Commission, which is due to take place after October. With no further items to discuss, Professor Nitta requested Professor Nardi draft the minutes of the meeting, for appreciation of all the members of the C14 Commission. Professor Nardi asked to all the participants to send him contributions of their speeches, since some parts were lost due to the SKYPE problems.

Dublin, Ireland, July 7<sup>th</sup>. 2017.  
Roberto Nardi

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Prof. Hideo Nitta (Japan), the last chair of the C14 Commission, sent in September 4<sup>th</sup>, to all the members, his report on the C14 activities during the period of 2015-2017, which he prepared for IUPAP General Assembly that will be held in coming October. This report is attached below.

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## **Report on the activities of IUPAP C14**

### **ICPE - International Commission on Physics Education**

#### **2015-2017**

## **The main goals of the Commission**

ICPE promotes the exchange of information and views among the members of the international scientific community in Physics Education including:

1. The collection, evaluation, coordination and distribution of information concerning education in the physical sciences at all levels
2. Information relating to the assessment of standards of physics teaching and learning
3. Suggestions of ways in which the facilities for the study of physics at all levels might be improved, stimulating experiments at all levels, and giving help to physics teachers in all countries in incorporating current knowledge of physics, physics pedagogy, and the results of research in physics education into their courses and curricula.

## **Officers/Members for the term 2015-2017**

Chair: Hideo Nitta (Japan)

Vice-Chair: Leoš Dvorač (Czech Republic)

Secretary: Zulma Gangoso (Argentina)

Members:

Qiang Chen (China)

Ian Bearden (Denmark)

Lotten Glans (Sweden)

Dmitry Khokhlov (Russian Federation)

Priscilla Laws (United States)

Eilish McLoughlin (Ireland)

Deena Naidoo (South Africa)

Roberto Nardi (Brazil)

Gorazd Planinsic (Slovenia)

Jayashree Ramadas (India)

David Sands (United Kingdom)

## **Conferences Organized**

**International Conference on Physics Education (ICPE 2015), Beijing, China, August 10-14, 2015.**

This conference was supported by IUPAP and C14. The conference focused on "Engaging Students in Physics – Research and Practice". More than 300 scientists attended the conference, including about 90 people from outside China. More than one-third of attendees were women.

### **The Second World Conference on Physics Education (2<sup>nd</sup> WCPE 2016) , São Paulo, Brazil, July 10-15, 2016**

2<sup>nd</sup> WCPE was held at the University of São Paulo as the IUPAP supported conference through C14. The conference theme was "Contemporary Science Education and Challenges in the Present Society: perspectives in Physics Teaching and Learning". WCPE is a series of conferences with a four-year periodicity, organized in global cooperation. 2<sup>nd</sup> WCPE was supported by ICPE, GIREP (Groupe International de Recherche sur l'Enseignement de la Physique) and MPTL (the Multimedia in Physics Teaching and Learning group) and endorsed by AAPT (American Association of Physics Teachers), LAPEN (Latin American Physics Education Network) and AsPEN (the Asian Physics Education Network).

### **GIREP-ICPE-EPEC 2017, Dublin, Ireland, July 3-7, 2017**

The 2017 IUPAP supported conference, GIREP-ICPE-EPEC 2017, was held at the Dublin City University. The conference theme was "Bridging Research and Practice in Physics Teaching and Learning". The conference was jointly organized with GIREP and EPEC (European Physical Society - Physics Education Division). Approximately 250 researchers from 21 countries took part in the conference. Eilish McLoughlin chaired the conference.

## **Future Conferences**

### **ICPE 2018 (ICPE-SAIP-WITS), Johannesburg, South Africa, October 1-05, 2018**

The next International Conference on Physics Education will take place in Johannesburg. Deena Naidoo will organize the conference. A website has been created: <http://events.saip.org.za/conferenceDisplay.py?confId=93>

An IUPAP Conference sponsorship application has been submitted.

### **GIREP-ICPE-EPEC 2019, Budapest, Hungary, 1-5 July**

The Commission agreed to endorse GIREP-ICPE-EPEC 2019 as the IUPAP supported conference.

### **Conference endorsed**

The commission endorsed GIREP-MPTL 2018 (July 9-11, San Sebastian, Spain) although this conference will not be financially supported by IUPAP.

## ICPE Medal

The ICPE medal was instituted to recognize “outstanding contributions to physics teaching of a kind that transcends national boundaries”. The ICPE medal recipient should have fulfilled two criteria: (1) the contributions to physics education should have extended over a considerable number of years; and (2) the contributions should be international in their scope and influence. The laureates during the period of report are:

- 2015 ICPE Medal: Kaihua Zhao (China); presented at 2<sup>nd</sup> WCPE in Sao Paulo.
- 2017 ICPE Medal: Marco Antonio Moreira (Brazil); presented at GIREP-ICPE-EPEC 2017 in Dublin.

We had faced the “ICPE Medal using-up” problem: in 2015, only one blank Medal was left. Thanks to Roberto Nardi, the problem was finally resolved. In 2016, Roberto found a factory that could reproduce *20 copies* of the ICPE Medal within the budget IUPAP regularly provides to commissions. I dare to mention this fact with the hope that future C14 will prepare for the same problem well *before 2036*.

## ICPE Newsletter

ICPE Newsletter No. 64 was published in June, 2017. Manjula Sharma (Editor – Associate Member of C14) did a great effort for its publication. The Newsletter is disseminated only in electronic form. The ICPE Newsletters are uploaded at <http://iupap-icpe.org/publications/newsletters/n64a.pdf>

## ICPE Website

The commission’s website is being maintained by Leoš Dvorák at <http://iupap-icpe.org/>. Our reports and publications as well as the list of ICPE Medal laureates are available at this site.

## PHYSWARE

PHYSWARE 2015 was held on January 25 to 30 at the ICTP Trieste. PHYSWARE is a collaborative workshop on low-cost equipment and appropriate technologies that promote active learning in physics throughout the developing world. PHYSWARE 2015 was generously sponsored by ICTP and co-sponsored by IUPAP and EPS. Gorazd Planinsic and Leoš Dvorák took care of this activity. The detail of the workshop has been published in: *Physics Education* **50** (2015) pp.264-267.



## **Annual ICPE face-to-face meeting**

The annual meeting of ICPE is usually held immediately after the closing of the commission supported conference. In the last three years, meetings took place in Beijing in 2015, Sao Paulo in 2016 and Dublin in 2017.

## **Links with other Commission/Organization**

### **Women in Physics (Workshop)**

The IUPAP Working Group on Women in Physics (WIP) and C14 built a link. As a cooperative activity, C14 and WIP organized the symposium on *Global Perspectives of Women in Physics* at the international conference GIREP-ICPE-EPEC 2017. The purpose of the symposium was to review and analyze the initiatives and research into the gender gap observed in physics education and in academia. The symposium was very successful. We plan to organize the next symposium at ICPE 2018.

### **Institute of Physics (IOP)**

Along with the line of the proposal from IOP for Africa proposal to IUPAP, the *Workshop on Physics for Africa* was held at the GIREP-ICPE-EPEC 2017. Right after the workshop, a closed meeting was organized for discussing the outcome of the workshop and possible action among representative members from IOP, ICTP, C14, and some other organizations. In order to determine a plan of action, however, further discussion is necessary. The next ICPE conference in Johannesburg, Africa, will be a nice place for further discussion.

Hideo Nitta

C14 (ICPE) Chair

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Prof. Dr. Roberto Nardi  
UNESP – State University of São Paulo – Bauru Campus  
ICPE Commission Chair  
Brazilian Society of Physics  
Bauru, São Paulo, April 18<sup>th</sup>, 2018.

## **Commission C15: Atomic, Molecular and Optical Physics**

Report (October 2017 – March 2018) to the IUPAP Council & Commission Chairs meeting

Submitted by Roberto Rivarola (Chair)

### **C15 officers:**

#### **Chair:**

Roberto Rivarola  
Instituto de Física Rosario (IFIR), Oficina 205,  
Bv. 27 de Febrero 210 Bis Rosario Santa Fe 2000, Argentina  
Email: [rivarola@ifir-conicet.gov.ar](mailto:rivarola@ifir-conicet.gov.ar)

#### **Vicechair:**

Dominique Vernhet  
Institut des NanoSciences de Paris, Sorbonne University – Campus Pierre et Marie Curie  
B84, 4 place Jussieu, 75252 Paris cedex 05, France  
Email: [dominique.vernhet@insp.jussieu.fr](mailto:dominique.vernhet@insp.jussieu.fr)

#### **Secretary:**

Wonho Jhe  
Seoul National University  
599 Gwanak-ro, Gwanak-gu, Seoul 151-742, Korea  
Email: [whjhe@snu.ac.kr](mailto:whjhe@snu.ac.kr)

### **C15 Activity:**

The major activities from October 2017 to March 2018 are categorized into the following items.

#### **1. IUPAP C15 Young Scientist Prize**

The commission C15 runs the IUPAP Young Scientist Prize in Atomic, Molecular, and Optical (AMO) Physics. Since January 2018 we initiated the process of nomination of candidates to the Prize for this year. A call for nominations was announced in the webpage of IUPAP and distributed to all members of the Commission and to different scientific societies and academies all around the world. The call was also conveyed by individual scientists who offered to help in this sense. The deadline for nominations being fixed on March 31<sup>st</sup>, we shall start with the discussions for selecting the winner during April. Worth mentioning that this year the call of the C15-YSP received a great success since we ended with a total of 36 eligible candidates of very high level. The YSP will be awarded this year during the 26<sup>th</sup> International Conference on Atomic Physics that will be held in Barcelona (Spain) from July 22<sup>nd</sup> -27<sup>th</sup>.

#### **2. Conference Support**

The following conferences are supported by IUPAP in 2018:

Type- A conference:

**The 26<sup>th</sup> International Conference on Atomic Physics (ICAP 2018)**

Location: Barcelona, Spain

Date: 22<sup>nd</sup> – 27<sup>th</sup> July 2018

Local Chair: Maciej Lewenstein (The Institute of Photonic Sciences (ICFO), Spain)

Type- B conference:

**The 19<sup>th</sup> International Conference on the Physics of Highly Charged Ions**

Location: Lisboa, Portugal

Date: 3<sup>rd</sup> - 7<sup>th</sup> September 2018

Local Chair: José Paulo Santos (Universidade Nova de Lisboa, Portugal)

### **Future schedule:**

The YSP prize has been awarded annually alternating between the two major “flagship” conferences of the AMO Physics field regularly supported by IUPAP, ICPEAC (International Conference on Photonic, Electronic, and Atomic Collisions) or ICAP (International Conference on Atomic Physics). This year, the C15 commission meeting and the winner’s talk of 2018 YSP are scheduled during the coming ICAP 2018 at Barcelona, Spain. Two spots in the conference programme have been fixed for these activities.

The winner will receive the medal and a certificate at the banquet on Wednesday 25<sup>th</sup> July 2018.

The commission meeting will be held on Thursday 26<sup>th</sup> July 2018, with the scope of exchanging opinions to encourage and stimulate future C15 activities. The Officers will explain the present activities including the funding situation of IUPAP, and a representative of ICAP will be invited to inform on how the IUPAP support was used for ICAP 2018.

We should also receive before June 2018, the application of ICPEAC 2019 for IUPAP support. This conference will be held in Deauville (France) from July 23<sup>rd</sup> to July 30<sup>th</sup>, 2019. It is of type A.

Applications of type B conferences for IUPAP support will be welcome.

# **C16 activities during the period October 2017-March 2018**

## **1) Introduction**

This report covers activities of the Commission during the period October 2017- March 2018.

## **2) Activities during October 2017-December 2017**

The Vice Chair of the C16 represented the Chair Lin Ni Hau at the IUPAP General Assembly of 2017.

The call for the Young Scientist Prize (YSP) 2018 was launched, with the approval of the Chair Lin-Ni Hau.

## **3) Activities during 2018**

The new Commission C16 took function in January 2018.

### **3.1) Selection of the winner of the YSP 2018**

The process for the selection of the winner of the YSP 2018 was completed at the end of March.

### **3.2) Participation in WG**

M.Q. Tran was nominated as Associate Member of the IUPAP WG on Particle Accelerator. He participated in a meeting of the WG, which was held at the Paul Scherrer Institute in Switzerland.

## Annex 1 Report on the ICPIG 2017

### **The XXXIII International Conference on Phenomena in Ionized Gases**

Luís Lemos Alves

Instituto de Plasmas e Fusão Nuclear,

Instituto Superior Técnico,

Universidade de Lisboa, Portugal

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



## Report to IUPAP Council and Commission Chairs Meeting

IUPAP C17: Commission on Laser Physics and Photonics

Singapore, 3-4 May 2018

### 1. ACTIVITIES SINCE THE LAST C&CC MEETING (OCTOBER 2017)

#### 1.1. UNESCO's International Day of Light 2018 (<https://www.lightday.org/>)

The first ever UNESCO's International Day of Light (IDL) is set on the 16 May 2018. The general ambition of IDL is to expose young minds, particularly high-school students, to advancements in optics and photonics, through open houses in all major institutions, to stimulate these young brains to start imagining innovations in science and technology. Supporting developing nations, and disadvantaged groups within developed nations, to achieve a similar exposure for high-school students, via means that can be resourced and implemented where the children live, can be a positive approach. The connection of IDL aims to the United Nations Sustainable Development Goals, which connects directly with IUPAP's mission.

C17 wishes to play an important role in raising awareness of IDL, its programs and events through the international reach of our channels and networks. Members have been strongly encouraged to support IDL by organizing events as an additional responsibility specific to our commission.

Below are some examples of the IDL events in which C17 and its members are involved, or are badged as a C17 conference:

- Light and Life: A Student Photo Contest (<http://www.phy.iitb.ac.in/en/content/light-and-life-student-photo-contest>) (organized by P. Vasa, member of C17)
- European Photonics Roadshow on Agriculture and Food (<http://www.photonicsroadshow.eu/events/2018-04-05-florence>), 16 - 17 May 2018, Florence, Italy (R. Pini, Secretary of C17, involved in organization)
- FOTONICA 2018 (<https://convegni.aeit.it/fotonica/>), 23-25 May 2018, Lecce, Italy (R. Pini, Secretary of C17, involved in organization)
- Photonics North (<http://www.photonicsnorth.com/en>), 5-7 June 2018, Montreal, Canada (badged as C17 conference after solicitation by T. Ozaki, Chair of C17)
- C. Simpson, member of C17, Deputy Chair of the New Zealand National Committee for IDL
- T. Ozaki, Chair of C17, Member of the Canadian National Steering Committee for IDL

#### 1.2. Articles to the IUPAP Newsletter

To promote visibility of young scientists in Laser Physics & Photonics, C17 has asked the winners of the 2017 IUPAP Young Scientist Prizes (YSP) to contribute articles to the IUPAP newsletter. The two winners were A/Prof. Igor Aharanovich (University of Technology Sydney, Australia) "For his outstanding contributions to research on quantum emitters in wide band-gap semiconductors" (Applied Aspects), and Dr. Mohsen Rahmani (Australian National University, Canberra, Australia) "For his outstanding contributions to light-matter interactions at nanoscale, particularly nonlinear nanophotonics via metallic, dielectric and semiconductor nanostructures and metasurfaces, which have paved the road for extending nonlinear optics to the nanoscale" (Fundamental Aspects). A/Prof. Aharanovich provided us with a short article on his research (see



Appendix B), which was published in the March 2018 edition of the IUPAP Newsletter. Dr. Rahmani has also agreed to provide an article for the June 2018 edition.

### **1.3. IUPAP Conference support**

C17 has started to solicit relevant conferences to be held in 2019 to apply for IUPAP conference support or endorsement. Initial contacts have resulted in several positive responses from the conference organizers. However, many conferences that were contacted did not have information on the 2019 conference, especially those that are planned later in the year.

### **1.4. Coordinating efforts between C17 and the International Commission for Optics**

The Chair of C17 (T. Ozaki) had a discussion with the President of the International Commission for Optics (ICO), Prof. Roberta Ramponi (Istituto di Fotonica e Nanotechnologie, Italy) on how C17 and IUPAP could increase collaborations with ICO. The discussion included the next topics:

Associate Member of C17 representing ICO: C17 currently welcomes Prof. John Harvey (U. Auckland, New Zealand) as an Associate Member representing ICO. The mandate of Prof. Harvey is until the end of 2018, and thus T. Ozaki has asked Prof. Ramponi to start discussions within ICO on the Associate Member for the next triennial (2019-2022). Prof. Ramponi said that she will discuss with Prof. Harvey, as well as others at ICO to nominate a candidate.

C17/IUPAP - ICO Joint Workshops and Conferences: Prof. Ramponi and T. Ozaki have agreed that organizing a joint workshop would be beneficial for both C17/IUPAP and ICO. Several possibilities on the theme of such a workshop was discussed, and it was agreed that each will start discussions within their commission to identify opportunities.

Promoting gender equality: Prof. Ramponi and T. Ozaki had discussions on how the two commissions could work together to strongly promote gender equality. Several suggestions were made, and it was decided that further discussions should first start within each commission.

### **1.5. Discussions on the C17 In-person Meeting for 2018 and 2019**

Communications and meetings of C17 have been primarily electronic, via emails. However, past history of our commission has shown the need for in-person meetings to allow much deeper discussions.

Our most recent in-person meeting was held in Singapore on the 1 August 2017. This was in parallel with the CLEO-Pacific Rim conference, where the award ceremony for our commission's Young Scientist Prizes was also held. To follow this tradition, C17 has decided that the best site for the 2019 C17 in-person meeting as well as the YSP award ceremony would be CLEO-Europe (June 2019, Munich, Germany). Negotiations with the organizers of CLEO-Europe have started.

For the 2018 in-person meeting, members of C17 were in favour of holding it at a different, more compact location, where commission members could sit down and exchange ideas on C17 business in depth. A proposal has been forwarded by G. Valusis, member of C17, to organize this meeting in Vilnius, Lithuania, in Q4 of 2018. Discussions on this 2018 in-person C17 meeting has just started.

### **1.6. Discussions on Joint C17/IUPAP-ICO Workshops**

Following exchanges with the President of ICO, Prof. Ramponi, discussions within C17 have started on a possible joint C17/IUPAP-ICO workshop in 2019.

## **2. PLANNED ACTIVITIES FOR 2018**

### **2.1. IUPAP Conference support**

Capitalizing on their network and connections, members of C17 will continue to identify conferences that could be supported or endorsed by IUPAP, and to solicit the organizers to apply.

### **2.2. Articles for Newsletter**

C17 members will be asked to provide articles relevant to IUPAP and the field. Examples of the contents of these articles include (i) significant scientific results and innovative applications; (ii) public and industrial initiatives related to C17 topics; (iii) *in memoria* of great scientists, tributes, anniversaries, selected prize winners.

### **2.3. C17 in-person Meeting**

The location and dates of the C17 in-person meeting will be voted and determined. The officers will work closely with the local organizers to prepare the agenda and the C17 business to be discussed. Some points that would need to be discussed are associate member renewal (section 2.4), activities to promote gender equality (section 2.5), preparations for the C17 YSP in 2019 (section 2.6), preparations to promote IDL in 2019 (section 2.7), joint activities between C17/IUPAP and ICO (section 1.4) and joint C17/IUPAP-ICO workshop (section 1.6).

### **2.4. Associate member renewal**

The mandate of the three Associate members of C17 (see Appendix A) will finish at the end of 2018. We will hold discussions in the 2018 C17 in-person meeting to determine the organization that the commission wishes to extend invitation to for C17 Associate membership. Once decision is made, we will contact these organizations to propose their representative, who will serve as Associate member of C17 for the 2019-2021 period.

### **2.5. Activities to promote Gender Equality**

Discussions among C17 members on activities to promote gender equality in physics have started. The commission will identify actions to be taken, and the C17 members will be asked to take measures accordingly.

### **2.6. Preparations for the C17 YSP in 2019**

The deadline for application for the C17 YSP for 2019 is projected to be at the end of December 2018. C17 members will be asked to advertise the YSP and solicit applications from young scientists in our field. C17 members will also be informed of the guidelines for ranking the applications and choosing the YSP winners, one on Fundamental aspects, and the other on Applied aspects.

### **2.7. IDL 2019**

Since many of the current members of C17 were newly appointed in January 2018, there was not enough time to prepare for the IDL in 2018 (on the 16 May). Members of C17 will be asked to communicate and work with the IDL national node of their country to promote IDL events, and to badge them as C17 and IUPAP events as well.

## APPENDICES

### Appendix A - Officers and Members of C17 (as of January 2018)

#### Officers:

**Chair:** Tsuneyuki Ozaki (2014) (2017)

Email: ozaki@emt.inrs.ca

**Vice-Chair:** Qihuang Gong (2011) (2014) (2017)

Email: qhgong@pku.edu.cn

**Secretary:** Roberto Pini (2014) (2017)

Email: roberto.pini@cnr.it

**Past Chair: Deborah Kane** (2011) (2014)

Email: deb.kane@mq.edu.au

#### Members:

Kai-Mei Camilla Fu (2017)

Email: kaimeifu@uw.edu

Alexey Kalachev (2017)

Email: a.a.kalachev@mail.ru

Kathy Lüdge (2017)

Email: kathy.luedge@tu-berlin.de

Andre Luiten (2017)

Email: andre.luiten@adelaide.edu.au

Kevin F. MacDonald (2017)

Email: kfm@orc.soton.ac.uk

Ci-Ling Pan (2011) (2017)

Email: clpan@phys.nthu.edu.tw

M. Cather Simpson (2017)

Email: c.simpson@auckland.ac.nz

Yoshiro Takahashi (2017)

Email: yitk@scphys.kyoto-u.ac.jp

Gintaras Valušis (2017)

Email: gintaras.valusis@ftmc.lt

Parinda Vasa (2017)

Email: parinda@iitb.ac.in

Arkadiusz Wójs (2014) (2017)

Email: arkadiusz.wojs@pwr.edu.pl

#### Associate Members (mandate until end of 2018):

Nicholas P. Bigelow (representing the Joint Council of Quantum Electronics )

Email: nbig@lle.rochester.edu

John Harvey (representing the International Commission for Optics)

Email: j.harvey@auckland.ac.nz

John Dudley (representing the International Year of Light legacy)

Email: john.dudley@univ-fcomte.fr

## Appendix B - Contribution by Dr. Aharonovich (2017 C17 YSP winner) to the IUPAP Newsletter (March 2018).

### Single Emitters in Wide Bandgap Semiconductors

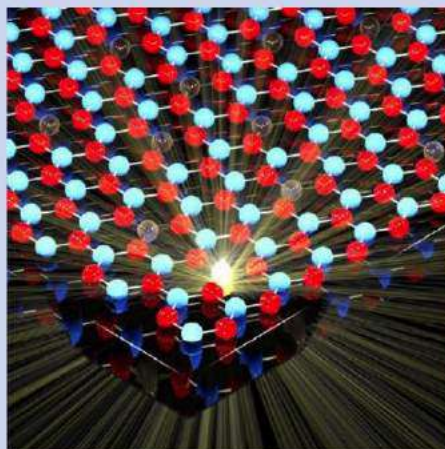
Dr. Igor Aharonovich (2017 C17 YSP winner)

Photonic technologies revolutionized many aspects of our daily lives. Spanning from ultra bright LEDs and lasers, optical communications that power the internet to novel biomarkers for imaging and sensing in health and diagnostics. A new research frontline is, engineering non classical – quantum light sources, also known as single photon emitters (SPEs). These emitters are in the heart of many quantum technologies as information carriers for secured communications, quantum nodes and building blocks for quantum metrology and quantum repeaters.

My research is focused on developing new (SPE). There are many criterion for an ideal SPE, including low multiphoton events, brightness and polarization. Over the last few years my lab has been focusing on studying defects in wide band gap materials – such as diamond, silicon carbide and gallium nitride. We have identified and investigated many sources that emit in the visible as well as in the infrared spectral range. More recently, we embarked on studying emitters in 2D materials, namely, hexagonal boron nitride (hBN). hBN is a wide bandgap material that can be exfoliated into a single monolayer. Identifying SPEs in a monolayer is advantageous as it eliminates scattering, internal reflection and offers promising attributes for integration with plasmonic and photonic cavities.

Currently, the group is focused on exploring these defects in 2D materials and implementing them in new modalities, such as,

super resolution imaging or non linear optics. In the near future, we aim to realize a fully integrated quantum photonic chip based solely on a wideband gap material hosting a high performance quantum emitter.



*hBN single defect glass rays*

## **C18 - Mathematical Physics**

### **Report to the Council & Committee Chairs**

The main periodic IUPAP sponsored event associated with the Commission on Mathematical Physics (C18) is the triannual International Congress on Mathematical Physics, which will be held this summer in Montreal. The International Scientific Committee of the congress has invited an impressive slate of speakers for the plenary and public talks and for the organizers of the thematic session. In the course of its deliberations, the International Scientific Committee kept itself well aware of the continuing underrepresentation of women in the field of mathematical physics and has tried hard to make progress on this issue. With the 2018 program ICMP is approaching the 20% mark for women plenary speakers and session organizers at this years congress. See <https://icmp2018.org> for details of the program.

At the ICMP in Montreal, through C18, IUPAP will award three Young Scientist Prizes. A subcommittee of the previous commission, chaired by Manfred Salmhofer, reviewed the nominations, solicited the input of outside reviewers, and selected three winners. The selection was approved through an email vote by the current membership of the commission.

The organizers of ICMP2018 and IAMP see the Commission C18 as an important liaison with IUPAP and the worldwide physics community as a whole. During my tenure I intend to fulfill the mission of C18 to the fullest extent possible and I will look for opportunities to strengthen the ties between IUPAP and IAMP.

Bruno Nachtergaele, Chair  
April 13, 2018

## 1. Commission membership 2014-2017

Chair: Grazina Tautvaisiene [*Lithuania*]  
Vice-chair: Gerry Gilmore [*United Kingdom*]  
Secretary: Patrick Woudt [*South Africa*]

Members: Petr Hadrava [*Czech Republic*]  
Shuang-Nan Zhang [*China*] Chanda  
Jog [*India*]  
Michel Rieutord [*France*]  
Rafael Rebolo [*Spain*]  
Marat Mingaliev [*Russian Federation*]  
Andreas Burkert [*Germany*]  
Sabine Schindler [*Austria*] Sung  
Won Kim [*Korea*]  
Chryssa Kouveliotou [*United States*]  
Pietro Ubertini [*Italy*]

Associate members (2015-2018):

Hans Kjeldsen [*Denmark*]  
Wieping Liu [*China*] Keiichi  
Maed [*Japan*]  
Virginia Trimble [*United States*]

## 1. Commission membership 01/2018 - 12/2020

Chair: Gerry Gilmore [*United Kingdom*]  
Vice-chair: Andreas Burkert [*Germany*]  
Secretary: Julie McEnery [*USA*]

Members: **Conny Aerts** (2017)

Email: [conny.aerts@ster.kuleuven.be](mailto:conny.aerts@ster.kuleuven.be)

**Michel Rieutord** (2014) (2017)

Email: [Michel.Rieutord@irap.omp.eu](mailto:Michel.Rieutord@irap.omp.eu)

**Chanda J Jog** (2014) (2017)

Email: [cjjog@physics.iisc.ernet.in](mailto:cjjog@physics.iisc.ernet.in)

**Markus Bottcher** (2017)

Email: [Markus.Bottcher@nwu.ac.za](mailto:Markus.Bottcher@nwu.ac.za)

**Jun'ichi Yokoyama** (2017)

Email: [yokoyama@resceu.s.u-tokyo.ac.jp](mailto:yokoyama@resceu.s.u-tokyo.ac.jp)

**Josep M. Paredes** (2017)

Email: [jmparedes@ub.edu](mailto:jmparedes@ub.edu)

**Sabine Schindler** (2014) (2017)

Email: [sabine.schindler@umit.at](mailto:sabine.schindler@umit.at)

**Pietro Ubertini** (2014) (2017)

Email: [pietro.ubertini@iaps.inaf.it](mailto:pietro.ubertini@iaps.inaf.it)

**Sung-Won Kim** (2014) (2017)

Email: [sungwon@ewha.ac.kr](mailto:sungwon@ewha.ac.kr)

**Vibor Jelic** (2017)

Email: [vibor@irb.hr](mailto:vibor@irb.hr)

**Susana Lizano** (2017)

Email: [s.lizano@irya.unam.mx](mailto:s.lizano@irya.unam.mx)

## 2. IUPAP support of international conferences

The main meeting sponsored was the [29th Texas Symposium on Relativistic Astrophysics](http://www.texas2017.org) 3-8 December 2017, Cape Town, South Africa.

The 29<sup>th</sup> Texas Symposium on Relativistic Astrophysics was held in Cape Town on 3–8 December 2017 ([www.texas2017.org](http://www.texas2017.org)). The 29th Symposium was the first of this long-established series to be held on the African continent, emphasizing Southern Africa's role as the host of world-leading astrophysical facilities, such as the Southern African Large Telescope, the High Energy Stereoscopic System (HESS), and the future Square Kilometre Array. Four members of the then-current C19 were active on the Scientific Organising Committee (Grazina Tautvaišienė, Patric Woudt, Shuang-Nan Zhang, and assoc. member Virginia Trimble). In addition the Chair of the Organising committee was Markus Bottcher, a member of the new C19.

## 3. IUPAP Young Scientist Medals in the field of Astrophysics

2017 - Dr. Pratika Dayal (University of Groningen, The Netherlands),  
*“for her great insights in combining analytic theory, numerical simulations and data interpretation, and building tantalising bridges between fields as diverse as astrophysics, particle cosmology and astrobiology.”*

2016 - Dr. Nikku Madhusudhan (Cambridge University, UK),  
*“for his pioneering and outstanding contributions to the characterization of exoplanetary atmospheres. His innovative approaches have led to the first insights into various physical processes and chemical compositions of exoplanetary atmospheres, have laid the foundations for understanding planetary formation & migration based on exoplanetary atmospheric compositions.”*



The medals (and talks) were awarded at the 2017 Texas Symposium by C19 Secretary Patrick Woudt. Also shown in the picture is Markus Bottcher, the chair of the organising committee of Texas2017, and new member of IUPAP C19 for the next cycle of the IUPAP.

## Report of the C20 Commission on Computational Physics

### Commission members

Chair	David P. Landau	United States
Vice-Chair	Mei-Yin Chou	China(Taipei)
Secretary	Lev Shchur	Russian Federation
Member	Richard Liska	Czech Republic
Member	Xiaoqun Wang	China(Beijing)
Member	Priya Mahadevan	India
Member	Regina Maphanga	South Africa
Member	Georg Kresse	Austria
Member	Andrew Horsfield	United Kingdom
Member	Maria-Roser Valenti	Germany
Member	Laurette Tuckerman	France
Member	Suklyun Hong	Korea
Member	Daniel Vizman	Romania
Member	Yuan Ping Feng	Singapore

### XXX IUPAP International Conference on Computational Physics CCP2018

The next international conference organized under the auspices of the C20 Commission will be the XXX IUPAP International Conference on Computational Physics CCP2018 to be held on the campus of the University of California, Davis from July 29 – August 2, 2018. The Conference Chair for CCP2018 is Prof. Barry Klein and the Conference website is: <http://ccp2018.physics.ucdavis.edu/>. The purpose of this annual conference series is to bring together computational scientists working in physics and closely related areas to exchange the latest developments in computational techniques and their applications. The conference features plenary, invited and contributed talks as well as poster presentations in a wide number of subject areas of active interest to the computational physics community. A C20 Commission meeting will take place during CCP2018.

### 2018 Young Scientist Prize in Computational Physics

The 2018 Young Scientist Prize in Computational Physics will be awarded at the CCP2018 Conference. The closing date for nominations was March 30, and the C20 Commission will be deciding upon the winner within the next several weeks. A number of outstanding young individuals from multiple continents have been nominated.

### XXXI IUPAP International Conference on Computational Physics CCP2019

The XXXI IUPAP International Conference on Computational Physics CCP2019 will be held in Hong Kong on the campus of the City University of Hong Kong from August 25-29 2019. The Conference Chair will be Prof. Che Ting Chan of the Hong Kong University of Science and Technology.

### XXXII IUPAP International Conference on Computational Physics CCP2020

The C20 Commission is currently exploring possible sites in Europe for the XXXII IUPAP International Conference on Computational Physics CCP2020.

Respectfully submitted,  
David P. Landau  
Chair, C20 Commission  
March 31, 2018