
Minutes of the Meeting of the IUPAP Executive Council & Commission Chairs, CERN, Geneva, Switzerland, 01 - 02 October 2013

Present:

Cecilia Jarlskog (President), Sukekatsu Ushioda (Past President), Bruce McKellar (President Designate), Stuart Palmer (Secretary General), Rudzani Nemutudi (Associate Secretary General), Williamina Lazaro (Administrator).

Vice-Presidents at Large: Alexandr Kaminskii, Marcia Barbosa, Mustansir Barma, Wenlong Zhan, Francis Allotey

Vice-Presidents/Commission Chairs: Stefano Ruffo (C3), Kimitoshi Kono (C5), Manuel Vasquez (Secretary representing Ingrid Mertig (C9), Katharine Gebbie (C15), Alex Hansen (C20)

Commission Chairs: Stephen Lea (C2), Johannes Knapp (C4), Kenichi Yoshikawa (C6), Robin Nicholas (C8), Yasuhiko Fujii (C10), Hiroaki Aihara (C11), Hideyuki Sakai (C12), Sandro Scandolo (Vice Chair representing Paulo Murilo de Castro Oliveira C13), Leos Dvorak (Secretary representing Robert Lambourne C14), Catherine Gebbie (C15), Robert Bingham (C16), Victor Zadkov (C17), Jakob Yngvason (C18), Thanu Padmanabhan C19)

Affiliated Commission Chairs/Representatives: Duncan Moore (AC1), Beverly Berger (AC2 secretary representing Gary Horowitz), Marion Burgess (AC3), Fridtjof Nüsslin (AC4)

Apologies: Ingrid Mertig (Chair, C9), Paulo Murilo de Castro Oliveira (Chair, C13)

1. Welcome Address and Presentation by CERN Director: *The Director General of CERN, Dr Rolf-Dieter Heuer welcomed the IUPAP C&CC delegates to CERN. He gave a presentation which highlighted the four-fold mission of CERN as the underlying driver of all its programs, namely Research, Innovation, Training, and Uniting People by pushing forward or backward the frontiers of scientific knowledge. Dr Heuer's presentation also highlighted the four biggest detector experimental programs at CERN, viz ATLAS (A Toroidal LHC Apparatus), CMS (Compact Muon Solenoid), LHCb (Large Hadron Collider beauty) and ALICE (A Large Ion Collider Experiment). He cited the recent Open Day program to demonstrate the successes of CERN as a truly multinational research facility that attracts scientists, engineers, researchers, visitors and tourists and from all over the world, with an estimated total of 70 000 people having visited CERN during the Open Day weekend of 28 September 2013.*

2. President's Welcome and introductions

2.1 IUPAP President Cecilia Jarlskog welcomed all delegates to the meeting, and thanked Dr Heuer and CERN for hosting the 2013 IUPAP C&CC meeting. She specifically welcomed those attending their first C&CC meeting as representatives of their commission chairs.

3. Minutes of the Meeting held on 21 – 22 October 2012, Rio de Janeiro, Brazil

3.1 The minutes of the C&CC meeting held in Rio de Janeiro, Brazil were approved.

3.2 Matters arising from the Brazil Minutes:

3.2.1. The MOU between the IUPAP and the IOP has been finalized (item 8.1 on previous minutes).

4. President's Report: The president indicated she will raise more pertinent issues under specific agenda items. She however urged people to forward to council a list of people and organizations that should receive the IUPAP newsletter. Commission chairs should also take a pro-active role and forward newsworthy items to council for inclusion in the newsletter. Future newsletters could also include highlights of cases of scientists who are unjustly denied visas to attend scientific conferences. A comprehensive register of such cases should be compiled and sent to ICSU. Other ICSU affiliate unions should be alerted of this IUPAP initiative and encouraged to compile similar cases (of visa denials) in their respective fields. Stefano Ruffo will contact Joe Lebowitz from Rutgers University, USA who has been very active in monitoring cases of visa denials.

5. Secretary General's Report

- 5.1. *The IUPAP website:* A process is currently underway to comprehensively revamp the IUPAP website. Once initial comments are all incorporated, the test-webpage will be circulated to commission chairs for further comment before it is launched.
- 5.2. *The IUPAP Young Scientist Prize:* After discussions through E-Mail, the general consensus within the IUPAP community is that the name of "IUPAP Young Scientist Prize" should be retained as it enhances the visibility of both the IUPAP and the relevant Commission.
- 5.3. *Support for the International Association of Physics Students (IAPS):* The last General Assembly's resolution to support the IAPS at the amount of €2 000 has not been implemented, partially as a result of the constrained budget, but also because there was no claim on the part of the IAPS. It is recommended that future IUPAP support of IAPS be given in forms other than direct financial contribution. Commission 14 intends to interact closely with the IAPS.

6. Reports from Commissions and Affiliated Commissions:

- 6.1. Brief reports were orally presented for all Commissions and affiliated Commissions, viz C2, C3, C4, C5, C6, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, AC1, AC2, AC3 and AC4. The Commission reports are in Appendix A.

6.2. General notes and decisions on Commission Reports

- 6.2.1. Cecilia suggested that certain parts of Commission reports, especially the more interesting aspects dealing with topical scientific results, should appear with a link on the commission website.
- 6.2.2. Some commissions continue to struggle to publicize the IUPAP Young Scientist Prize. A strategy should be formulated to raise the profile of the prize. This could include sending invitations to other commissions with fields of focus that are closely related to a specific commission. Information should also be sent to national liaison officers who could disseminate it further in their respective countries to broaden the pool of contest for the Young Scientist Prize. Robin Nicholas, chair of C8, was requested to summarize the proposal to raise the profile of the Young Scientist Prize which he should subsequently forward to Cecilia.
- 6.2.3. The issue of the need to accommodate the "Soft Matter Physics Community" cannot currently be addressed by creating a new working group as this would be too big a step to undertake without a mandate of the General Assembly. It is instead resolved that a "Study Group" on Soft Matter be created with the chair of C10 as its convener. The group should after further consultation with the relevant community table its report in the form of a recommendation to the council by the end of 2013. The recommendation could further be discussed before a final recommendation to the 2014 GA in line with Resolution 5 of the 2011 General Assembly.
- 6.2.4. Chair of C4, Johannes Knapp, gave a brief presentation motivating for the change of the name of C4 from "Commission on Cosmic Rays" to "Commission on Astroparticle Physics". The proposed name change was agreed by the C&CC meeting.
- 6.2.5. Commissions that keep receiving requests to support type D conference applications could entertain such support only in consultation with Commission 13 as it (C13) is specifically dedicated to type D conferences.
- 6.2.6. Commissions that underspend on their allocated budget should not carry the funds over to the next financial year but start afresh from a clean slate.
- 6.2.7. Evidence should be collected of IUPAP conferences and meetings for which participants were unable to obtain visas. The compiled evidence should be forwarded to ICSU, and IUPAP should also advise other ICSU-adhering bodies about this initiative and encourage them to collate similar information from their respective fields.
- 6.2.8. Newsletter and General Communication: Commissions and national liaison committees are encouraged to provide news-worthy information and related materials about their activities. This will allow for the newsletter to be released on a frequent basis; at average 2 to 4 times a year.

- 7. Working Group Reports:** Council received written reports from working groups WG1, WG5, WG7, WG9, WG11 and WG12, see Appendix B. In addition, a report was also received from the IUPAC/IUPAP Joint Working Party on the Discovery of New Elements. The following are the highlights of some of the activities of the working groups.
- 7.1. **ICFA:** The chair of ICFA, Pier Oddone, has retired as the Director of Femilab and subsequently stepped down as ICFA chair on 1 July 2013. ICFA agreed that the incoming director of Fermilab, Nigel Lockyer would serve the remainder of Oddone's term as chair of ICFA until 31 December 2014. ICFA continues to make valuable input and contribution in major accelerator-based science programs and projects. A panel on neutrino facilities was also created to look at non-accelerator based neutrino activities.
- 7.2. **WIP:** The Working Group on Women in Physics will hold its special IUPAP International Conference on Women in Physics on 6 – 8 August 2014 in Waterloo, Canada. Consistent with past practice, IUPAP will provide special financial support of €15 000 for the 2014 WIP conference. Marcial Barbosa as the gender champion will ensure that all the information related to ICWIP2014 is accordingly disseminated to the entire C&CC.
- 7.3. **ICNP:** The working group on International Co-operation in Nuclear Physics has organized the "IUPAP WG.9 Nuclear Science Symposium" at the Laboratori Nazionali di Frascati which was held on 31 May – 1 June 2013. The working group is also closely monitoring construction of major physics research facilities which portend an exciting future for the field of nuclear physics.
- 7.4. **APPIC:** The Astroparticle Physics International Committee is the Working Group 10 of IUPAP. It is under construction. Michel Spiro from France will be the Chair of this working group.
- 7.5. **GWIC:** The Gravitational Wave International Committee has received a report on the status of the proposal of India to build a large gravitational wave detector in collaboration with the LIGO Laboratory in the USA.
- 7.6. **WGE:** The newly formed IUPAP working group on Energy held its first meeting in Tokyo on 1 – 2 July 2013. The meeting formally approved the mandate of the working group and agreed that regular briefs should be made on selected issues and that these (briefs) should be posted on IUPAP website. The first of such briefs will be on geothermal energy, gas and hydrates.
- 8. ICSU Grants:** Deadline for submission of ICSU grants applications is 1 December 2013. Bruce McKellar will send to Commission chairs a call from ICSU for commissions to decide if they will apply for ICSU funding. The applications should however be submitted through IUPAP. Grants of up to €30 000 are awarded by ICSU to proposals from its affiliated unions. Each ICSU affiliated union may submit no more than one application.

9. Approval of 2013 Conferences

- 9.1. Rudzani Nemutudi presented a list of 2014 conference applications: A total of 36 Conferences were approved for 2014 IUPAP funding or endorsement. In their designated categories, 8 A, 15 B, 8 C and 5 D conferences were approved.
- 9.2. Each *A* conference, except that proposed by C2, will be allocated the sum of €5 500 as a basic conference grant together with an extra €5 000 travelling grant to assist conference delegates travelling from under-developed and developing countries. The *A* conference proposed by C2 will receive €10 500 as a basic conference grant. Each *B* conference will receive the sum of €5 000 basic conference grant. All *C* conferences were endorsed without financial support. A total of €21 000 was allocated to support five category *D* conferences.
- 9.3. Meeting recommended that one page should be included by organizers when they submit their conference report in order to give an account of how the allocated funds were spent.

10. Financial Matters:

- 10.1. Bruce McKellar presented the financial statements.
- 10.2. For 2012, when dues received in 2013 for 2012 were allocated to 2012, the 2012 income was above budget. However, principally because of the very large expense of the two C&CC meetings in 2012 expenditure was also above budget. As agreed at the C&CC meeting in Rio in October, 2012, the deficit for 2012 would not be carried forward, but would be offset from the reserve funds.

- 10.3. A question was asked about the reconciliation of the IUPAP-UK statement of accounts for 2012 and the statement in Appendix C. The differences relate to the different accounting practices used for debtors and creditors in the two statements and will be explained by letter to the members of the C&CC.
- 10.4. For 2013, as at 31 August both income and expenditure were less than provided in the budget. It was still expect that the anticipated surplus of €34 800 would be available to carry forward to 2014.
- 10.5. For 2014, allowing for decisions made at this meeting and at the meeting of the Executive Council, and the generous support of Singapore for the 2014 GA, the likely outcome for 2013 and 2014 was no surplus and no deficit. To achieve this will require the use of the contingency fund and careful management and control of costs.
- 10.6. The IOP office charges will be billed annually at the contract amount of €52 800 for 2013 and €57 800 for 2014.
- 10.7. Correspondence should be sent to National Liaison Committees to remind them that their respective countries should pay their IUPAP membership dues. Such correspondence should also be copied to commission chairs. Williamina will produce and circulate amongst commission chairs a list of countries that are in arrears
- 10.8. The prize for the Young Scientist Award will be kept at €1 000.

11. Review of Statutes:

- 11.1. Stuart and Bruce have worked on a proposal to review the statutes. The proposal will be circulated to Commission chairs for input before the final version is compiled for presentation at the 2014 General Assembly. The draft review includes introducing electronic form of voting as in ICSU.

12. Other Matters:

- 12.1. **Iranian Student:** There was no clarity at the meeting on the recent case of the Iranian student who was arrested, and neither was there any indication that the recent change of government could herald any future progress. Duncan Moore and Cecilia Jarlskog will look further into this matter.
- 12.2. **Review of Commissions:** The idea of embarking on a wholesale review of Commissions together with the entire structure of IUPAP was not endorsed as it could lead to a process that might take as long as two years. The meeting felt that the current process of reviewing commissions on a need basis should be adequate, coupled as it is with regular recommendations for establishment of focussed working groups. In addition, it was recommended that when revising by-laws, a way should be found to simplify the process of reviewing the mandates of commissions, including name changes.
- 12.3. **IUPAC/IUPAC Joint Working Party:** IUPAP should hold discussions with IUPAC to ensure that in future, the announcement of the discovery of new elements is made jointly by both organizations. Cecilia will write to the IUPAC to initiate the discussions.
- 12.4. **Nomination Process:** National Liaison Committees and Commission chairs to receive correspondence which will clearly explain the process of nominating officers of commissions, commission chairs, and council. Correspondence should also emphasize the need for those nominating to do so after consulting their respective communities and stakeholders. Notice will also be issued to the National Liaisons and Commissions asking them to propose resolutions for the General Assembly. Deadline for nominations are set at 1 June 2014 for National Liaisons, and 1 August 2014 for Commissions.
- 12.5. **Committee to compile the slate:** After nominations are received, a committee of four will convene to produce the first draft of the slate. The committee will consist of past president Sukekatsu Ushioda, President designate Bruce McKellar, Secretary General Stuart Palmer, and Vice-President at Large Alexandr Kaminskii. Professor Kaminskii will approach the Russian academy to cover his travel costs to attend the meeting.

13. Future Meetings:

- 13.1. **2014 C&CC Meeting + General Assembly:** The venue of the next IUPAP C&CC meeting will be at the Nanyang Executive Center of the Nanyang Technological University in Singapore on 3 – 4 November 2014.

The C&CC meeting will be followed at the same venue by the 28th IUPAP General Assembly on 5 – 8 November 2014.

- 13.2. **2015 C&CC Meetings:** Spain is currently considered as the first choice to host the 2015 C&CC meeting with Italy-Trieste and Germany-Berlin as the second and third choices. The idea of meeting twice after the general assembly has become costly. The mooted idea of meeting once should however be balanced against the need to induct incoming commission chairs. Final decision to be made in 2014 in Singapore.
14. **Vote of Thanks:** Cecilia Jarlskog thanked all delegates for attending the C&CC and actively participating in the deliberations

C&CC Meeting adjourned

See separate attachments for Appendices A, B and C.

a. Appendix A: 2013 IUPAP Commission Reports of individual Commissions

b. Appendix B: 2013 IUPAP Working Group Reports

c. Appendix C: 2012 – 2014 IUPAP Accounts Against Budget

Reports from IUPAP Commissions

Collected for the October meeting 2013, by Cecilia Jarlskog

The reports here below are from

- Commission on Symbols, Units, Nomenclature, Atomic Masses and Fundamental Constants (C2)
- Commission on Statistical Physics (C3)
- Commission on Cosmic Rays (C4)
- Commission on Low Temperature Physics (C5)
- Commission on Biological Physics (C6)
- Commission on Semiconductors (C8)
- Commission on Magnetism (C9)
- Commission on the Structure and Dynamics of Condensed Matter (C10)
- Commission on Particles and Fields (C11)
- Commission on Nuclear Physics (C12)
- Commission on Physics for Development (C13)
- Commission on Physics Education (C14)
- Commission on Atomic, Molecular, and Optical Physics (C15)
- Commission on Plasma Physics (C16)
- Commission on Quantum Electronics (C17)
- Commission on Mathematical Physics (C18)
- Commission on Astrophysics (C19)
- Commission on Computational Physics (C20)

COMMISSION C2

**Report to the IUPAP Council & Commission Chairs meeting,
CERN, Geneva, 1 – 2 October 2013,
from Commission C2 – SUNAMCO**

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

9 September 2013

Membership: The Director of the BIPM is *ex-officio* a full Member of C2 without national affiliation. Michael Kuhne retired as Director on 31 December 2012 and has been replaced as a Member of C2 by the new Director, Martin Milton.

Succession Planning: This is an area where C2 may run into a real problem of continuity and sustainability: the Secretary, Jens Dilling, is in his third term; the Vice-Chair, Jörn Stenger, is in his second term but has indicated that he does not wish to proceed to the position of Chair; and Stephen Lea is Chair in his second term, having been somewhat anomalously Secretary in his first term. Other members currently in their second term have not been very active, although this is in part due to the difficulty in meeting as a full Commission without budget.

Supported Conferences: C2 supported one conference in 2012: the Conference on Precision Electromagnetic Measurement (CPEM 2012), Washington DC, USA, 1–6 July 2012. Despite their best efforts to identify suitable candidates, the conference organizers were unable to allocate all of the funds for travel for physicists from developing countries and reimbursed IUPAP US\$5,000 of unused funds.

Awards: C2 expects to continue to advertise and award the IUPAP Young Scientist (Early Career) Prize in Fundamental Metrology biennially (normally making two awards) and hence is making no award in 2013.

Meetings: A small number of commission members met on Monday 10 June 2013 at BIPM, Sèvres, in advance of a meeting of the CCU. The principal topic was succession planning as discussed above.

Representation: IUPAP's representative at the meeting of the Consultative Committee for Units of the CIPM, held at the BIPM, 11-12 June 2013, was C2 Member William Phillips (USA). Unfortunately he was unable to be present and his contribution was presented by past C2 Chair Peter Mohr (USA), present as representative of NIST. C2 Members Jörn Stenger (Germany) and Stephen Lea (UK) were also present as national representatives and C2 Associate Member Savely Karshenboim (Russia) as an invitee of the President of the CCU, Ian Mills. The meeting addressed issues associated with the eventual implementation of the "New SI", including the *mis en pratique* of the new definition of the kelvin. There was also a discussion, led by William Phillips and Peter Mohr, of the way angle and count rate are treated in the current SI, these being found by many to be unsatisfactory.

Clemens Elster (Germany) and Wolfgang Wöger (Germany) have represented IUPAP at meetings of the Joint Committee for Guides in Metrology (JCGM) and its working groups in Nov/Dec 2012 and May/June 2013. Reports from the Nov/Dec meetings have been received and are appended below.

Proposal for a resolution at the 2014 GA: It has been suggested that the debate on angle and count rate in the SI begun at the CCU meeting could be taken forward in the form of an IUPAP GA resolution (in favour of an approach more palatable to physicists), this being the means IUPAP has at its disposal to influence formally the decisions of the CIPM.

Red Book: Work continues on the informal project to update the SUNAMCO Red Book (IUPAP-25 "Symbols, Units, Nomenclature and Fundamental Constants in Physics"). A web domain,

www.sunamcoredbook.org, and hosting have been obtained with a view to getting an online version available quickly, pending future development of the IUPAP website.

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COMMISSION C3

Report on the activities of the C3 Commission

Statistical Physics

The main activities of the C3 commission are:

- The organization of the (triennial) **Statphys** Conference.
- Selecting the recipient of the **Boltzmann medal**, the highest international recognition for outstanding research contributions to the field.
- Selecting the recipient of the **Young Scientist Award** in Statistical Physics.

Statphys 25

The Statphys25 meeting was held on July 22-26, 2013 at Seoul National University in Seoul, Korea. It attracted 850 participants from all over the world. The scientific program consisted of 10 plenary lectures, 46 invited talks, 194 contributed talks and 349 poster presentations.

The conference website can be found here: <http://www.statphys25.org/>. Several informations about the meeting are available on the website, including those on scientific, organising and advisory committees, where previous and current members of C3 were heavily involved together with internationally known scientists in the field. At Statphys25 both the Boltzmann medal and the Young Scientist Prize of the IUPAP were delivered. A memorial session was held on July 24 honoring Kenneth G. Wilson, the first Boltzmann medalist and Nobel Prize in Physics, who recently passed away: <http://www.youtube.com/watch?v=-6LAR1Og4nE>.

The Boltzmann Medal

The Boltzmann medal is the most prestigious international prize in statistical physics. It is awarded every three years, with the formal presentation occurring during the Statphys conference. The jury consisted of all the members of the C3 Commission, as well as the previous Boltzmann medalists, the Chairman of the Statphys25 Conference (D. Kim) and the previous Chairman of C3 (H. Orland). For the 2013 round, nominations were due on September 1, 2012, and 17 were received. The jury agreed to award the prize jointly to Gianni Jona-Lasinio from the University La Sapienza (Rome, Italy) and Harry L. Swinney from the University of Texas Austin. Jona-Lasinio receives the award “for his seminal contributions to spontaneous symmetry breaking in particle physics and the theory of non-equilibrium fluctuations”, and Swinney is recognized “for his ingenious and challenging experiments which have had a large impact on many areas of statistical physics.”

Young Scientist Award in Statistical Physics

The Young Scientist Award in Statistical Physics has recently been established by the C3 Commission on Statistical Physics of the IUPAP. The Prize is aimed at recognizing outstanding achievements of scientists at early stages of their career in the broad field of Statistical Physics. Like the Boltzmann Medal, it is awarded every three years, with the formal presentation occurring during the Statphys conference. In this round 33 nominations were received: The C3 Commission selected Takahiro Sagawa (University of Tokyo) and Kazumasa Takeuchi (University of Tokyo) as the joint 2013 winners. Sagawa is recognized “for developing a comprehensive theoretical framework to characterize the thermodynamics of nonequilibrium systems with feedback control” and Takeuchi wins the award “for his outstanding experiments on fluctuation properties of growing interfaces in turbulent liquid crystals.”

Extract from the minutes of the C3 Commission meeting held in Seoul on July 24 2013

The Chairman, Stefano Ruffo, informed the Commission that two bids to organize StatPhys26 were received, one for Lyon and a second one for Barcelona. The proposal to organize StatPhys26 in Lyon was presented by a group of French delegates: There was consensus in the Commission that this was a well-prepared strong bid and the Commission unanimously accepted the Lyon proposal: Hence Statphys26 will be held in Lyon on July 18-22, 2016.

The mandates of the following members will expire in 2014: Ruffo, Yu, Diehl, Hermann, Procaccia, van Beijeren, Woafu. A long and careful discussion on the choice of new members, guided by the goals of realizing a good representation of the various statistical physics communities and their research fields in different geographical parts of the world and of increasing the number of female scientists in the Commission led to the proposal of the following new members: Lucilla **de Arcangelis**, Department of Information Engineering, Second University Naples Aversa, Italy; Jan **de Gier**, the University of Melbourne, Department of Mathematics and Statistics, Australia; Erwin **Frey**, Ludwig-Maximilians-Universität München, Faculty of Physics, Germany; Doochul **Kim**, Korea Institute for Advanced Study (KIAS), Seoul, Korea; José L. **Mateos**, National Autonomous University of Mexico, Department of Complex Systems, Mexico City, Mexico; Lei Han **Tang**, Hongkong Baptist University, Department of Physics, Hongkong, and Beijing Computational Science Research Center, China.

The Executive Committee (Chair, Vice-Chair, Secretary) of C3 will also expire on 2014. After a careful discussion, the officers-elect are: Itamar **Procaccia (Chair)**, Julia **Yeomans (Vice Chair)**, and Rahul **Pandit (Secretary)**.

Moreover, since Africa will no more have a member in C3, it was felt necessary to ask for the addition of an Associate Member: Timoleon Crepin **Kofane** of the University of Yaoundé and a Member of the African Academy of Sciences.

Concerning workshops to take place in 2014, the C3 Commission received two proposals: “Nonequilibrium Statistical Mechanics”, to be held at Florence University, Department of Physics and Astronomy may 26-30 2014; “International Conference on Nano Structures (ICNS5)”, to be held at Kish Island, Iran march 6-9 2014. The Commission was convinced that absence of discrimination is absolutely indispensable for IUPAP sponsorships of conferences: It seemed doubtful that this condition will be met by the Iranian proposal. Therefore, this sponsorship was not considered. On the other hand, the Florence proposal was well received and put in first priority.

Officers and members of the C3 Commission:

Stefano Ruffo, Chair (Italy)

Yu Lu, Vice-Chair (China)

Hans Werner Diehl, Secretary (Germany)

Henk van Beijeren (The Netherlands)

Jean-Francois Joanny (France)

Hans Herrmann (Switzerland)

Rahul Pandit (India)

Itamar Procaccia (Israel)

Mohammad Reza Ejtehadi (Iran)

Maxi San Miguel (Spain)

Masaki Sano (Japan)

Beate Schmittmann (USA)

Paul Woafu (Cameroon)

Julia Yeomans (UK)

Associate Members: Yu M. Romanovsky (Russia) and F. Alcaraz (Brasil)

Detailed contact info can be found at the Commission website, under

<http://www.iupap.org/commissions/c3/members/index.html>

Florence, september 21 2014

Stefano Ruffo
Chair of C3

COMMISSION C4

Report from Commission C4 Cosmic Rays

by Johannes Knapp

1 Conferences in 2013

The 33rd International Cosmic Ray Conference (ICRC 2013), <http://www.cbpf.br/~icrc2013/> was held at Rio de Janeiro in 2-9 July 2013.

With more than 750 attendants from 54 countries, with contributions on solar activity and space weather and with many young excited scientists presenting their work we easily fulfilled the IUPAP Mission:

"To assist in the worldwide development of physics, to foster international cooperation in physics, and to help in the application of physics toward solving problems of concern to humanity."

Nine plenary review talks, 20 plenary highlight talks 360 oral presentations, and about 820 posters have been presented and were summarised in 7 rapporteur talks. The proceedings of the ICRC 2013 with 979 contributions is online via INDICO website <http://143.107.180.38/indico/contributionListDisplay.py?confId=0>

For the first time the conference had a program committee of experts that was largely independent of the local organising committee and a Dark Matter branch in parallel to the four traditional branches cosmic rays, solar and heliospheric physics, gamma rays, neutrinos. The resulting program was greatly appreciated and the commission decided to define the "Rio Template" to be followed at least for the next two conferences.

Scientific highlights of the last year were:

- high-energy (PeV) neutrino events seen with IceCube which are widely believed to be the first astrophysical neutrinos
- The Fermi gamma-ray satellite discovered:
 - two big bubbles of gamma ray emission above and below the galactic disk (Fermi bubbles),
 - a possible 130 GeV line emission from the galactic centre,
 - and variability and strong flaring from the Crab nebula
- the new 28-m Cherenkov telescope (HESS II) is operational and the Cherenkov Telescope Array (CTA) is rapidly coming closer to realisation
- Voyager 1 left the Solar system.
- AMS has released first data on cosmic ray spectra
- new LHC data constrain air shower models, and cosmic ray shower models fit better the LHC forward data than the particle physics models.

The following prizes were presented during the inaugural session of the ICRC 2013:

- O'Ceallaigh medal to Edward C Stone (Caltech; Voyager),
- Yodh prize to Motohiko Nagano (Japan; AGASA),
- IUPAP-TIFR Homi Bhabha medal and prize to Heinz Völk (Germany; Gamma ray theory)
- Duggal award to Rolf Bühler (Germany, Fermi) and the
- IUPAP Young Scientist awards to Aya Ishihara (Japan; IceCube) and Daniel Mazin (Spain; MAGIC).

During the C4 meetings held at Rio during the ICRC 2013, it was decided to organize the 34rd ICRC 2015 at the Hague, Netherlands, in 30 July - 6 Aug 2015. Also, the Commission gave its approval for

organizing the 35th ICRC 2017 in Busan, South Korea.

Further conferences in 2013 with IUPAP support have been:

TAUP 2013: International Conference on Topics in Astroparticle and Underground Physics, 8-13 September 2013 in Asilomar, California, USA. The Proceedings for TAUP2013 will be published by Elsevier B. V. as a Virtual Special Issue, online and open access.

2 Conferences in 2014

Conferences in astroparticle physics who have applied for IUPAP support for 2014 are:

- Amsterdark 2014, Amsterdam: TeV particles and Dark Matter
- ISVHECRI 2014, CERN: Int. Symposium on Very High Energy Cosmic Ray Interactions
- Cospar 2014, Moscow: Cospar Scientific Assembly

While the latter two of them applied only past the deadline, the C4 Commission still supports their applications, as their topic is relevant to C4 and the both series traditionally received some support from IUPAP.

3 Renaming the C4 Commission from "Cosmic Rays" to "Astroparticle Physics"

The commission C4 "Cosmic Rays" is one of the oldest, founded in 1947. Since then particle physics has split off and become a separate commission, and the area under this commission has widened to include solar and heliospheric physics, gamma ray astronomy, neutrino astronomy and dark matter.

A first proposal to change the name of the commission to "Astroparticle Physics" has been discussed at a national Meeting in 2010 and forwarded to the IUPAP GA in 2011. The GA referred it to the C4 chair to consult with the commission and the wider community.

The C4 commission and many senior scientists found the name change appropriate and timely to properly reflect the breadth of activities gathered under the C4 umbrella. In many countries the name "Astroparticle Physics" has been established for this area. IUPAP is in the process of establishing the "Astroparticle Physics International Committee (APPIC)" to advise the Global Science Forum of the OECD and the "Astroparticle Physics International Forum (APIF)" in matters relating to big international projects in the area largely covered by C4. Thus, "Astroparticle Physics" would be the best name for the Commission C4.

At this summer's International Cosmic Ray Conference we have extensively discussed the issue in the commission and formally polled the commission members and the ICRC attendants. The result was a 76.5% support for the name change among the commission members and 60% support among the ICRC participants who returned the poll. In the view of the C4 officers this is a clear enough majority to apply formally to IUPAP for a name change of the commission C4.

Note:

we suggest a different name for C4 that describes better the activities currently under the umbrella of C4. We do not suggest to redefine the topics of C4. The name of our big bi-annual international conference will remain

“International Cosmic Ray Conference”
but with the subtitle "The Astroparticle Physics Conference".

The change of the Mandate to go along with the name change is minimal:
the old mandate is:

C4 Mandate

To promote the exchange of information and views among
the members of the international scientific community in the
general field of **Cosmic Ray** Physics including:

- the nature and characteristics of the electromagnetic,
particle and other radiation **present in the cosmos**;
- the theory and models concerning the origin of this radiation;
- non-accelerator high energy physics;
- the specialized technologies necessary in the field and their application.

the new mandate is proposed to be:

C4 Mandate

To promote the exchange of information and views among
the members of the international scientific community in the
general field of **Astroparticle** Physics including:

- the nature and characteristics of the electromagnetic,
particle and other radiation, **from the lowest to the highest
energies, in the heliosphere, the galaxy and the universe**;
- the theory and models concerning the origin of this radiation;
- non-accelerator high energy physics;
- the specialized technologies necessary in the field and their application.

Also the Chairs of C11 (Particles and Fields), C12 (Nuclear Physics) and C19 Astrophysics)
have been asked for their views.

Hiroaki Aihara (Chair C11) had no concerns about the name change.

Thanu Padmanabhan (Chair C19) worried whether the chairs of C11 and C12 would agree,
Hideyuki Sakai (Chair C12) personally had no objections, but reported some concerns
of his commission members: overlap with C19?, C19 to absorb C4?, Redefine the mandate to avoid
overlap with C19?

So, interestingly, C19 members did not express concerns about the overlap with C19,
and C12 members did not worry about C12.

The Commission Chair meeting requires some discussion of this issue.

COMMISSION C5

C5 Activity Report for the IUPAP C&CC Meeting - Geneva CERN, October 2013

(submitted by K. Kono, Chair C5, September 2013)

Officers/Members 2011-2014

| | | |
|-----------------------|-------------------------|-------------------|
| Chair: | Kimitoshi Kono | Japan |
| Vice-Chair: | Karen Hallberg | Argentina |
| Secretary: | John Saunders | UK |
| Members: | John Beamish | Canada |
| | Nan Lin Wang | China |
| | Jukka Pekola | Finland |
| | Jean-Pascal Brison | France |
| | Christian Pfeiderer | Germany |
| | Srinivasan Ramakrishnan | India |
| | Hu-Jong Lee | Republic of Korea |
| | Hans Hilgenkamp | The Netherlands |
| | Alexander Smirnov | Russia |
| | Alexander Feher | Slovak Republic |
| | Robert Hallock | USA |
| Associate Members: | Jacek Kossut | Poland (from C8) |
| | YoshiChika Otani | Japan (from C9) |
| | Juhn-Jong Lin | Taiwan |

Main Achievements

1. Commission Meeting

C5 holds its major triennial formal meeting in advance of the General Assembly on the occasion of the meeting of International Conference on Low Temperature Physics (LT), our major Type A conference held every three years. The previous meeting was in August of 2011 in Beijing at the time of LT26. In August of 2014 LT27 will be held in Buenos Aires, when we will have a face-to-face meeting. We have conducted business effectively by e-mail in the interim.

2. Sponsored Conference (2012)

Type B

- **International Conference on Quantum Fluids and Solids 2012 (QFS2012)**
August 15-21, 2012, Lancaster, UK;
267 registered participants (26 women) from 25 countries;
9 keynote talks and 55 invited talks (3 by women), and approximately 210 posters;
Co-chairs: S.N. Fisher and G.R. Pickett

3. Sponsored Conference (2013)

Type B

- **International Conference on Quantum Fluids and Solids 2013 (QFS2013)**
August 1-6, 2013, Matsue, Japan;
220 participants (14 women) from 23 countries;
10 plenary talks and 47 invited talks (1 by women), and 147 posters;
Chairman: Y. Okuda, Co-Chairman: K. Kono

4. Sponsored Conferences (anticipated for 2014 and beyond)

Type A

- **27th International Conference on Low Temperature Physics (LT27), early approval**
August 6-13, 2014, Buenos Aires, Argentina;
about 1,200 participants
Chair: S. Hernández, Co-Chair: V. Bekeris

Type B

- **International Conference on Ultralow Temperature Physics (ULT 2014), proposition**
August 16-19, 2014, San Carlos de Bariloche, Argentina;
200-300 participants
Organizers: Henri Godfrin, Julio Guimpel, J. Luzuriaga, E. Osquiguil

5. IUPAP Young Scientist Prize in Low Temperature Physics

The following solicitation for the IUPAP Young Scientist Prize in Low Temperature Physics is posted on the C5 website and distributed in the community. Up to three prizewinners will be nominated in early 2014 by C5. The Prize award ceremony will be held at the LT27 Conference in August 2014. All prizewinners will give an invited talk.

CALL FOR NOMINATIONS

IUPAP Young Scientist Prize in Low Temperature Physics 2014

Nominations are being sought for the Young Scientist Prize in Low Temperature Physics, which will be awarded by the International Union of Pure and Applied Physics through the Commission C5 (Low Temperature Physics) in 2014. The prize will be awarded during the 27th International Conference on Low Temperature Physics (LT27) to be held in Buenos Aires, Argentina, August 6—13, 2014. The Prize includes a medal, the sum approved by IUPAP, and an invited presentation to be made at LT27.

The nominee is expected to have made original and outstanding contributions to the field of low temperature physics. If the work was performed in collaboration, the leading personal contribution of the recipient to the achievement must be clearly identifiable. Nominees for the prize should by January 5, 2014 have a maximum of 8 years of research experience (excluding career interruption) following the award of PhD.

Nominations should include:

- A letter of not more than 1,000 words evaluating the nominee's achievements and identifying the specific work to be recognized.
- Curriculum vitae that identifies all publications.
- A brief biographical sketch not to exceed two pages.
- Suggested text for the award citation.

Self-nominations will not be considered. Nominations should be sent to the chair of IUPAP C5: preferably by web upload (http://lt.riken.jp/iupap/young_scientist/prize.shtml), e-mail with attachments (e-mail: kkono@riken.jp), or by regular mail (Dr. K. Kono, Low Temperature Physics Laboratory, RIKEN, Hirosawa 2-1, Saitama, 351-0198 Japan).

Deadline for receipt of nominations is January 5, 2014.

COMMISSION C6

C6 - Commission on Biological Physics

Report from Kenichi Yoshikawa

Activity report of C6:

1) International Conference of Biological Physics, ICBP 2014, has been decided to be held at Beijing, China for the period of June 18-22, 2014.

<http://icbp2014.iphy.ac.cn>

ICBP2014 belongs to the category A.

The first two days (June 18-19) will encompass training workshops, and the remaining three days (June 20-22) will include research symposia and plenary lectures.

Symposium topics

Principles of Protein Dynamics and Functions
Physics of Folding, Misfolding, Aggregation & Diseases
Physics of Evolutionary Dynamics
Systems Biology and Networks
Biomembranes & Cell Mechanics
Novel technologies and Instrumentation
Single Molecule Biophysics
Genome Structure & RNA Folding
Soft Matter and Biomaterials
Physics of Cancer
Neural Biology & Networks
Physics of Living Cells

2) Cooperation with AC4 (Medical Physics):

Joint symposium between C6 and AC4 was held on the occasion of 20th International Conference of Medical Physics, ICMP 2013, at Brighton, UK, for the period of September 1-4, 2013.

We will have the joint symposium also on ICBP2014. It is also under planning that a joint workshop will be held in Japan as the preconference of ICBP2014.

3) Young Scientist Prize:

Call for nomination,

<http://icbp2014.iphy.ac.cn/icbp/Home/youngprize/index/2737336874458>

Dead line: November 30, 2013

4) Connection with IUPAB:

Prof. Silvia Morante has been assigned as the representative of C6 for the connectivity with IUPAB, International Union of Pure and Applied Biophysics.

COMMISSION C8

C8 - Commission on Semiconductors

by Robin Nicholas

IUPAP C8 Commission met on 2 July 2013 during EP2DS/MSS conference, Wroclaw

1. Young Scientist Prize in Semiconductor Physics (YSP-SP)

A discussion was held and arrangements agreed for the Young Scientist competition to be held for 2014. It was agreed that the same application and selection procedure should be used as for 2012 and that the timing should be so that the prize winners could present their work as invited talks and receive their prizes during the ICPS2014 conference. A discussion was held about re-naming the prize as an Early Career prize which was not enthusiastically greeted, but without very strong opinions being expressed.

2. Planning and Supervision of ICPS (Int. Conf. on Phys. of Semiconductors) series of conferences

Formal agreement was made to recommend the application for IUPAP sponsorship as a category A conference for ICPS 2014 to be held in Austin, Texas, 10-14/08/2012 which were well in hand. Following consultations with colleagues in Australia, China and France, two full bids were received to host the 2016 ICPS-33 conference in Beijing and Montpellier. Both groups of colleagues made impressive presentations to the committee which were also circulated to the full committee. Following discussion of the bids and further email consultations it was decided to follow the normal conference rotation sequence and award the meeting to the consortium from China.

A discussion was held on possible locations for the 2018 ICPS-34 conference and it was decided to request bids to be submitted for consideration at the next C8 commission meeting which will take place during ICPS2014 in Austin.

3. Supporting Other Conferences

A bid for IUPAP support was subsequently received from the HMFSP conference 2014, which could not be supported as this is a satellite meeting of the ICPS conference and therefore not eligible under IUPAP rules.

4. Raising the profile of IUPAP

This was briefly discussed without any clear ideas other than continuing to promote the Young Scientist Prize, which was viewed as a considerable success. There was no enthusiasm for the production of a commission newsletter.

5. Commission membership

The addition of the co-opted members of the C5 and C17 commissions. Jukka Pekola (Finland) and Jason Petta(US) were noted.

Next meeting:

During ICPS2014 meeting Austin, Texas, 10-14 August 2014.

Commission membership 2011-14.

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Vice Chair S. J. Lee
Secretary M. Thewalt

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COMMISSION C9

C9. Commission on Magnetism (1957)

Officers 2011-2013

Chair: Ingrid Mertig (Germany)

Vice - Chair: Ching-Ray Chang (Taiwan)

Secretary: Manuel Vazquez (**Spain**)

Members:

Xiaofeng Jin (China)

Carlos Cabal-Mirabal (Cuba)

Nguyen van Dau Frederic (France)

Sharika Nandan Kaul (India)

Stefano Sanvito (Ireland)

YoshiChika Otani (Japan)

Sung-Chul Shin (Republic of Korea)

Vladimir Ustinov (Russia)

Borje Johansson (Sweden)

Andrew Boothroyd (UK)

Julie Borchers (USA)

Associate Members 2009-2012:

Sergio Rezende (Brazil)

P.H. Kes (The Netherlands)

Abdelwaheb Cheikhrouhou (Tunisia)

Associate Members 2012-2014:

C. Pfeleiderer (Germany)

Activities

* One of the most important activities of C9 is to organize the International Conference on Magnetism (ICM), which is held every three years under the auspices of IUPAP. The last one, the 19th ICM, took place in July 2012 in Busan, Korea. The 20th ICM will be held in July 2015 in Barcelona, Spain. The venue of 21th ICM in 2018 has been decided to be in San Francisco, USA.

* The ICM Magnetism Award and Neel Medal, and the IUPAP Young Scientist Awards in the field of Magnetism are presented at ICM. The call for nominations for these Awards has been made in August 2011. The winners have been selected by the C9 Committee and have been presented at the 19th ICM in Korea. The ICM Magnetism Award and Neel Medal was dedicated to Prof. Sadamichi Maekawa (Japan) and to Prof. Yoshinori Tokura (Japan). The IUPAP Young Scientist Award was given to Dr. Suchitra Sebastian (UK).

New Developments in Magnetism

Magnetism is a traditional and broad field of study in physics. It is also familiar in daily life. For example, magnets may be found stuck on the door of a kitchen refrigerator. Magnetic materials are valuable not only as magnets but as electronic materials. In the past, the electron's spin and charge mostly were studied separately. A revolution in magnetism has emerged from the combination of charge and spin properties.

* **Spintronics [1]:**

Nowadays information technology is based on semiconductor and ferromagnetic materials. Information processing and computation are performed using electron charge by semiconductor transistors and integrated circuits. On the other hand, the information is stored on magnetic high-density hard disks by electron spins. Recently, a new branch of physics and nanotechnology, called magneto-electronics, spintronics, or spin-electronics, has emerged, which aims to simultaneously exploit both the charge and the spin of electrons in the same device and describes the new physics raised. One of its tasks is to merge the processing and storage of data in the same basic building blocks of integrated circuits, but a broader goal is to develop new functionality that does not exist separately in a ferromagnet or a semiconductor.

In the field of spintronics, the flow of electrical charges as well as the flow of electron spin, the so-called spin current, are manipulated and controlled together. Whereas charge current flows without decay (owing to the fundamental charge conservation), spin current decays on a length scale of less than a few micrometers. In other words, it exists only on a nanometer scale. Therefore, recent progress in the physics of magnetism and the application of spin current has progressed in tandem with the nanofabrication technology of magnets and the engineering of interfaces and thin films.

*** New quantum phases of matter:**

Discovery of new materials, and purification and microfabrication of materials provide opportunities to study new quantum phases of matter. In the following, some of them which have recently been developed are given.

a) Topological Insulators [2]: Topological insulators are insulating materials that conduct electricity on their surface via special surface electronic states. The surface states are topologically protected, which means that unlike ordinary surface states they cannot be destroyed by impurities or imperfections. Topological insulators are similar to the quantum Hall state in that they exhibit “topological order”. Unlike the quantum Hall state, which is only seen when a strong magnetic field is present, topological insulators occur in the absence of a magnetic field. In these materials the role of the magnetic field is played by spin-orbit coupling. This analogy between spin-orbit coupling and a spin dependent magnetic field provides a way to understand the simplest two-dimensional topological insulator; quantum spin Hall state, which occurs when the spin-up and spin-down electrons, which feel equal and opposite spin-orbit “magnetic fields”, are each in quantum Hall states. Recent measurement of electrical transport in a quantum well structure made by sandwiching a thin layer of mercury telluride between layers of mercury cadmium telluride suggests the possibility of the topological insulating state.

b) Multiferroics [3]: The well-established ferroic orderings, ferroelectricity, ferromagnetism, and ferroelasticity, can be switched by their conjugate electric, magnetic and stress fields, respectively. Cross coupling allows those ferroic orderings to also be tuned by fields other than their conjugates; in magnetoelectric multiferroics, a promising new toroidal ordering of toroidal moments, which should be switchable by crossed electric and magnetic fields. Spiral-antiferromagnetic ground state of Cr_2BeO_4 results in a small ferroelectric polarization. The oxide BiFeO_3 is another example of multiferroic materials, which shows an antiferromagnetic order and is ferroelectric. Multiferroics continue to reveal novel and unanticipated physics, and the potential applications now stretch far beyond electrical control of ferromagnetism.

c) Quantum Criticality: The quantum critical point, where the transitions occur, is present only at absolute zero temperature, but its influence nevertheless is felt in a broad regime of “quantum criticality” at nonzero temperatures, and it is the key to understanding a variety of experiments such as quantum spin systems and heavy fermions. The copper oxide compounds (the cuprates) such as $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ which display high-temperature superconductivity are another example. In the stoichiometric limit, the cuprates are good insulators that display the antiferromagnetic order. By varying the relative concentration of elements, one can dope the materials with mobile charge carriers and turn them into good metals. Along the way, high-temperature superconductivity emerges. More recent examples are the iron-based pnictide compounds such as $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)$, which display a similar set of phases.

In the recent magnetism, presented are not only a wealth of studies of a variety of magnetic materials but also a new pathway towards the control of magnetism. This paradigm is epitomized by a flood of new concepts, which introduces a new front in the evolution of traditional research in magnetism.

Prefaces:

[1] S. Maekawa: Nature Materials 8, 777 (2009).

[2] C. Kane and J. Moore: Phys. World, Feb. 2011, page 32.

[3] N.A. Spaldin, S. W. Cheong and R. Ramesh: Phys. Today, Oct. 2010, page 38.

[4] S. Sachdev and B. Keimer: Phys. Today, Feb. 2011, page 29.

COMMISSION C10

C10 - The Structure and Dynamics of Condensed Matter

Report submitted by Yasuhiko Fujii, Chair

1. C10 Young Scientist Prize

2014 Dr. Clarina R. de la Cruz,

Lead Instrument Scientist, Neutron Sciences Directorate
Oak Ridge National Laboratory, U.S.A.

“For her outstanding achievements in the field of strongly correlated electron systems, specifically in multiferroic materials and unconventional superconductors.”

Dr. Cruz received her undergraduate and Master’s degrees in National Institute of Physics, University of the Philippines, Philippine in 1996-2003 and Ph.D in Department of Physics, University of Houston, U.S.A. and became a Post-Doctoral Fellow in Neutron Sciences Directorate, Oak Ridge National Laboratory and Department of Physics and Astronomy, University of Tennessee, U.S.A in 2007-2009. She has been a Lead Instrument Scientist at the present position since 2010.

Venue for the Award Ceremony & Prize Lecture

C10 has sponsored some International Conferences such as M²S and ICSOS, but there is no major premier conference where most of C10 members can attend and hold a face-to-face Commission Meeting like other Commissions. C10 has covered a wide range of condensed matter physics so that a research field of every year’s YSP winner is not predictable. Therefore, it is not practical to fix the venue for the annual Award Ceremony and Prize Lecture for C10 YSP at any biennial or triennial international conference.

On the other hand, the American Physical Society has its Division of Condensed Matter Physics (DCMP) which covers most of C10’s research fields. Therefore, the annual *APS March Meeting* where some of C10 members usually attend will be a very good opportunity for C10 to cooperate DCMP organizers to celebrate a C10 YSP winner.

By taking such an opportunity, we may encourage C10 members to hold the 1st Commission Meeting at the next APS March Meeting (Denver, Mar. 3-7, 2014).

2. C10-Sponsored Conferences

(2013) No conferences nominated.

(2014) The 11th International Conference on the Structure of Surfaces (ICSOS-11, University of Warwick, UK, July 21-25, 2014) nominated for IUPAP endorsement.

(2015) The 11th International Conference on Materials and Mechanisms of Superconductivity (M²S 2015, Geneva, Switzerland) to be nominated for IUPAP endorsement.

3. The Issue on “Soft Matter Physics”

(1) The original assignment given at the IUPAP General Assembly (London, Nov. 2011)

German delegates’ claim: There is a substantial overlap between the Commissions C5, C8, C9 and C10 all covering aspects of condensed matter physics. It is proposed to dedicate C10 specifically to the emerging field of soft matter physics. The name could be either “Commission on Soft Matter” or “Commission on the Structure and Dynamics of Condensed and Soft Matter”.

(2) C10’s interim report to the last C&CC (Rio)

C10 has recognized the emerging soft matter physics as an important research field but has opposed such a proposal as C10 will be dedicated to soft matter because C10 has covered important research fields, which are NOT covered by any other Commissions.

C10 members, most, if not all, of whom are solid state physicists, currently favour (partial) inclusion of soft matter physics in C10 by a possible modification of its title and mandate.

(3) More intensive discussion with soft matter physicists and other related Commissions such as C3 (Statistical Physics), C6 (Biological Physics) and C8 (Semiconductors) will be conducted although a final report is expected at this C&CC (Geneva)

4. IYCr2014 (International Year of Crystallography in 2014)

The General Assembly of the United Nations adopted a text by which it established 2014 as the International Year of Crystallography on July 3, 2012. Introducing the text, the representative of Morocco said that it decided to proclaim the Year considering that crystallography was ever-present in modern life in drug development, nanotechnology, biotechnology and the development of new materials, and that 2014 marked the centenary of the science.

The Assembly, through the text, invited the United Nations Educational, Scientific and Cultural Organization (UNESCO) to facilitate implementation of the Year and encouraged all Member States, the United Nations system and all other actors to promote awareness of the Year and of the importance of crystallography. Morocco's representative said it was hoped that the Year would have a significant educational component, particularly in developing countries where the science was least developed.

C10's mission is closely related to crystallography so that C10 will cooperate with the International Union of Crystallography (IUCr) on possible projects for IYCr2014. Currently one of C10 members, Prof. Claude Lecomte (France), has served as Vice President of IUCr.

COMMISSION C11

Activities of the Commission on Particles and Fields (C11)

October 2012 – September 2013

Hiroaki Aihara C11 Chair

1. Type A conference in past year

We had the International Symposium on Lepton Photon Interactions at High Energies (LP2013) in June 2013 in San Francisco.

2. Commission meeting

C11 meeting was held during LP2013. We have decided on venues for the future IUPAP supported conferences:

- July 2014 in Valencia: International Conference on High Energy Physics (ICHEP)
- August 2015 in Ljubljana, Slovenia: LP
- July 2016 in Chicago: ICHEP

3. Young Scientist Prize

We are calling for nominations for 2014 Young Scientist Prize.

COMMISSION C12

C12 - Commission on Nuclear Physics

Report from Hideyuki Sakai, Chair of C12

The annual meeting of C12 was held at the Villa Vittoria, in Florence during the International Physics Conference (INPC) sponsored by IUPAP on June 3, 2013. 710 participants from 55 nations. 33 invited plenary talks: 8 female speakers. This meeting was followed by the annual meeting of the IUPAP Working Group 9 on International Cooperation in Nuclear Physics which was held at INFN(Frascati). The members of WG.9 were welcome as observers to attend the meeting of C12 and vice versa.

1. IUPAP Young Scientist Prize

Selection for the IUPAP Young Scientist Prize in the field of Nuclear Physics was concluded in March 2013 following a call for nominations which was made in early July 2012. There were 32 nominations (26 males and 6 females). Prizes was awarded to the three winners (2 males and one female) at a special session of the International Conference on Nuclear Physics (INPC2013) sponsored by IUPAP, held in Florence, Italy, on June 5, 2013. The detail selection process is described in the attached document (C12_IUPAP_YSP.zip).

2. Conference recommendations

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

Conferences in 2014:

Category A support:

[1st priority]

Quark Matter 2014 (QM2014),
Darmstadt, Germany, May 19-25 2014.

[2nd priority]

Particle and Nucleus International Conference (PANIC2014).
Hamburg, Germany, August 24-29 2014.

Category B support:

[1st priority] Pre-approved last year.

Advances in Radioactive Isotope Science (ARIS2014)
Tokyo, Japan, 1-6 June 2014.

[2nd priority]

Nuclei in Cosmos (NIC2014)
Debrecen, Hungary, 300 participants, 7-11 July, 2014.

[3rd priority]

Spin Physics Symposium (SPIN2014)
Beijing, China, 20-24 October, 2014.

[No support]

22nd European Few Body Conference (EFBC2014)
(Regional but not international conference character)

[Future International Nuclear Physics Conference (INPC2016)]

C12 evaluated three bids received for hosting INPC2016 - Adelaide, Australia presented by Anthony Thomas (chair) - Institute of Modern Physics, Lanzhou-HIRFL, China, presented by Gouqing-Xiao (chair) - Tel-Aviv, Israel, presented by Israel Mardor (co-chair) After careful deliberation, the C12 commission selected the site of the next INPC (INPC2016) to be in Adelaide, Australia. It should be noted that the INPC moves around the continents, America, Europe and Asia.

INPC2007 Tokyo, Japan

INPC2010 Vancouver, Canada

INPC2013 Florence, Italy

An application of INPC2016 for the IUPAP conference support will be made next year by the organizers for pre-approval.

3. New IUPAP-IUPAC Joint Working Party

The new IUPAP-IUPAC Joint Working Party (JWP) established in last January 2012 is now considering the claims for the discovery of elements with atomic numbers 113, 115, 117 and 118 or heavier. It was informally announced that the work is progressing steadily.

COMMISSION C13

C13 - Commission on Physics for Development

Report from Paulo Murilo Castro de Oliveira (Chair)

Report on the IUPAP-C13 meeting, August 17, 2013

The annual meeting of the C13 IUPAP commission (physics for development) occurred in Trieste, August 17, 2013, hosted by our traditional partner institution ICTP (International Centre for Theoretical Physics). Present at this meeting were Paulo Murilo Castro de Oliveira (chair), Sandro Scandolo (vice-chair), Ahamadou Wague (secretary), the members Carmen Cisneros, Sekazi Mtingwa, Dénes Nagy, Samuel Mensah, Mourad Telmini and Fernando Quevedo (C13 associated and ICTP director). By skype, member Anatoly Dvurechensky also participated.

C13 has improved a lot its actions during the last decade, good events (congresses and schools) were sponsored in Africa, Asia and Latin America, all of them very well evaluated by the physics community (ASESMA school in Africa, for instance, was awarded last year by ICSU, the IUPAP mother institution). The number of students profiting from these events grew consistently during this period. Now the number of applications for 2014 has exploded, we received 7 good applications. However, the C13 budget is only 21,000 euro per year, with a maximum share of 7,000 euro per each sponsored event (IUPAP type D). Before, the maximum number of received applications was 4, last year. During the meeting, it was a consensus that all 7 applications present very good quality, deserving IUPAP endorsement. We recommend this action to IUPAP council.

The conference application from Romania (Advanced many-body and statistical methods in mesoscopic systems - second edition), however was considered not fitting the scope of IUPAP type D conference. Therefore, C13 decided not recommend financial support. Also, the conference application from Tunisia (First African Conference on Optics and Applications to Sustainable Development, supposed to occur this year (2013)) should have been sent to IUPAP one year ago. It was accepted by IUPAP administration, probably, by mistake. Anyway, for that reason C13 decided not to recommend financial support. Concerning the other 5 applications, C13 evaluated that all deserve the full share of 7,000 euro each, due to their quality. However, this would not fit into the current C13 budget. Therefore, we recommend financial support according to the following list of priorities, with the indicated values:

1) conference application from Senegal (LAM10 International conference on Optics and Lasers in Science and Techniques for Sustainable Development), with the full share of 7,000 euro;

2) school application from Nigeria (African School on Electronic Structure Methods and Application 2014, ASESMA 2014), with 6,000 euro;

3) conference application from Mexico (8th International Meeting on Photodynamics and Related Aspects), with 4,000 euro;

4) conference application from Cameroon (COOPERATIVE PHENOMENA IN CONDENSED MATTER PHYSICS: FROM BEC TO NON-LINEAR OPTICS), with 2,000 euro;

5) school application from Senegal (Third Biennial African

School of Fundamental Physics and its Applications), with 2,000 euro.

Another subject treated during the meeting was the possibility of implementing a prize for outstanding individual contributions to physics in developing countries. According to the 2005 IUPAP general assembly decision, each commission has a budget for an annual young scientists prize to be awarded for outstanding scientific contributions. It was already awarded to many young scientists by other commissions, since then. It was a consensus during the meeting that this program does not fit completely into the quoted aim of a would-be C13 prize.

Therefore, C13 consults the IUPAP council about the possibility of considering the already implemented program of young scientists prize in a slightly modified characteristic for C13 in particular, allowing us to award scientists resident in developing countries for their outstanding contributions to physics studies in these countries.

Finally, the last subject discussed in the meeting is a suggestion to IUPAP council. Existing international organisations in physics whose aims and activities are in harmony with those of IUPAP may wish to establish stable and formal link to IUPAP. This is especially important for organisations with significant impact in physics for development like associations on methods that are widely used in developing countries. Such a request was received some time ago from IBAME, the International Board on the Applications of the Mössbauer Effect. IBAME, which has been an Associated Organisation of IUPAC since many decades, asked for establishing similar links to IUPAP. Unfortunately, within the frames of the present IUPAP structure there is no room for a link to another international organisation similar to the IUPAC Associated Organisation. Existing categories like Members, Observers and Working Groups are much different in character. C13 believes that establishing a new kind of links to existing international organisations in Physics could significantly contribute to supporting IUPAP aims and activities and also contribute to the visibility of IUPAP.

Therefore C13 suggests that the IUPAP Executive Council considers setting up a new category of IUPAP Associated Organisations under similar conditions to those of the IUPAC Associated Associations.

COMMISSION C14

C14 - Commission on Physics Education (ICPE)

Report on the Activities 2012-2013

The Commission held its annual International Conference in Prague, in the Czech Republic, 4-10 August 2013. It was organized with the cooperation and support of the Physics Education Division of the European Physical Society and the Faculty of Mathematics and Physics at Charles University. The conference was well attended and was a great success scientifically and organizationally, thanks in no small part to the highly efficient local organizing effort led by the C14 secretary, Prof Leos Dvorak.

At the Conference, the 2013 ICPE Medal was presented to the *International Young Physicists' Tournament* in recognition of IYPT's sustained contribution to international physics education over many years.

Plans for the 2014 ICPE Conference in Cordoba, Argentina were announced.

ICPE held its annual face-to-face meeting immediately after the end of the conference. 13 of the 14 members were present. Prof Zulma Gangoso, the new editor of the greatly valued ICPE Newsletter, described her plans for future editions. Prof Gorazd Planinsic agreed to coordinate ICPE's future efforts regarding the hands-on Physware Workshops, particularly the organization of a 2015 International Workshop at ICTP in Trieste. Prof Nianle Wu agreed to lead the organization of the 2015 ICPE Conference in China, and it was confirmed that the 2016 Conference would be held in Brazil, as part of the Second World Conference on Physics Education.

The tentative hope was expressed that ICPE 2016 would be in Africa.

Robert Lambourne
C14 Chair

COMMISSION C15



Commission C15: Atomic, Molecular and Optical Physics

- Chair: K. Gebbie, Physical Measurement Laboratory, NIST
Gaithersburg, MD, USA. gebbie@nist.gov
- Vice Chair: D. Mathur, Tata Institute of Fundamental Research,
Mumbai, India: atmol1@tifr.res.in
- Secretary: T. Azuma, Atomic, Molecular & Optical Physics
Laboratory, RIKEN, Hirosawa, Wako, Japan
Toshiyuki-azuma@riken.jp

Report to the IUPAP Council & Commission Chairs meeting CERN, 1-2 October 2013

The two large international conferences in Atomic, Molecular and Optical Physics are the International Conference on Atomic Physics (ICAP) and the International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), which are held biennially on alternating years.

Commission C15 members met on 26 July 2013 during the XXVIII ICPEAC Conference in Lanzhou, China. Japan, China, Germany, France, Austria and the United States were represented by their Commission members. We were particularly pleased that the two previous C15 Chairs, Joachim Burgdörfer and Burkhard Fricke were able to attend and give us the benefit of their experience.

The meeting included a discussion of how Commission 15 might best contribute to the mission of IUPAP to assist in the worldwide development of physics, to foster international cooperation in physics, and to help in the application of physics toward solving problems of concern to humanity. It was suggested that one approach might be to sponsor Type D Conferences: Workshops in Developing Countries. One model might be the Industrial Physics Forum 2012: *Capacity Building for Industrial Physics in Developing and Emerging Economies*, sponsored jointly by American Institute of Physics (AIP) and the International Center for theoretical Physics (IPST).

The soliciting and ranking of nominations for the Young Scientist Prize in AMO Physics is highly competitive and taken very seriously by all members of the Commission. This year, thanks to our Secretary's efforts, we had an all-time high number of 38 candidates, 24 who were still eligible from previous years and 14 new nominations. The winner is Dr. Till Jahnke from the University of Frankfurt "for his groundbreaking experiments on Interatomic Coulombic Decay – From experimental proof to making a movie".

The proposed change in the name of the IUPAP Young Scientist Prize was also discussed by the Commission members and former Chairs. They generally felt the present name was not a serious problem, and for the prestige and integrity of the prize, the name should remain the same.

Conference support for 2013

27th International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC XXVII)

Location: Lanzhou, China

Date: 24 - 30 July 2013

Chair: Toshiyuki Azuma (RIKEN, Tokyo)

Conference Type: A

21st International Conference on Laser Spectroscopy (ICOLS)

Location: Berkeley, CA USA

Date: 9 - 12 June 2013

Co-Chairs: Dmitr Budker and Harmut Haffner (UC Berkeley)

The 2014 Meeting of Commission 15 will take place during the 24th International Conference on Atomic Physics (ICAP), 3-8 August, at the Mayflower Renaissance Hotel in Washington, D.C. USA. The event will be hosted by the Joint Quantum Institute, a partnership between the National Institute of Standards and Technology and the University of Maryland, with support from the Laboratory for Physical Sciences.

COMMISSION C16

IUPAP C16 report 2012-2013

submitted by Robert Bingham (Chair)

I. IUPAP C16 SPONSORED/ENDORSED CONFERENCES

The XXXI International Conference on the Phenomenon in Ionized Gases (ICPIG)
Granada, Spain July, 2013.

II. C16 2012 YOUNG SCIENTIST PRIZE IN PLASMA PHYSICS

Purpose: The IUPAP Commission C16 Young Scientist Prize recognizes exceptional achievement in the study of plasma physics by scientists at a relatively junior stage of their career. The recipient must be no more than eight years post PhD (excluding career interruptions) by the deadline of the competition, and is expected to have displayed significant achievement and exceptional promise for future achievement in an area of plasma physics. The Prize will consist of 1,000 Euro and a Medal and Certificate.

The prize selection committee will consist of C16 commission members.

2013 Award Winner: Peter Bruggeman won the IUPAP C16 Young Scientist Prize.

The citation reads:

For studies that have provided fundamental insights into the nature of plasmas in and in contact with liquids, and of basic phenomena in non-equilibrium atmospheric-pressure discharges.

Peter Bruggeman carried out his research at the University of Eindhoven, NL. He has now taken up the position of Richard and Barbara Nelson Associate Professor of Mechanical Engineering at the University of Minnesota, USA.

The IUPAP C-16 medal and certificate were presented at the XXXI International Conference on the Phenomenon in Ionized Gases (ICPIG), Granada, Spain July, 2013.

IUPAP is considering renaming the Young Scientist Award in the future as the *Early Career Award*.

III. IUPAP C16 COMMISSION MEETINGS

July 2013 – XXXI International Conference on the Phenomenon in Ionized Gases (ICPIG)
Granada, Spain.

November 11 – 15, 2013 Annual meeting of the APS Division of Plasma Physics (DPP),
Denver, CO.

The C16 meeting is scheduled to take place at the this meeting.

IV. FUTURE MEETINGS

The following conferences have requested IUPAP support.

The International Congress in Plasma Physics (ICPP), 15th -19th August 2014, Lisbon,
Portugal. Organised by Professor Tito Mendonca.

ICPP is a category A conference.

The International Conference on the Physics of Dusty Plasmas (ICPDP) 16th -20th May 2014, Dehli, India.
Organised by Avinash Khare, University of Dehli, India.
ICPDP is a category B conference.

V. OTHER C16 COMMISSION ACTIVITIES

Response to the Royal Society Questionnaire: The C16 Commission Chair, Robert Bingham, suggested that the grand challenge in plasma physics is fusion energy, and that the National Ignition Facility (NIF) at Livermore, and The International Thermonuclear Experimental Reactor (ITER), being built in Cadarache, France, are to plasma physics, equivalent to the LHC at CERN.

Footnote: In August the National Ignition recorded the highest yield fusion shot. It is making steady progress towards ignition and gain.

COMMISSION C17

C17 - Commission on Quantum Electronics

Report submitted by Victor Zadkov (Chair)

1. Changing the name of the commission

Under the effort to align the name of the commission with the research topics of modern optics and photonics and following the recommendation of the IUPAP Executive Council a working team of people was composed to discuss and make recommendations regarding the C17 name:

Victor Zadkov (chair C17)

Deborah Kane (vice-chair, C17)

Cristina Masoller (secretary, C17)

Martin McCall (member, C17)

Katharine Gebbie (chair C15) or a replacement from C15 on her recommendation

Duncan Moore (chair AC1) or a replacement from AC1 on his recommendation

John Dudley (EPS associated member of C17, president of the EPS)

2. Associated members of C17

At the last IUPAP Executive Council and Committees Chairs meeting in October 2012 C17 suggested to approve the European Physical Society (EPS) as an associated member of the commission, and this proposal was approved. Two persons from the EPS are named as the representatives:

John Dudley, President of the EPS, former chair of the QEOD/EPS

David Lee, Secretary General, EPS

3. IUPAP C17 Prize for Young Scientists

The selection rules for the IUPAP C17 Prize for Young Scientists were discussed by the C17 commission members and respectively changed in order to allow selection of up to two winners (one for fundamental and one for applied aspects) prior to the award ceremony.

The upcoming 2013 Call for the IUPAP C17 Prize for Young Scientists has been prepared and launched. It was agreed that the Award Ceremony will take place at the Optics & Photonics Taiwan International Conference (OPTIC 2013) to be held in Zhongli, Taiwan, on 5-7 December, 2013. This is an international meeting with up to 1000 participants, covering most of the areas of QE and applications, and in a nice location.

COMMISSION C18

C18 – Commission on Mathematical Physics

Report by Jakob Yngvason (Chair)

In past years, the main activities of the Commission C18 for Mathematical Physics have been connected with the triannual International Congress of Mathematical Physics (ICMP), both the congress itself and the selection of laureates for the IUPAP Young Scientists Prizes, where the prize ceremony is part of the programme of the ICMPs. As already reported at the C&CC meeting in Rio the last ICMP took place in Aalborg, Denmark, August 6-11 2012 and three IUPAP Young Scientists Prizes were awarded.

Besides the ICMP there is another series of regular conferences on general topics in Mathematical Physics, the QMath conferences, that could potentially qualify for IUPAP support. They have, however, so far not fulfilled the IUPAP requirements about the minimum number of participants, the number typically being less than 200. The last conference in this series, QMath 12, took place at the Humboldt University of Berlin September 10-13 this year, but the organizers decided to abstain from an application to IUPAP for the reason mentioned.

The next ICMP will be in Santiago in Chile in August 2015 with Professor Rafael Benguria, Universidad Católica de Chile, as congress convener. It is expected that the organizers will next year apply for IUPAP support. The soliciting process for the next candidates for the IUPAP Young Scientists Prizes has already begun within the C18, but the final selection and decision about the prize winners will only take place during the next year.

COMMISSION C19

C19 - Astrophysics

Activity report submitted by Grazina Tautvaisiene (C19 Secretary)

1) IUPAP Young Scientist Medals in the field of Astrophysics

Call for nominations for the IUPAP Young Scientist Medals in the field of Astrophysics of 2013 was announced in April of 2013. Applications of five outstanding astrophysicists have been received by the 1st of July. A committee of five members was appointed which reviewed the applications and selected the winners.

The IUPAP Young Scientist Medal in the field of Astrophysics of 2013 will be awarded to Alicia Soderberg (Harvard University, USA) for discovering of new classes of explosions in the Universe across the electromagnetic spectrum, including the first X-ray flare associated with a shock breakout in a supernovae (SN 2008D), and the first luminous radio emission from a supernova (SN 2009bb) which requires a substantial relativistic outflow powered by a central engine without an observed gamma-ray burst.

Dr. Alicia Soderberg will present her work at the 27th Texas Symposium on Relativistic Astrophysics (December 8–13, 2013 in Dallas, USA), where the IUPAP Medal will be awarded.

2) IUPAP support of international conferences

For the IUPAP support has been selected the 27th Texas Symposium on Relativistic Astrophysics to be held in Dallas on 8–13 December, 2013.

There are no symposia selected for the IUPAP support in 2014.

3) Participation in organizing committees of international conferences supported by IUPAP

Four members of C19 are members of the Scientific Organising Committee of the 27th Texas Symposium on Relativistic Astrophysics to be held in Dallas on 8–13 December, 2013 (Thanu Padmanabhan, Victoria Kaspi, Grazina Tautvaisiene and assoc. member Virginia Trimble).

COMMISSION C20

C20 - Commission on Computational Physics

Report submitted by Alex Hansen (Chair)

Trondheim, September 14, 2013

Conferences:

The Conferences on Computational Physics (CCP) form an international series of conferences which has served as a lively forum for computational physicists from around the world. Since 1998, the CCP conferences rotate yearly between the European/African continents, the Asian/Oceanian continents and the Americas. In 1997, the CCP conference series succeeded the EPS-APS Joint Conferences "Physics Computing" (PC) organized annually since 1989.

The XXV IUPAP Conference on Computational Physics CCP2013 was held in Moscow, Russia on August 20-24 (ccp2013.ac.ru). There were around 200 registered attendees. It was chaired by Professor Lev Shchur of the Landau Institute for Theoretical Physics and C20 member. The conference spans the entire field of computational physics, from astrophysics to nanoscience. *The XXVI IUPAP Conference on Computational Physics CCP2014* will be chaired by Professor Anders Sandvik and will be held at Boston University. The dates are August 11-14, 2014 – but this *may* be adjusted in order to avoid collision with LT-27 – the large C5 conference. *CCP2015* will be organized by Professors Sitangshu Bikas Santra of the Indian Institute of Technology at Guwahati and Purusattam Ray of the Institute for Mathematical Sciences in Chennai at the IIT campus in Guwahati in the state of Assam (India) as venue. At present we are discussing the location of CCP2016 and CCP2017. The most likely venues are Paris (2016) and South Africa (2017).

Young Scientist Prize:

We only received two nominations of the YSP this year. We voted that this number was too low and will award two medals in 2014. We will invest effort in improving the way the medal is announced.

Reports from IUPAP Affiliated Commissions

for October meeting, 2013

Collected by Cecilia Jarlskog

The reports here below are from

- AC.1. International Commission for Optics
- AC.2. International Commission on General Relativity and Gravitation
- AC.3. International Commission for Acoustics
- AC.4. International Commission on Medical Physics

AC.1.



AC1

IUPAP Report on ICO Activities 2012 - Sept., 2013

During 2012, ICO held two topical meetings:

- 1) [ICO Topical Meeting: 6th International Conference on Nanophotonics \(ICNP 2012\)](#)
Beijing, China, May 27-30, 2012
- 2) [ICO Topical Meeting: 12th Conference of the International Society on Optics Within Life Sciences "OWLS 12"](#), Genoa, Italy, July 4-6, 2012

An ICO Strategic Planning Committee Retreat was held July 1-2 in Genoa, followed by the ICO Bureau Meeting on July 3rd. This first meeting of the Strategic Planning Committee was devoted to establishing the strengths and weaknesses of the ICO. A second meeting is planned October 26th 2013, at which time several of the strategies for the ICO future will start elucidating.

ICO co-sponsored or endorsed another eight international activities. One of them was the **First ICO/ICTP/TWAS Central American Workshop in Lasers, Laser Applications and Laser Safety Regulations** in San José de Costa Rica, April 30-May 11, 2012. This is the first of a series of activities in Central America that are expected to take place within the ICO/ICTP/TWAS Central America Initiative, which was launched with this event. Continuation of the initiative will be a Workshop on Optics and Energy in Chiapas, Mexico, to be held at MCTP next year.

[Dr. Nirit Dudovich](#) from Israel was the IUPAP Young Scientist Prize in Optics 2012.

Dr Nirit Dudovich has a PhD in physics from the Weizmann Institute of Science, Rehovot, Israel. She performed her post-doctoral research at the National Research Council (NRC) in Canada. In 2007 Dr. Dudovich joined the physics faculty at the Weizmann Institute of Science as a senior scientist, where she leads the attosecond science group. She was awarded for her outstanding achievements on **“Developing a completely new approach to attosecond pulse metrology”**.

ICO worked jointly with the EPS, ICTP, the LAM Network and other international organizations to promote and get international support for an International Year of Light (YoL) in 2015. ICO President Duncan Moore presented the proposal for the YoL to the IUPAP General Assembly, and obtained the IUPAP support for the initiative. Jointly with the ICTP, ICO promoted a meeting on the YoL at ICTP.

As of April 2013 nominations for ICO Bureau officers are currently being sought. At the 2014 23rd Congress of the International Commission for Optics in Santiago de Compostela elections will take place. The goal is to have a varied list of candidates in place by February 28, 2014, at which time all members will receive information as to the nominated candidates so that they can identify those individuals that they wish to support for any specific office.

In May 2013 three distinguished scientists were presented ICO awards during the SPIE Optics and Optoelectronics 2013 Symposium in Prague. Jan Peřina of Palacký University was presented with the 2011 ICO Galileo Galilei Award, Shuang Shang of the University of Birmingham was awarded the 2010 IUPAP Young Scientist Prize in Optics and Romain Quidant of ICF was presented the 2012 ICO Prize for his accomplishments in nanoscale optical manipulation.

LIST OF CO-SPONSORED OR ENDORSED ICO EVENTS in 2012

6 - 7 February 2012

[ICTP Winter College on Optics: Advances in Nano-Optics and Plasmonics](#)

Trieste, Italy

Contact: ICTP Secretariat, phone: +39-040-2240-9932;

fax: +39-040-2240-7932; smr2132@ictp.it

30 April - 11 May 2012

[FIRST ICO/ICTP/TWAS Central American Workshop in Lasers, Laser Applications and Laser Safety Regulations](#)

San José de Costa Rica, Costa Rica.

[Home page at ICTP.](#)

Directors: [María L. Calvo](#), [Angela M. Guzmán](#), [Joseph J. Niemela](#)

Local Organizers; [Luis Diego Marín Naranjo](#) and [Jaime](#)

[Cascante](#) jcascantev@gmail.com

Secretariat: Ms. Rosa del Rio (smr 2381) the [Abdus Salam International Centre for Theoretical Physics](#) - Strada Costiera 11 - 34151 Trieste, Italy

Telephone: +39-040-2240396 - Telefax: +39-040-22407396 - E-mail: smr2381@ictp.it

10 – 13 April 2012

[VII International Workshop TecnoLaser, "TECNOLASER 2012", and III International Meeting Optics, Life & Heritage, under the general lemma "Optics and Laser Technology in Science, Industry and Culture"](#)



ana, phone: (0537) 209 3920, fax: (0537) 202 1518

[u](#)

[Central American Workshop in Lasers, Laser Applications and Laser Safety](#)

Costa Rica.

Contact: Ms. Rosa del Rio (smr 2381) the [Abdus Salam International Centre for Theoretical Physics](#) - Strada Costiera 11 - 34151 Trieste, Italy Telephone: +39-040-2240396 - Telefax: +39-040-22407396 - E-mail: smr2381@ictp.it

14 – 17 May 2012

[3rd Int. Topical Meeting on Optical Sensing and Artificial Vision \(OSAV 2012\)](#)

St. Petersburg, Russia

Contact: Igor Gurov, phone: +7 (812) 571-6532, fax: +7 (812) 315-7534

gurov@mail.ifmo.ru

27– 30 May 2012

[ICO Topical Meeting: 6th International Conference on Nanophotonics \(ICNP 2012\)](#)

Beijing, China

Honorary Chairs: Bingkun Zhou, Paras Prasad

General Chairs: Qihuang Gong, Joseph Haus

Contact & Exhibit Manager: Yun-Feng Xiao, phone: (86)10-62765512, fax: (86)10-62756567

icnp2012@pku.edu.cn

2 – 5 July 2012

[8th International Conference on Optics-photonics Design and Fabrication "ODF'12"](#)

St.-Petersburg, Russia

Contact: M. Letunovskaya, phone: +7(812)457 18 87, fax: +7(812)457 18 87

odf12@gmail.com

4 – 6 July 2012

[ICO Topical Meeting: 12th Conference of the International Society on Optics Within Life Sciences "OWLS 12"](#)

Genoa, Italy

Contact: Alberto Diaspro, phone: +39-010.71.781.503, fax: +39-010-72.03.21

alberto.diaspro@iit.it

3-6 September 2012

[International Conference "Micro- to Nano-Photonics III - ROMOPTO 2012](#)

Bucharest, Romania

Contact: Valentin Vlad, phone: +40 21 457 44 67, fax: 40-21- 457 44 79; -457 42 43

v_i_vlad@yahoo.com

21-25 October 2012

[4th International Symposium on Transparent Conductive Materials \(TCM 2012\)](#)

Crete, Greece

Contact: George Kiriakidis, phone: +302810391271, fax: +302810391295

kiriakid@iesl.forth.gr

LIST OF CO-SPONSORED OR ENDORSED ICO EVENTS in 2013

4 - 15 February 2013

[ICTP Winter College on Optics: Trends in Laser Development and Multidisciplinary Applications to Science and Industry](#)

Trieste, Italy

Contact: ICTP Secretariat, phone: +39-040-2240-9932;

fax: +39-040-2240-7932; smr2132@ictp.it

9 - 11 April 2013

[icOPEN2013](#) (International Conference on Optics in Precision Engineering and Nano-technology)

Singapore

Contact: Anand Asundi, phone: 67905936, fax: 67924062, anand.asundi@pmail.ntu.edu.sg

15-18 April 2013

[SPIE Optics + Optoelectronics 2013](#)

Prague, Czech Republic

Contact: Karin Burger, phone: +442920894749, fax: +442920894750, karin@spieeuropa.org

21-25 April 2013

[Digital Holography and 3D Imaging](#)

Hawaii, USA

Contact: Laura Holloway, phone: +1.202.416.1436, fax: +1.202.416.6100, lholloway@osa.org

17-21 June, 2013

[Tenth Rochester Conference on Coherence and Quantum Optics](#)

Rochester NY, USA

Contact: Joseph H. Eberly, phone: +1 585-275-4576, fax: +1 585-276-0018,

eberly@pas.rochester.edu

18-20 June, 2013

[2nd International Conference on Quantum Information and Measurement \(QIM-2\)](#)

(Satellite Meeting to "Tenth Rochester Conference on Coherence and Quantum Optics"),

Rochester, USA

Contact: Joseph H. Eberly, phone: +1 585-275-4576, fax: +1 585-276-0018,

eberly@pas.rochester.edu

22-26 July, 2013

[8th Iberoamerican Optics Meeting / 11th Latinamerican Meeting on Optics, Lasers and Applications](#) (RIAO/OPTILAS 2013)

Porto, Portugal

Contact: Contact: Manuel Filipe P. C. Martins Costa, phone: 00351967642732, mfcosta@fisica.uminho.pt

[ta@fisica.uminho.pt](mailto:mfcosta@fisica.uminho.pt)

23-26 July, 2013

[Education in Optics and Photonics "ETOP 2013"](#)

Porto, Portugal

Contact: Manuel Filipe P. C. Martins Costa, phone: 00351967642732, mfcosta@fisica.uminho.pt

1-13 September 2013

[First African Summer School on Optics and Applications to Sustainable Development](#)

Tunis, Tunisia

Contact: Mourad Zghal, phone: (+216) 71857000, fax: (+216) 71856829,

mourad.zghal@supcom.rnu.tn

16-19 September 2013

Information Photonics 2013,

Warsaw, Poland

Contact: Marian Marciniak, phone: +48 22 5128715, fax: +48 22 5128715,

marian.marciniak@ieee.org

18 – 21 September 2013

[The Eleventh International Conference on Correlation Optics "Correlation Optics'13"](#)

Chernivtsi, Ukraine

Contact: Oleg V. Angelsky, phone: (380-3722)44730, fax: (380-3722)44730, angelsky@itf.cv.ua

27 - 30 October 2013

[ICO Topical Meeting: 18th Microoptics Conference \(MOC'13\)](#)

Tokyo, Japan

Contact: Tomoyuki Miyamoto; phone: +81-45-924-5059; fax: +81-45-924-5059;

tmiyamot@pi.titech.ac.jp

Draft of the report prepared by ICO Secretary, Angela Guzman, 9/17/2013.

Final report prepared by ICO President, Duncan T. Moore, 9/18/2013

AC.2.

Report of Affiliated Commission AC.2 for 2012-13
submitted by Beverly K. Berger, Secretary

The principal event of the year for the International Society on General Relativity and Gravitation (AC2) was the triennial GR conference. GR20 was held in July 2013 at the University of Warsaw jointly with Amaldi10 (in the Amaldi series organized by GWIC and sponsored by IUPAP via AC2). There were 845 registered participants. Sponsorship from IUPAP for both meetings, and AC2's own limited funds, assisted some of these participants. As usual, the conference had plenary talks in the morning, covering the whole field of AC2's (and GWIC's) interests. In the afternoons there were parallel contributed papers and poster sessions. There were 20 plenary talks (4 of the speakers being women) and 23 parallel sessions (4 of the chairs being women). A book containing abstracts of all submissions was circulated. The abstracts of all talks and posters and the slides from the plenary talks are available on the conference website (<http://gr20-amaldi10.edu.pl>). Proceedings will be published by *General Relativity and Gravitation*, AC2's journal.

During the meeting, the first annual IUPAP General Relativity and Gravitation Young Scientist Prize was presented to Lisa Barsotti (LIGO Lab, MIT). While subsequent prizes will be awarded and announced annually, the formal presentations will take place at the triennial GR meetings. Through the generosity of Abhay Ashtekar, all winners will receive a travel grant to enable attendance at the meeting. The triennial Ehlers and Bergmann-Wheeler Prizes (for the best PhD theses in classical and quantum gravity respectively) were presented to Aseem Paranjape (ETH Zurich) and Aron Wall (UC Santa Barbara). The annual GWIC thesis prize (for which AC2 acts as fund-holder) was presented to Paul Fulda (Florida). The Hartle Prizes for student presentations at the meeting were awarded to Majd Abdelqader (Queens U, Canada), Valentina Baccetti (Victoria U, Wellington), Christopher Berry (Cambridge), Sydney Chamberlin (U Wisconsin, Milwaukee), Stephanie Erickson (Southampton), Oliver Gerberding (Albert Einstein Inst.), Lisa Glaser (Niels Bohr Inst.), Gavin Hartnett (UC Santa Barbara), Giuliana Russano (Trento), and Antonia Zipfel (Erlangen-Nurnberg). The Chandrasekhar Prizes for postdoctoral presentations at the meeting were awarded to Alexandre Le Tiec (Maryland), Charles Melby-Thompson (Tokyo), Eric Perlmutter (Cambridge), and John Veitch (Nikhef). Regrettably, the funding foundation FORTH (Greece) was forced by financial considerations to withdraw its support for AC2's Xanthopoulos Prize, which has been discontinued until further notice. The Society also awarded Fellowships to Yvonne Choquet-Bruhat, Nathalie Deruelle (Paris), George Ellis (Capetown), Eanna Flanagan (Cornell), Stefan Hollands (Cardiff), Werner Israel (Victoria), Balasubramanian Iyer (Raman Inst.), Luis Lehner (Perimeter), Ezra Newman (Pittsburgh), Peter Saulson (Syracuse), Bernard Schutz (AEI), Masaru Shibata (Kyoto), Tarun Souradeep (IUCAA), Takahiro Tanaka (Kyoto), and Robert Wald (Chicago).

AC2 sponsored its first event for representatives of our national organizations which range in character from mailing lists to independent societies. Many are groups within larger physics societies. The representatives presented brief summaries of their organizations. Discussions centered on common issues and possible future joint

activities. Representatives from organizations in Australasia, Canada, China, Germany, India, Japan, Poland, Russia, South Africa, Spain, UK, and USA participated while those from Greece sent comments which were presented to the group. Efforts are already underway to continue the communications among these organizations and with AC2.

The Commission itself (alias the Society's Committee) held 3 meetings during GR20. IUPAP support for Commission meetings was used to enable a number of less well-funded members, in particular IUPAP representatives, to be present. The first meeting reviewed the previous three years' activities and included reports from the editors of the Society's journal, from GWIC, newly reconstituted as WG11, from IUPAP C&CC meetings, and from its information website <http://hyperspace.aei.mpg.de/>. One topic of discussion was the status of AC2's review volume to celebrate the 2015 centennial of general relativity. The volume, edited by A. Ashtekar et al, will be published by Cambridge University Press. The component chapters are currently in progress by a distinguished list of authors. The second meeting was to hear bids for the site of the next meeting. It was agreed that GR21 will be held in New York City in July 2016. This recommendation was accepted by the General Assembly of the Society, which also elected new officers and committee members in accordance with the constitution. Gary Horowitz became President, Beverly Berger was reelected as Secretary, while the previous president, Malcolm MacCallum, automatically became Deputy President. The Assembly also reviewed membership, finance and administration and heard the reports from the journal, GWIC, IUPAP, and Hyperspace.

The third committee meeting was to discuss future plans. AC2 is exploring suitable ways to mark the centennial. Heavy emphasis will be placed on coordination with the national organizations. The AC2 website will provide links to national events. Other activities such as a worldwide series of talks on 25 November 2015, the centennial of Einstein's final lecture introducing GR, are under consideration.

By a long-standing agreement, IUPAP appoints four members of the AC2 committee, each for a six-year term, two changing after every GRn conference. AC2 itself nominates possible IUPAP members, seeking, in doing so, to improve geographic, subject and/or gender balance among its members. The two members retiring in 2013 are Nigel Bishop (South Africa) and Yongge Ma (China). The continuing IUPAP members are Nadja Magalhaes (Brazil) and David McClelland (Australia). AC2 proposes as the new IUPAP members Rong-Gen Cai (China) and Sharon Morsink (Canada).

AC.3.

**Report from AC3 International Commission for Acoustics (ICA) to IUPAP
C&CC Meeting in Geneva, Switzerland October 2013**

1. ICA Governance The ICA comprises the acoustical societies from 47 member countries and our most recent members have been acoustical societies in Israel and Nigeria. Both of these societies confirmed their membership of ICA at the time of national conferences. There are 8 international affiliate organizations which themselves have individual members distributed across the world and also organize international conferences every one or two years.

The ICA has been reviewing the governance for some years with a view to a structure that better allows for representation throughout the membership. The revisions to the by laws, which involve a balance of dedicated seats from the three main geographical regions plus open seats on the 15 member board was accepted at the 2013 General Assembly with voting effective immediately. The benefit of the new governance was immediately obvious from the number of nominees for the positions which was greater than in previous years.

The new board effective 1 October 2013 comprises representatives from the following countries: Australia, China, Germany, Canada and Spain in the executive, and Brazil, Denmark, France, Italy, Japan, Korea, Poland, Slovakia, UK and USA. It is also relevant to note that there are 3 females on the board with one being the President.

2. ICA Congress The major activity for the ICA is the congress held every 3 years. The last was held in Sydney, Australia in 2010 which was followed by the ICA held in Montreal, Canada in mid 2013. This 5 day congress was a joint undertaking between the Canadian and US acoustical societies and with 2300 registrants, over 1600 technical papers, and 49 Exposition booths, ICA 2013 was one of the biggest meetings in acoustics ever. The statistics show that 25% of the participants, 25% of the general organising committee and 9% of the technical organising committees were female. The next ICA will be held in Argentina in 2016.

3. Early Career Awards and Young Scientist Grants The ICA allocates the majority of its annual budget to encourage acoustics activities. The prestigious "ICA Early Career Award" was presented at the ICA Congress to Tapio Lokki from Finland, who presented a plenary lecture on "Sensory evaluation of concert hall acoustics". With additional support from the American Acoustical Society, 30 "Young Scientist Conference Attendance Grants" were awarded to assist the participation by young researchers in the congress. There was an overwhelming number of applications for this support in 2013 and the selection process is being reviewed for the future ICA.

4. Symposium Support Annually, the ICA provides support for specialist symposia which provide opportunities for those working in particular areas of acoustics to meet. The guidelines for selection require some international involvement and there is priority for developing countries. The meetings supported for 2013 include:

- Acoustics 2013 New Delhi (Indo-French Conference), November 10 - 15 (New Delhi, India)
- International Symposium on Room Acoustics (ISRA), June 9-11 (Toronto, Canada)
- European Symp Environmental Acoustics and Noise Mapping, October 1 (Valladolid, Spain)
- Winter School on Therapeutic Ultrasound, March 17-22 (Les Houches, France)

5. International Year of Sound The ICA is undertaking the initial steps towards an International Year of Sound in 2019 and looks forward to the support from IUPAP.

6. IUPAP Conferences At the current time from the IUPAP site the *only* meetings that are listed under each organization are those which have been approved by IUPAP. So the implication is that there is no activity for the ICA which is clearly not the case. We again request that IUPAP implements that on the "Meetings" webpage for each commission/affiliate commission additional text saying that those meetings listed below are only those that have been directly supported/endorsed by IUPAP and give the commission/affiliate commission web page for details of other activities.

Marion Burgess
ICA Secretary General 2008-2013
ICA President 2013-2016

AC.4.

International Union of Pure and Applied Physics (IUPAP)
Affiliated Commission AC-4: Medical Physics
[International Commission on Medical Physics Committee, IComMP]

Fridtjof Nüsslin, Chair

Report on Activities from Sept-2012 to Oct-2013

Background

The International Organization for Medical Physics (IOMP) represents over 18,000 medical physicists worldwide and has 83 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 physics and promoting the highest quality medical services for patients.

Medical Physics is a branch of Applied Physics that applies scientific principles, methods and techniques in practice and research for the prevention, diagnosis and treatment of human diseases with the specific goal of improving human health and well-being. The profession Medical Physicist has been recognized by the International Labor Organization (ILO) in 2010 as a professional group listed in the ILO classification system ISCO-08 under '*Physicists and Astronomers*'. To strengthen Medical Physics science within IOMP and to link IOMP to IUPAP the International Commission on Medical Physics (IComMP) has been established which has been approved as IUPAP Affiliated Commission AC-4.

Membership of AC-4

IOMP Officers:

Kin Yin Cheung (President IOMP)
Slavik Tabakov (Vice-President)
Fridtjof Nüsslin (Past-President IOMP, IComMP/AC-4 Chair)
Madan Rehani (Secretary General IOMP)
Anchali Krisanachinda (Treasurer)

IOMP Committee Chairs

William Hendee (Science, SC)
John Damilakis (Education & Training, ETC)
Raymond Wu (Professional, PRC)
Tae Suk Suh (Publication, PC)

Associate Members from IUPAP Commissions:

Kenichi Yoshikawa (Chair C6, Biological Physics)
Paulo Murilo de Castro Oliveira (C13, Physics for Development)
Robert Lambourne (C14, Physics Education)

3 external scientists co-opted by IComMP:

to be elected at the AC 4 meeting 1st Sept 2013 in Brighton / UK

Activities

1. Mission and Objectives revised:

Objectives of AC 4:

- (1) to promote medical physics in its scientific and professional aspects in the physics community by interaction with the IUPAP commissions,
- (2) to specifically link to the C6 commission "Biological Physics",
- (3) to apply for support of the ICMP congress series,
- (4) to participate in the IUPAP Young Scientist Award program

Mission of AC 4:

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.

2. International Conference on Medical Physics (ICMP13):

This year the IOMP is celebrating its 50th anniversary. Therefore the ICMP is to be held close to its birth place Harrogate in the UK, from 1st – 4th Sept 2013 in Brighton (<http://www.icmp2013.org/>). The theme of the conference is NEW HORIZONS – GLOBAL AND SCIENTIFIC. The program covers the whole spectrum of subjects medical physicists and engineers are engaged in, it is a showcase of the innovative power of the medical physics community.

3. AC 4 meeting in Brighton:

The opportunity of the ICMP13 which is attended by a majority of commission members is used to hold a business meeting.

4. Joint Symposium AC 4 & C 6 in Brighton:

Incorporated in the program of the ICMP13 is a symposium “From Molecules to Life – Approaches of Biological Physics and Medical Physics in Cancer” which is jointly organized by the AC-4 (F.Nüsslin) and the C6 (Biological Physics, Chair Kenichi Yoshikawa). The objectives of the symposium are to understand the cross linking of biological & medical physics concepts applied in the diagnosis and treatment of cancer, and to explore perspectives of joint research activities in biological physics and medical physics.

5. Young Scientists Award 2012 & 2013

The winners of the IUPAP Young Scientist Award have been selected according to the rules of the IOMP Awards & Honors Committee (Chair Tomas Kron). The awardees are: Magdalena Stoeva (2012) and Ferdinand Schweser (2013). The citation for the certificate reads:

Dr. Magdalena Stoeva, Associate Professor in the Medical University, Plovdiv, Bulgaria, is awarded the IUPAP Young Scientist Medal for her significant contributions to international Medical Physics journals and Medical Physics e-Learning.

Dr. Ferdinand Schweser, Research Associate in the Medical Physics Group at the Friedrich Schiller University, Jena, Germany, is awarded the IUPAP Young Scientist Medal for his significant contributions to medical physics research into Magnetic Resonance Imaging.

6. International Day of Medical Physics:

With the intention to promote the medical physics in the public the *International Day of Medical Physics* has been created as an annual event which in remembrance of the birthday of Marie Sklodowska Curie (7.11.1867) is to be celebrated every year at the 7th November. The national and regional organizations of the IOMP are challenged to organize events, lectures, symposia mainly aiming to attract the science community at large and the public.

7. Medical Physics International – New web IOMP Journal:

IOMP is very pleased to announce release of the First issue of *Medical Physics International*, the official Journal of IOMP. This journal is web based and readers are referred to http://mpijournal.org/content_currentissue.aspx

Munich August 16, 2013

Fridtjof Nüsslin
Chair AC-4
Past-President IOMP

Reports from IUPAP Working Groups, for October meeting, 2013

Collected by Cecilia Jarlskog

The reports here below are from

- WG.1 - International Committee for Future Accelerators (ICFA)
- WG.5 - Women in Physics
- IUPAP Gender Champion, Marcia Barbosa
- WG.7 - International Committee on Ultrahigh Intensity Lasers (ICUIL)
- WG.9 - International Cooperation in Nuclear Physics (ICNP)
- WG.11 - Gravitational Wave International Committee (GWIC)
- WG.12 - Energy
- IUPAC - IUPAP Joint Working Group

We have two more Working Groups:

WG.2 - Communication in Physics;

WG.10 - Astroparticle Physics International Committee (APPIC).

The reports from these groups will arrive later. The timing was not optimal for WG.2, and in the case of WG.10, the group is being formed, a process which will take some time. A very brief status report on WG.10 is included at the end of this report.

WORKING GROUP 1

Activities of the International Committee for Future Accelerators (ICFA)

September 2012 - September 2013

Roy Rubinstein - ICFA Secretary

1. Introduction

During the past year there were two ICFA meetings: on 21/22 February 2013 at TRIUMF, and on 26 June 2013 during Lepton-Photon 2013 in San Francisco. At the February meeting, which is the major annual ICFA meeting, directors of the world's leading particle physics laboratories were also invited, as has been the practice for the past ~ 2 decades. This allows a much more extensive discussion of the current and future status of particle physics.

The present ICFA membership is given in Appendix I.

2. Linear Collider

The Global Design Effort (GDE) and Research Directorate completed their mandates by producing the draft Technical Design (TDR) and Detailed Baseline Design (DBD) reports late in 2012. This was followed by a technical review of the International Linear Collider (ILC) accelerator and detector designs by an augmented Project Advisory Committee in December 2012. In February 2013, there was an international review of ILC accelerator costs. Changes recommended by these two reviews were incorporated into the final documents, which became publicly available at a world-wide "ILC Event" on 12 June 2013.

The International Linear Collider Steering Committee was set up in 2002 by ICFA to facilitate the global collaborative effort on the ILC. In February 2013, this committee went out of existence, and was replaced by the Linear Collider Board (LCB), which will oversee the activities of the Linear Collider Collaboration (LCC), comprising the ILC, the CLIC project, and the detectors for these colliders. ICFA produced a Mandate for the LCB, and has appointed its members. Lyn Evans was appointed Linear Collider Director, with Hitoshi Murayama as Deputy Director, Michael Harrison as ILC Associate Director, Steinar Stapnes as CLIC Associate Director, and Hitoshi Yamamoto as Associate Director for Detectors. Brian Foster and Harry Weerts have joined the LCC as Regional Directors, with an Asian Regional Director still to be appointed. Among the LCC goals are to support construction of a staged ILC in Japan.

3. ICFA Seminar

ICFA Seminars are held every three years, with the most recent being at CERN in October 2011, and the next one at IHEP/Beijing on 27-31 October 2014; these four-day Seminars allow for an international exchange of information primarily on plans for future facilities in the field of particle physics. Typical attendance is 150-200 invited leading members of the fields of accelerator and particle physics, together with leaders from related topics such as astroparticle physics, scientific computing, outreach, etc. Representatives of government funding agencies are also invited.

4. FALC

The Funding Agencies for Large Colliders (FALC) will produce a report on GDE activities over the past several years which have led to the ILC design, and how useful such a mechanism is for a future large global science project.

5. Neutrino Facilities

ICFA created a Panel on neutrino facilities, limited to an accelerator-based program, but which will also look at related non-accelerator based neutrino activities; a charge for this Panel was produced.

6. ICFA Chair

Pier Oddone retired as Fermilab Director and ICFA Chair on 1 July 2013. ICFA agreed that the incoming Fermilab Director, Nigel Lockyer, would serve as ICFA Chair for the remainder of Oddone's term, which ends on 31 December 2014.

7. Reports

Reports were presented to ICFA meetings on the activities of ICFA's Panels; the ICFA/ICUIL collaboration on particle acceleration by lasers; and of each country and lab represented at the meeting. There were also reports given on InterAction (the particle physics communicators' organization).

Appendix I

ICFA MEMBERSHIP

September 2013

CERN Member States

R. Heuer
M. Krammer
J. Mnich

USA

N. Lockyer (Chair)
D. MacFarlane
I. Shipsey

Japan

T. Mori
A. Suzuki

Russia

A. Bondar
S. Ivanov

Canada

W. Trischuk

China

Y. Wang

Other Countries

G. Alves
A. Roy
V. Tsakanov

C11

H. Aihara

(Secretary: R. Rubinstein)

WORKING GROUP 5

Report on the activities of the IUPAP Working Group on Women in Physics, 2012-2013

The Working Group on Women in Physics was formed by resolution of the Atlanta IUPAP General Assembly with the following mandate:

- to survey the present situation and report to the Council and the liaison committees
- to suggest means to improve the situation for women in physics.

One of the main activities of the Working Group is the organization of the International Conferences on Women in Physics (ICWIP) that take place once every three years. At these conferences experiences and data from a large number of countries are exchanged. During the last year the editing of the 2011 ICWIP Proceedings was finalized. The proceedings are now available at: <http://proceedings.aip.org/resource/2/apcpcs/1517/1?isAuthorized=no>

During 2012 we received proposals from Canada and Ecuador to hold the forthcoming 2014 International Conference on Women in Physics. Taking into account that the previous conferences took place in Europe, Latin America, Asia and Africa we decided to have it in Canada. In preparation for the conference we had a Working Group meeting in Waterloo, Canada, in June 2013. On that occasion, we visited the premises where the conference is going to be held and discussed the conference organization. In particular, the conference is being co-organized by the IUPAP Working Group on Women in Physics and the Canadian Association of Physicists with the collaboration of the Perimeter Institute (<http://www.perimeterinstitute.ca/>). The conference will be held from August 6 through August 8, 2014, at the Wilfrid Laurier University (<http://icwip2014.wlu.ca/>). It will include 6 plenary talks, 5 Workshops, outreach activities, a country poster session where country teams will present information on the current situation of women physicists and a scientific session where participants will present the results of their scientific research. Regarding plenary talks, the following speakers have confirmed their participation: Fabiola Gianotti (former spokesperson of the ATLAS experiment at CERN) from Italy, Silvia Torres-Peimbert (President elect of the International Astronomical Union) from Mexico, Sabine Stanley (Professor at the University of Toronto) from Canada and Tsai-Chien Chiang, author of the book *Madame Chien-Shiung Wu: The First Lady of Physics Research* (see e.g., <http://cerncourier.com/cws/article/cern/51556>) who will talk about Madam Wu. In connection to this activity, the publisher of the book has agreed to give out 300 copies of it to attendants of the conference. Regarding the conference organization, we are now in the process of raising funds to support the travel of attendants from developing countries so as to guarantee that as many countries as possible are represented at the conference. In particular, we are requesting financial support from IUPAP in a separate letter. This support will be very important given the financial restrictions that most countries are facing. We are also communicating with previous country team members so that they put together teams that can attend the conference, encouraging them to apply for funds in their own countries or regions. Finally, we are in the process of organizing the workshops of the conference that will cover the following topics: Gender Studies, Physics Education, Improving the workplace, Professional

Development and Leadership, Cultural perception and bias/ Science Practice and Ethics.

Another important activity of the Working Group is to give out grants to fund the travel expenses of women physicists from developing and Eastern European countries that are willing to attend scientific conferences and schools. In 2013 a new call for Travel Grant Applications was launched. Sixty-five applications were received and 15 Travel Grants were awarded (for the list of awardees, please see <http://wgwip.df.uba.ar/iupap-grant-2013.htm>).

We contacted the American Institute of Physics regarding the analysis of the Global Survey of Physicists that was answered by about 15000 physicists from around the world. So far, the data collected has been analyzed partially (see e.g., http://www.physicstoday.org/resource/1/phtoad/v65/i2/p47_s1?bypassSSO=1). For our Working Group knowing what were the differences across regions was of particular interest. After contacting Rachel Ivie from AIP she finally found a way to finalize this analysis, which will be done by the end of the year with funds from AIP. Having a thorough and complete analysis of this data will be most helpful to advance the agenda of our Working Group. In particular, it will help us suggest ways to improve the situation of female physicists and increase the number of women in the field.

We are still in the process of looking for people that can join the Working Group who are from regions that are under-represented in the group. We have also made some decisions on how to replace some of our members that have been part of the Group for a relatively long time. In that regard, we have invited Prof. Kwek Leong Chuang from Singapore who has accepted to join the group during ICWIP replacing Jin-Hee Yoo and Youngah Park from Korea.

Finally, we would like to mention that none of our activities would be possible without the continuous help of Jacquelyn Beamon-Kiene.

Silvina Ponce Dawson, Argentina (chair), silvina@df.uba.ar

Igle Gledhill, South Africa (vice-chair) igledhil@csir.co.za

Jacquelyn Beamon-Kiene (secretary and financial manager) (beamon@aps.org)

Ching-Ray Chang, China, Taipei crchang@phys.ntu.edu.tw

Gillian Butcher, UK, gib@star.le.ac.uk

Manling Sui, China, Beijing mlsui@bjut.edu.cn

Renee Horton, rhorton@mint.ua.edu

Shobhana Narasimhan, India, shobhana@jncasr.ac.in

Youngah Park, Korea, youngah@mju.ac.kr

Lilia Meza Montes, Mexico, lilia@ifuap.buap.mx

Jin Hee Yoon , Korea, jinyoon@inha.ac.kr (associated member)

Report from IUPAP Gender Champion

Women in Physics

I- 2012 Conferences

| | | | |
|-----|--|---|--|
| AC2 | Thirteenth Marcel Grossmann Meeting | Speakers: 2/33 Attendees:125/879 | Speakers: 6% Attendees: 14% |
| C4 | E1.15 Cosmic Ray Origins: the Viktor Hess Centennial Anniv | Speakers:1/? Attendees: 18/120 | Speakers: ? Attendees: 15% |
| C4 | 100 Years Cosmic Rays Anniversary | Speakers:3/33 Attendees: 12/98 | Speakers:9% Attendees: 12% |
| C5 | QFS2012 | Speakers: 3/64 Attendee: 26/267 | Speakers:4.7% Attendees: 9.7% |
| C8 | Int. Conf. Phys. Of Semiconductors | Speakers:7/67 Attendees:198/1163 | Speakers: 10% Attendees: 17% |
| C11 | NEUTRINO2012 | Speakers: 6/66 Attendees:90/623 | Speakers:9% Attendees: 14.4% |
| C11 | The 36th International Conference on High Energy Physics | Speakers: 92/? Attendees: 115/715 | Speakers:? Attendees: 16% |
| C12 | EMIS 2012 | Speakers: 4/24 Attendees:23/175 | Speakers: 17% Attendees: 13% |
| C12 | Nuclei in the Cosmos XII | Speakers: 10/38 Attendees:80/272 Chair: Woman | Speakers: 26% Attendees: 30% |
| C12 | The 20th International IUPAP Conference on Few-Body Problems in Physics (FB20) | Speakers: 9/135 Attendees: 38/303 | Speakers: 7% Attendees: 12% |
| C12 | Quark Matter 2012 | Speakers: 7/? Attendees:72/689 Chair:Woman | Speakers: ? Attendees: 10% Chair:Woman |
| C13 | SPECTRA 2012 | Speakers: 10/45 Attendees:30/124 | Speakers: 22% Attendees: 24% |
| C15 | Physics of Highly-Charged Ions | Speakers: 10/41 Attendees: 39/254 | Speakers: 24% Attendees: 15% |
| C16 | Joined EPS Plasma Physics and ICPP | Speakers: 7/9 Attendees: 81/792 Chair: Woman | Speakers: 7% Attendees: 10% |
| C18 | International Congress on Mathematical Physics ICM | Speakers: 6/63 Attendees: 37/358 | Speakers: 9% Attendees: 10% |
| C18 | International Symposium on Non-linear Acoustics | Speakers: 1/6 Attendees: 8/130 | Speakers: 17% Attendees: 6% |
| C19 | 26 th Texas Symposium on Relativistic Astrophysics | Speakers: 6/24 Attendees: 25/150 | Speakers: 25% Attendees: 17% |
| C20 | Conference on Computational Physics | Speakers: 15 /85 Attendees: ? /404 | Speakers: 17% Attendees: |

Suggestions:

- Please include the total number of invited.
- Visa - IUPAP could intervene as had done in the past.

II- News on the IUPAP Working Group on Women in Physics

II-1 -5th IUPAP International Conference on Women in Physics

4-6 August 2014, Wilfrid Laurier University, Waterloo, Canada

<http://icwip2014.wlu.ca/>

<http://wipwip.df.uba.ar/>

II- 2 - Proceedings of the 4th IUPAP International Conference on Women in Physics

<http://proceedings.aip.org/resource/2/apcpcs/1517/1?isAuthorized=no>

II-3 - Global Survey

Women in physics: A tale of limits

Rachel Ivie and Casey Langer Tesfaye

http://www.physicstoday.org/resource/1/phtoad/v65/i2/p47_s1?bypassSSO=1

Suggestion:

- Communication between the Commissions and the Working Group
- Commissions help on advertising the 5th IUPAP ICWIP

III- Commissions

| | | |
|----|---|-----------------------|
| C1 | Cecilia Jarlskog : 1/2 | Female Members: 50% |
| C2 | Bodil Holst : 1/14 | Female Members: 7% |
| C3 | Beate Schmittmann Julia Yeomans : 2/16 | Female Members: 12.5% |
| C4 | Victoria Fonseca Eun-Suk Seo: 2/14 | Female Members: 14% |
| C5 | Karen Hallberg: 1/17 | Female Members: 6% |

| | | |
|-----|--|-----------------------|
| C6 | Aihua Xie Rita Maria Cunha de Almeida Silvia Morante Galina Riznichenko :4/15 | Female Members: 27% |
| C8 | Belita Koiller Pascale Senellart: 2/16 | Female Members: 12.5% |
| C9 | Ingrid Mertig Julie Borchers: 2/18 | Female Members: 11% |
| C10 | J. Raynien Kwo Laura Greene : 2/15 | Female Members: 13% |
| C11 | Heidi Schellman: 1/19 | Female Members: 5% |
| C12 | Alinka Lepine-Szily Dominique Guillemaud-Mueller Undraa Agvaanluvsan: 3/17 | Female Members: 17% |
| C13 | Farouz Malek Carmen Cisnero Dipali Bhartt-Chauhan Alinka Lepine-Szily: 4/18 | Female Members: 22% |
| C14 | Zulma Gangoso, Jayashree Ramadas Sile Nic Chormaic Lotten Glans Priscilla Laws: 4/17 | Female Members: 23.5% |
| C15 | Katharine Gebbie Danielle Dowek Pavla Čapková : 3/14 | Female Members: 21% |
| C16 | Danielle Carati Alix Gicquel Lin-Ni Hau : 3/16 | Female Members: 19% |
| C17 | Deborah Kane Christina Masoller : 2/16 | Female Members: 12.5% |
| C18 | none | Female Members: 0% |
| C19 | Victoria Kaspi Grazina Tautvaisiene Chryssa Kouveliotou Maria Victoria Trimble, Virginia; 5/17 | Female Members: 29% |
| C20 | Joan Adler Constantia Alexandrou: 2/17 | Female Members: 12% |

WORKING GROUP 7



Annual Report to IUPAP September 2013

Submitted by Terry Kessler

www.ICUIL.org

ICUIL Activity Overview

ICUIL Board

The International Committee on Ultra-High Intensity Lasers continues to be engaged with the growth and vitality of the whole international field of ultra-high intensity lasers. Our goals are to provide a venue for discussions, among representatives of high-intensity laser facilities and members of user communities, on international collaborative activities such as the development of the next generation of ultra-high intensity lasers, exploration of new areas of fundamental and applied research, and formation of a global research network for access to advanced facilities by users. As summarized in the highlights of this report, ICUIL has been very active in promoting collaborations required to design and build high-intensity laser infrastructures for the advancement of the international physics community.

Chair
Toshiki Tajima

Co-Chairs
Chris Barty
Alexander Sergeev

Secretary
Terry Kessler

ICUIL Biennial Conferences

Treasurer
Tsuneyuki Ozaki

ICUIL has a decade-long history of promoting unity and coherence in the field by convening conferences dedicated to ultra-high intensity lasers and their applications. The 6th biennial ICUIL conference will be held **September 16-21 in Goa, India** and will be hosted by the **Tata Institute of Fundamental Research**, with R. Kumar serving as the conference chairman. It will be located in the city of Goa, on the west coast of India, about 600 km south of Bombay. Attendees will be able to visit the Tata Institute of Fundamental Research (TIFR), the Bhabha Atomic Research Centre (BARC) and the Raja Ramanna Centre for Advanced Technology (RRCA). TIFR has an operational 100TW laser system focusing on basic intense laser science and applications while RRCAT has a 150 TW system for laser particle acceleration. BARC will soon have a 200 TW laser system.

2013 Annual General Assembly (GA) Meeting

A twelve member quorum was reached at the annual GA meeting held in Livermore CA, US on July 18th. The agenda for the meeting consisted of member rotation, the 2014 ICUIL Conference, website development, the world map, fund raising, and laser infrastructure initiatives and collaborations such as ELI, XCELS, and IZEST. The role of educational institutions in addressing the high demand for individuals trained in laser science, engineering, and technology was discussed. Bi-monthly teleconferences continue to be effective in maintaining progress in each of these activities.

ICUIL Member Rotation

Several of the current ICUIL members will have completed two terms of service by 2016 and will be required to step down according to the bylaws of the ICUIL charter. A phased member rotation in 2014 is being planned to provide continuity. Member rotation has been carried out, in small steps, to maintain continuity and ensure that ICUIL continues to advance while maintaining balance both geographically and between the various high



field science working groups of IUPAP.

ICUIL Newsletter

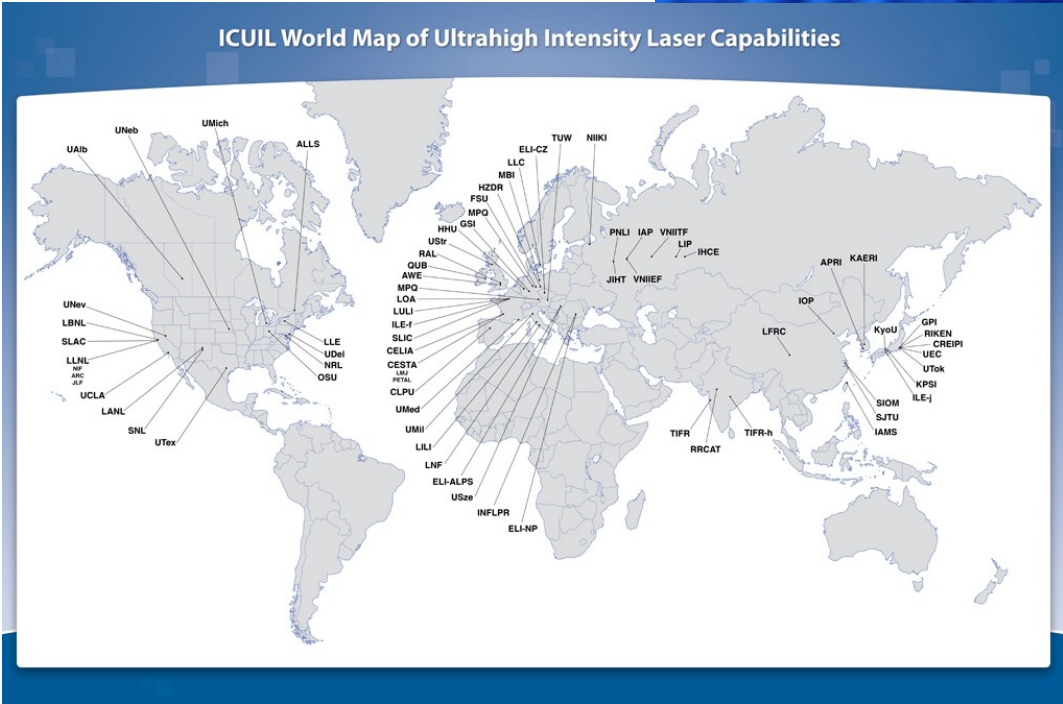
The fourth ICUIL Newsletter (Volume 4) was sent out to the high intensity laser community on May 2013 and is also available at the ICUIL website. The chief editor, C. Labaune, managed the illustration and publication resources to distribute an eight-page newsletter to hundreds of readers, highlighting the major laser construction and laser science projects within the HIL community, major conferences, and related workshops. ICUIL's goal is to continue publishing an annual newsletter.

Fund raising

ICUIL has continued its corporate support program to afford maintenance of the ICUIL website, publish an annual newsletter, and support biennial conferences. The remaining funds are being targeted towards support of new outreach activities including student competitions held at the biennial conferences.

ICUIL Website

One of the features of the ICUIL website is an interactive world map that highlights the high intensity laser facilities around the world as shown below. A survey of the worldwide laser community has been conducted by ICUIL in an effort to provide an accurate accounting of all existing and planned ultrahigh intensity laser facilities that are capable of reaching intensities above $10E19$ W/cm². The map (shown below) exists on the ICUIL web site both in downloadable, high quality static form and also as a dynamic interactive map based on an underlying Google-Maps engine that has been licensed by the Lawrence Livermore National Laboratory for this purpose. The data base generated in the creation of the ICUIL world map reveals that ICUIL related activities are growing worldwide at an incredible pace. In 2009 the sum of the peak power from all existing ICUIL related facilities was 12 PW. Survey data suggests that by 2015 this number will be over 100 PW.



2013 ICUIL Membership

| | | |
|-------------------|-------------|----------------|
| Toshiki Tajima | Chairman | International |
| Chris Barty | Co-Chairman | United States |
| Alexander Sergeev | Co-Chairman | Russia |
| Terry Kessler | Secretary | United States |
| Tsuneyuki Ozaki | Treasurer | Canada |
| Gerard Mourou | | France |
| Hiroshi Azechi | | Japan |
| John Collier | | United Kingdom |
| Dino Jaroszynski | | United Kingdom |
| Thomas Kuehl | | Germany |
| Ravi Kumar | | India |
| Christine Labaune | | France |
| Wim Leemans | | United States |
| Ruxin Li | | China |
| Chang Hee Nam | | Korea |
| Bedrich Rus | | Czech Republic |



Wolfgang Sandner
Heinrich Schworer
Ken-ichi Ueda

Germany
South Africa
Japan

Associate Members (without vote)

Ryosuke Kodama
Jong-Min Lee
Sandro de Silvestri
Nilson Dias Vieira Jr.
Claes-Goran Wahlstrom

Japan
Korea
Italy
Brazil
Sweden



ICUIL Related Science and Technology Highlights

I. ICFA/ICUIL Joint Task Force (JTF)

ICUIL and ICFA have exercised their Joint Task Force (JTF) on future applications of laser acceleration to promote and encourage international collaboration between the accelerator and laser communities. The JTF outlined a roadmap for advancing laser technology to meet the challenge of future accelerators that use or rely on very high-average power lasers. Following two workshops, a document describing the recommended future course of actions was published in the ICFA Newsletter. The laser driven acceleration approach is paving a way to help a variety of high-energy accelerator physics issues such as the future high-energy collider, ion beam sources, electron beam source for FEL, and compact ion beam cancer therapy application. Although the scientific case for the laser based accelerator is compelling, the technological requirements are challenging. One of the most urgent needs for development is an efficient high-average power laser technology. In order to meet these recommendations and challenges, a project called International Coherent Amplification Network (ICAN) between the laser and accelerator communities was launched last year. This network has identified the fiber laser as the primary candidate for achieving highly efficient, high-average power lasers in the future. In an 18-month pilot project funded by the EU, 64 fiber lasers were coherently combined to form one laser beam. An article describing the extension of this laser technology for accelerator physics appeared in *Science*, Volume 341, on August 16, 2013.

The EC has launched a new initiative centered at CERN by forming European Network for Novel Accelerators, encompassing a few dozen accelerator and laser institutions worldwide. At the last IPAC2012 meeting in New Orleans a meeting was held with the ICFA Advanced and Novel Accelerator Panel. CERN representatives have expressed interest in the ICAN initiative and would consider providing space for a test facility. A description of where ICAN is positioned within the context of new accelerator techniques was requested by CERN Director General, Rolf Dieter Heuer.

II. Extreme Light Infrastructure (ELI)

Extreme Light Infrastructure (ELI), the world's first international user facility for laser research, was established as an International Association on April 11, 2013 in Brussels, Belgium. The event was attended by representatives from the European Commission and various ELI partner countries. ELI is part of the European Strategy Forum on Research Infrastructures (ESFRI) roadmap for international research infrastructures of high priority for Europe. Based on strong international collaborations it is being constructed in three countries utilizing EC Structural Funds. In the Czech Republic, *ELI-Beamlines* facility will provide a variety of petawatt scale laser capabilities that will enable creation of secondary, laser-driven particle and light sources for basic science and industrial applications. In the Romanian *ELI-Nuclear Physics* facility, two 10 PW lasers are planned to be constructed in conjunction with a world-leading gamma-ray source to investigate a wide range of nuclear science. In Hungary, the *ELI-ALPS* facility will concentrate on the development and applications of intense sources of attosecond laser pulses. With its ultra-intense and ultra-short pulses of light it will create new states of

matter in dense plasmas, probe the structure of vacuum and produce secondary radiation of high-energy photons or particles.

A new legal entity, the *ELI-DC Association*, was created in order to manage and support the implementation of the existing and future ELI research centers and to preserve the pan-European dimension of the overall project. It will also organize the establishment of an international consortium that will be in charge of the future operation of ELI, preferably in the form of a European Research Infrastructure Consortium (ERIC). ICUIL member Wolfgang Sandner is its designated Director General.

III. Exawatt Center for Extreme Light Studies (XCELS)

XCELS is one of the six mega-science projects that were chosen by the RF Government on a competitive basis in 2011. This initiative is analogous to ESFRI in that it requires participation in constructing and exploiting research complexes of foreign partners. A scientific Workshop, “The Laser Ascent to Subatomic Physics and Applications” took place at the French Embassy in Moscow on April 26. Memoranda of collaboration in the area of extreme light between CEA, Ecole Polytechnique and IAP, and between CEA, Ecole Polytechnique and Russian National Nuclear University (MEPHI) were signed during this workshop. It was organized by the Embassy of France in Russia together with the IZEST and the Institute of Applied Physics of the Russian Academy of Sciences. About 70 scientists, from Russia, France, other European countries, China and Taiwan participated in the event and agreed to promote creation of XCELS, IZEST, collaboration between French and Russian research laboratories in the area of extreme light science, application, and technologies and partnership of appropriate laboratories to form consortia capable of performing complementary research.

Construction of the fourth ELI center containing the world’s most powerful subexawatt laser complex is currently pending and represents a common goal with the XCELS project. This cooperation opens up a unique opportunity for EC countries to implement the full ELI project and for Russia to become an equitable partner of the European scientific community. A legal form of Russian participation in the ELI+XCELS alliance may involve an associated membership in the ERIC. On June 19, the second evaluation meeting took place at the EC headquarters in Brussels, where the EC appointed experts, Susana Gota Goldman (CEA) and Wolfgang Sandner (ELI), fully supported the ELI+XCELS alliance.

IV. International Center for Zetta-Exawatt Science and Technology (IZEST)

IZEST, headquartered at the Ecole Polytechnique, will unify a number of exawatt class facilities such as the ELI-Fourth Pillar, the Russian XCELS, as well as possible Japanese and Chinese exawatt lasers. The initial experimental program will be performed by using the most powerful European laser PETAL at the CEA-CESTA in Bordeaux and the Russian Exawatt once completed, but most of the preparatory activities will be carried out in the IZEST-associated laboratories around the world. Almost 30 laboratories in 13 countries have signed a collaboration agreement with IZEST. The second IZEST meeting was held November, 2012 at Strathclyde University, Scotland. The meeting included a presentation from Peter Higgs as a distinguished speaker, and many other prominent speakers. The main objective of the conference was to explore the potential of very high fields available from the next generation of high power lasers and also the potential of combing them with high

energy particle beams from laser-plasma accelerators, for fundamental studies of the structure of matter. The third IZEST meeting was held at the Lawrence-Livermore National Laboratory in July, 2013 to discuss the development of novel exawatt and zettawatt laser technologies and the development of frontier, ultrahigh intensity science and applications. The main mission of the International IZEST center is to position the scientific community behind this proposal to use the laser field to probe the nonlinearity of vacuum.

V. Shanghai Institute of Optics and Fine Mechanics (SIOM)

In China, Ruxin Li from the State Key Laboratory of High Field Laser Physics, is pursuing the challenge of producing laser intensities in the ultra-relativistic regime, where laser pulses with peak power of 10 PW level and beyond are necessary. Laser amplification in Ti: sapphire has led to generation of 1.5PW laser pulses. With successful control over the parasitic lasing, his group obtained a record energy of 72.6 J from a Ti: sapphire of 100mm size, corresponding to a record power of 2PW after the amplified chirped pulse is compressed to 26 fs. This represents an important step forward in the development of ultra-high intensity laser sources based on the scheme of CPA. For the realization of 10PW and beyond, the optical parametric chirped pulse amplification (OPCPA) scheme is a promising alternative approach. In contrast to CPA where the laser energy is gained due to the laser action based on population inversion in laser materials, OPCPA is based on the parametric amplification in nonlinear optical crystals. They demonstrated the highest energy broadband OPCPA at 800nm by using a 80-mm in diameter LiB_3O_5 (LBO) crystal, with an output energy 28.68 J, a bandwidth of 80 nm (FWHM) and a conversion efficiency of 25.8%. After pulse compression, the peak power of 0.61 PW was produced.

VI. Center for Relativistic Laser Science (CoReLS)

In Korea, the Institute for Basic Science (IBS) opened the Center for Relativistic Laser Science. The Korean national nine-year program, Ultrashort Quantum Beam Facility (UQBF) Construction Program, was successfully completed in 2012 and has started an international users' service. The Korean government is now forming a national plan for applied research projects using this facility. When fully installed, IBS will comprise 50 research centers, each of which focuses on a selected research topic in basic science. One of the earliest research centers is the Center for Relativistic Laser Science (CoReLS), which explores the superintense laser-matter interaction. CoReLS's research is focused on the understanding of physics under extreme conditions induced by superintense laser fields. The goal is pursued cooperatively by the five research groups of CoReLS: laser group, low-density laser-plasma group, high-density laser-plasma group, atto science group, and laser-plasma theory group. CoReLS is directed by Prof. Chang Hee Nam who has pioneered the development of advanced femtosecond laser technology and atto science in Korea. Two petawatt beamlines: 1.0 PW and 1.5 PW at 30 fs, the latter being the most powerful femtosecond laser as of 2012, were developed by the UQBF project and led by Prof. Jongmin Lee. Enthusiastic researchers are joining from around the world.

WORKING GROUP 9

Nuclear Physics Research: An International Perspective

Introduction

A working group set up under the auspices of the International Union of Pure and Applied Physics (IUPAP) is taking a forward look from an international perspective at nuclear physics and the facilities it uses. IUPAP was established more than 90 years ago (in 1922) to foster international co-operation in physics. It does this through the activities of a number of commissions for different areas of research, including the Commission on Nuclear Physics (C12), established in 1960. In addition through various commissions working groups were set up with specific mandates. Well known are the International Committee for Future Accelerators (ICFA) formed in 1976 with a link to the Commission on Particles and Fields (C11) and the Working Group on International Cooperation in Nuclear Physics formed in 2005 with a link to Commission C12 (Working Groups WG.1 and WG.9, respectively).

The membership of IUPAP WG.9 was chosen to constitute a broad representation of geographical regions and nations with expertise in the various subfields of nuclear physics, as one would expect for a working group of IUPAP. Its membership consists of the working group's chair, immediate past-chair, and secretary; the chairs and immediate past-chairs of the Asia Nuclear Physics Association (ANPhA), of the Nuclear Physics European Collaboration Committee (NuPECC), and of the Nuclear Science Advisory Committee to the US DoE and NSF (NSAC); the chair of the Latin-America Association for Nuclear Physics and Applications (ALAFNA); the directors of the large nuclear physics facilities (four each from Asia, Europe, and North-America, plus one from South-Africa); and the chair of IUPAP C12. The IUPAP WG.9 working group meets every year just prior to, the Annual General Meeting (AGM) of IUPAP C12. In addition, IUPAP WG.9 has the task to organize the triennial two-day Symposium on Nuclear Science and Nuclear Physics Facilities.

The chief tasks of IUPAP WG.9 are to answer the three specific questions:

- What constitutes nuclear science from an international perspective?
- Which are the facilities that are used to investigate nuclear physics phenomena?
- Which are the scientific questions that need to be addressed at these and future facilities.

The answers to these questions appear in IUPAP Report 41, published in hard copy in 2007 and is posted on the website:

<http://www.triumf.info/hosted/IUPAP/icnp/index.html> ,

However, the document requires regular updating. IUPAP Report 41 contains entries for all nuclear physics user facilities that agreed to submit data. The 92 entries range from smaller facilities with more restricted regional usage to the large nuclear physics

accelerator laboratories with a global users group. The report also contains an overview of the major scientific questions facing nuclear physics today, together with a summary of how these questions are being addressed by the current nuclear physics facilities or how these questions will be addressed by future and planned facilities. There is also a short account of the societal benefits stemming from the basic advances in nuclear physics with its underlying high technology developments and of the energy question of such great importance for the evolution of society.

IUPAP WG.9 is operating following a mandate given by the OECD Global Science Forum, (GSF). In 2008, IUPAP WG.9 gave expert advice to the OECD GSF Working Group on Nuclear Physics. It became apparent that for science policy makers in many countries it is essential to understand how proposals for future large nuclear physics facilities fit within an international context. The OECD report provides a global roadmap for nuclear physics in the current decade in a format suitable to science administrators.

The 2013 Nuclear Science Symposium

In response to the mandate given to IUPAP WG.9 by the OECD GSF a second two-day nuclear science symposium was organized at the Laboratori Nazionali di Frascati, May 31 – June 1, 2013. The symposium provided the opportunity for proponents of nuclear science across the world to learn about and discuss present and future plans for research in nuclear physics, as well as upgraded and new research facilities that will be required to realize these plans. Three half-day presentations were arranged by the executive of IUPAP WG.9.

The presentations at the symposium focused on seven main topics of nuclear physics today:

1. “Can the structure and interactions of hadrons be understood in terms of QCD?”.
2. “What is the structure of nuclear matter?”,
3. “What are the phases of nuclear matter?”,
4. “What is the role of nuclei in shaping the evolution of the universe, with the known forms of matter only comprising a meager 5%?”,
5. “What is the physics beyond the Standard Model?”,
6. “What is the role of nuclear physics in serving society?”,
7. “What is the role of nuclear energy in the global energy question?”.

The presentations are available at

<http://www.triumf.info/hosted/IUPAP/icnp/index.html>

and are briefly summarized below:

- “QCD and Hadronic Nuclear Physics (hadrons and nucleons)”
Since the last symposium in 2010 considerable progress has been made in

elucidating the intricate structure of the nucleon, but there is a wealth of exciting, fundamental questions that need to be addressed in turn.. Experiment, phenomenology, and lattice QCD appear to be working together beautifully. It needs to be emphasized that appropriate investments are needed to exploit the facilities now operating and nearing completion. To further the field an electron-ion collider requires being build and high power computers are necessary for lattice QCD.

- “QCD and Quark Matter”

The higher priority for quark matter research is the full exploitation of the physics potential in colliding heavy ions at the LHC. At lower energies where the highest baryon densities are reached, there are opportunities for a new generation of precision measurements that address central questions about the QCD phase diagram. The complementarity of LHC and RHIC is an essential resource in efforts to quantify properties of the Quark-Gluon Plasma.

- “Electroweak Physics and Fundamental Symmetries”

Fundamental symmetry tests probe new physics at the PeV scale and already severely constrain the flavor and CP structures of any scenario addressing the hierarchy question. If a positive signal is found it would not point to a specific theory or model. It is therefore of paramount importance to pursue as many different types of symmetry tests as possible [B, L, LF, CP, P conservation] and then within each type of symmetry test study various kind of processes, like $\mu \rightarrow e \gamma$, $\mu \rightarrow 3e$, $\mu - e$ conversion, and where possible deduce final state information, like spin, flavor, energy. The subfield is moving towards being the primary search vehicle for new physics if nothing (except for the Higgs) is discovered at the LHC.

- “Low Energy Nuclear Structure and Nuclear Astrophysics”

The study of atomic nuclei provides the connection between the fundamental building blocks of matter, complex nuclear systems, and the cosmos. The last three years has seen considerable progress in the physics of nuclei and the interconnection with nuclear astrophysics. Existence of the super heavy elements with atomic numbers between 112 and 118 has been found and confirmed. Great progress has been made in a comprehensive and validated theory of nuclei from the light nuclei to medium-weight nuclei to heavy nuclei.

- “Nuclear Physics Serving Society”

Nuclear technology, nuclear processes, and nuclear data play an essential role throughout modern society. The use of radioactive nuclei for diagnostic purposes or treatment purposes is prevalent in and essential and critical for modern medicine.

- “Nuclear Energy”

Nuclear energy is still perceived as a clean and economical source of energy, but a new approach to safety and sustainability is needed. Developing countries have taken the lead role in the construction of new nuclear power plants. The future of the nuclear fuel cycle is a most important issue. Accelerator driven systems for power generation and nuclear waste management has a major window of opportunity. But economics will drive the future of nuclear energy and nuclear waste management.

- “Nuclear Physics Facilities”

The present and near completion nuclear physics facilities plus those presently under construction give great promise to answer the questions outlined in the above -listed presentations. For hadrons and nucleons and QCD – Jlab [12 GeV], J-PARC, and FAIR. For quark matter – LHC-ALICE, RHIC, FAIR. For nuclear structure and nuclear astrophysics – FRIB, RIKEN-RIBF, GANIL-SPIRAL2, LNL-SPES, CERN-HIE-ISOLDE, TRIUMF-ISAC, ALTO at IPNO, as well as rare isotope beam facilities under construction in China – CSR in Lanzhou, BRIF in Beijing, HIAF in Lanzhou, and in Korea (RAON-RISP). There is also in the planning stage EURISOL. Tests of fundamental symmetries range from table-top experiments to extended experiments at the large nuclear physics facilities.

The presentations led to extensive discussions among the various representatives. At the Symposium two separate ‘in camera’ meetings were arranged for science administrators/government representatives.

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Willem T.H. van Oers
Secretary of IUPAP WG.9
TRIUMF, June 24, 2013

WORKING GROUP 11

Gravitational Wave International Committee (WG.11)

report to IUPAP

28 August 2013

(prepared by Stan Whitcomb, Caltech [Secretary]
and Eugenio Coccia, University of Rome "Tor Vergata" [Chair])

The Gravitational Wave International Committee (GWIC) was formed in 1997 to facilitate international collaboration and cooperation in the construction, operation and use of the major gravitational wave detection facilities world-wide. From 1999 until 2011, GWIC was recognized as a subpanel of PaNAGIC (IUPAP WG.4). In 2011, GWIC was accepted by IUPAP as a separate Working Group (WG.11). This was judged to be possible without any change to the remit or the by-laws of GWIC. Since its founding, GWIC has included representation from the International Society on General Relativity and Gravitation (AC2) and from the astrophysics/theoretical relativity community. GWIC agreed to accept representation from other interested IUPAP commissions and working groups, and to provide cross-representation for APPIC (WG10) and to other IUPAP commissions as requested.

GWIC meets annually adjacent to an appropriate conference, with recent meetings in Warsaw (2013), Rome (2012), Cardiff (2011), Hannover (2010), Pasadena (2009), New York City (2009), and Pisa (2008). Other business during the year is conducted via email or other electronic communication.

GWIC maintains a website at <https://gwic.ligo.org/> which contains an up-to-date listing of members, its by-laws, announcements of its activities, and links to other items of interest to the gravitational wave community.

GWIC Membership

The membership of GWIC represents all of the world's active gravitational wave projects, as well as other relevant communities, covering gravitational wave frequencies from nanohertz to kilohertz. Each project has either one or two members on GWIC depending on size. GWIC also includes representatives from ISGRG (IUPAP AC2) and from the astrophysics/theoretical relativity community.

Each member project in GWIC determines its representatives on GWIC. In this year, five member projects appointed new representatives: ACIGA (Peter Veitch), KAGRA (Yoshio Saito), LISA (Neil Cornish), NANOGrav (Rick Jenet), and PPTA (George Hobbs). In addition, Beverly Berger was appointed by AC2 as its representative.

The GWIC Chair is elected by its membership at its annual meeting in odd years. In 2013, GWIC chose Eugenio Coccia for a second term as GWIC Chair, serving until 2015. The GWIC Chair appoints the Executive Secretary, and Eugenio continued Stan Whitcomb in this position.

GWIC Activities in 2012-2013

GWIC received a report on the status of the proposal in India to build a large gravitational wave detector there in collaboration with the LIGO Laboratory. The project has been included in the five-year plan for Indian science, and is awaiting final agreement between the Indian and US governments.

GWIC convenes the biennial Edoardo Amaldi Conference on Gravitational Waves, sponsored by IUPAP as a "class B" Conference. The Amaldi meeting is considered by many in the gravitational wave community to be their most important international gathering. The members of GWIC serve as the Scientific Organizing Committee for the Amaldi meetings. This year, the tenth Amaldi meeting was held in conjunction with AC2's 20th International Conference on General Relativity (GR20) in Warsaw, 7- 13 July 2013. GWIC approved the topics for invited talks at its September 2012 meeting, and approved the plenary and invited speakers via email during the year.

A major decision at the 2013 GWIC meeting was the selection of a venue and local organizing group for the 2015 Amaldi meeting. Four groups presented proposals to host the 2015 Amaldi meeting, in Adelaide (Australia), Budapest (Hungary), Gwangju (Korea), and Minneapolis (USA). All proposals were judged to be excellent. Gwangju was selected, marking the first time that the Amaldi meeting will be held in Korea, and only the second time in Asia.

Since 2006, GWIC has awarded an annual international prize for an outstanding Ph. D. thesis based on research in gravitational waves. The 2012 GWIC Thesis Prize was awarded Paul Fulda from the University of Birmingham, and was presented to him at the Amaldi-10 meeting in Warsaw. There were 11 theses nominated this year, from five different countries. Paul is the first winner from the UK, making it the sixth country represented among the winners in the seven years since the prize was established. GWIC continued its agreement with Springer, to nominate the winner of the GWIC Thesis Prize for publication in the Springer Thesis Series. Springer has accepted Paul's thesis for publication this year.

At its meeting in Warsaw, Eugenio brought up the issue of the Stefano Braccini Thesis Prize. In 2011, an informal group (the Friends of Stefano Braccini) created a separate thesis prize, to honor Stefano, a talented young physicist who had worked with the Virgo project. The assessment of GWIC was that the growth in the field of gravitational waves, as evidenced by the number and quality of the theses nominated for the two prizes, could justify two annual prizes. It was decided, together with the Friends of Stefano Braccini, that the two prizes be announced through a single call for nomination and that the selection of both Prizes be made by a jointly appointed committee. Furthermore, it was proposed that the two prizes be distinguished by emphasizing the impact to the field for the GWIC Thesis prize and by emphasizing creativity and innovation for the Stefano Braccini Prize. This new arrangement will begin with the next call for nominations, for calendar year 2013.

Membership of GWIC (as of September 2013)

Chair: Eugenio Coccia

ACIGA: Peter Veitch

AURIGA: Massimo Cerdonio

Einstein Telescope: Michele Punturo

European Pulsar Timing Array (EPTA): Michael Kramer

GEO 600: Karsten Danzmann, Sheila Rowan

IndIGO: Bala Iyer

KAGRA: Takaaki Kajita, Yoshio Saito

LIGO, including the LSC: Gabriela Gonzalez, David Reitze

LISA: Neil Cornish, Bernard Schutz, Robin Stebbins, Stefano Vitale

NANOGrav: Frederick Jenet

NAUTILUS: Eugenio Coccia

Parkes Pulsar Timing Array (PPTA): George Hobbs

Spherical Acoustic Detectors: Odylio D. Aguiar

VIRGO: Francesco Fidecaro, Jean-Yves Vinet

Theory Community: Clifford Will

AC2 Representative: Beverly Berger

Executive Secretary: Stan Whitcomb

WORKING GROUP 12

Report from WG 12, August 16, 2013

(Received from Jon Samseth)

The working group had its first meeting in Tokyo, July 1st and 2nd. The following mandate was approved

- The working group (WG 12) shall review current energy issues and through International Union of Pure and Applied Physics (IUPAP) make briefs available for the global physics community and policy makers as well as the public at large.
- The group meets once or twice a year to review selected topics taking advantage of local experts where the meeting is held.
- The topics considered should include energy supply, carriers, storage and use. Both advanced and low tech systems shall be looked into.

It was agreed to make briefs on selected issues rather than technical reports. These will be posted on the IUPAP website. It was also agreed to insure quality by having a review system.

The meeting in Tokyo had 4 invited guest talks given by local experts.

- Dr. Toshi Toshi, AIST: Geothermal energy
- Dr. Koichi Kitazawa: Fukushima accident
- Dr. Masakazu Toyoda, IEEJ: Japanese energy situation
- Dr. Koji Yamamoto, Jogmec: Gas hydrates

Based on these talks it was decided to make briefs on geothermal energy and gas hydrates. In order to create a uniform set of briefs, a template has been worked out that will be adopted to each topic. The preparation of the first two briefs has started, including finding reviewers.

The group plans to meet in Norway during spring 2014.

**IUPAC - IUPAC
JOINT WORKING GROUP**

**Brief 2013 status report on the IUPAC/IUPAP
Joint Working Party (JWP) for the discovery of new elements**

The IUPAC and IUPAP Joint Working Party (the 4th JWP) to consider claims for the discovery of new elements was charged with considering claims, submitted electronically by 31 May 2012, for the discovery of the remaining elements in the seventh row of the Periodic Table for which no assignments have yet been made: namely elements with atomic numbers 113, 115, 117 and 118. As of the end of August 2013, all committee members* have contributed comprehensive critiques of the available documentation, including recent supplementary publications.

As has been the philosophy of the JWP in the past, part of our approach is to be very aware of the influence the discovery recognition process will have on future JWPs.

Both RIKEN (Japan), and Dubna (Russia)/Livermore (US) have claims for discovery of $Z = 113$ and it can be argued that these may overlap in time. The former, following a “cold fusion” synthesis route to a limited number of events, have possible links through known decay products which, if accepted, would support their claim. The latter, employing “hot fusion”, have many decay chain events, but rather than connecting to known nuclear decays, terminate in non-specific spontaneous fission. Unlike the recent discovery profiles of flerovium ($Z = 114$) and livermorium ($Z = 116$), odd mass number nuclei ($Z = 113, 115, \text{ and } 117$) have many accessible decay pathways, one of several situations which complicates satisfying the discovery criterion of redundancy.

Claims for $Z = 115$ and $Z = 117$ arise only from the Dubna-Livermore collaboration(s). The JWP is carefully considering both supportive and disputing points. The acceptability of these claims, since no anchoring to known nuclides occurs, involves cross bombardments (sort of a triangulation of Z assignment which has been used before to satisfy criteria), and chemical identification of a long-lived end product that undergoes fission. This latter aspect, the possible linking of chemical behavior to that of dubnium ($Z = 105$) has developed into a very influential criterion in our internal debate and requires a convincing critical assessment which is underway.

An initial review of the few events for $Z = 118$ by the Dubna-Livermore collaboration(s) is seemingly less troublesome, but of course, no recommendation has yet been agreed upon, pending our next exchange of viewpoints.

From experience, the Chair feels that completion of these critiques can be accomplished by the end of the year.

Disclosure: This informal progress statement has been prepared entirely by the Chair of the JWP and has not been reviewed by the membership.

Paul J. Karol, *Chair*
17 September 2013

** Due to health and schedule, one member (G. Fortuna, Italy) withdrew from the JWP.

Appendix

Members of the JWP

Professor R. C. Barber
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University of Manitoba
Email: barber@physics.umanitoba.ca

Emeritus Prof. Paul J. Karol (Chair)
Chemistry Department
Carnegie Mellon University
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Dr. Bradley Sherrill
Chief Scientist
National Superconducting Cyclotron Laboratory
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Prof. Emanuele Vardaci
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Emeritus Prof. Toshimitsu Yamazaki
Heavy Ion Nuclear Physics Laboratory, RIKEN
Email: yamazaki@nucl.phys.s.u-tokyo.ac.jp

**A very brief report on
Astroparticle Physics International Committee (APPIC)**

From Michel Spiro, Chair of APPIC

APPIC is in the process of being formed. It will have about 15 eminent members - scientists from all areas of Astroparticle Physics and all world regions active in this type of research. It will be connected specially to C4 (renaming of this Commission would be welcome), but also to C11, C12 and C19. APPIC will liaise a dialogue with OECD GSF concerning scientific developments in this field, new worthwhile projects, opportunities for international cooperation, and other matters that deserve the attention of the governmental funding agencies. The exact terms of reference of APPIC are still being discussed and worked upon.

| | 2012 | | | 2013 | | | 2014 | | |
|--|---------------|---------------|-----------------|---------------|----------------|-----------------|--------------------------|---------------------------|------------------------|
| | Budget | Actual | Actual - Budget | Budget | Actual at 31/8 | Actual - Budget | Notional Budget Oct 2012 | Suggested Budget Oct 2013 | Agreed Budget Oct 2013 |
| INCOME | | | | | | | | | |
| Dues | 407000 | 415339 | 8339 | 419000 | 297253 | -121747 | 432000 | 432000 | 432000 |
| Bank Interest | 1000 | 2949 | 1949 | 1000 | | -1000 | 1000 | 1000 | 1000 |
| Other | | 600 | 600 | | | | | | |
| TOTAL INCOME | 408000 | 418888 | 10888 | 420000 | 297253 | -122747 | 433000 | 433000 | 433000 |
| EXPENDITURE | | | | | | | | | |
| Conferences | 148000 | 136417 | -11583 | 104500 | 114500 | 10000 | 104500 | 104500 | 124000 |
| Conference/travel grants | 42000 | 38314 | -3686 | 45000 | 45000 | 0 | 45000 | 45000 | 35000 |
| ICTP publications for developing countries | 3000 | | -3000 | 3000 | 0 | -3000 | 3000 | | |
| ICPE News letter | 3000 | | -3000 | 3000 | 0 | -3000 | 3000 | 3000 | 3000 |
| Commissions | 30000 | 7712 | -22288 | 23000 | 18362 | -4638 | 23000 | 23000 | 23000 |
| C&CC meetings | 70000 | 151718 | 81718 | 35000 | 0 | -35000 | 50000 | 50000 | 45000 |
| Young scientist prizes | 12000 | 13606 | 1606 | 6000 | 7947 | 1947 | 6000 | 6000 | 12000 |
| Working Groups | 35000 | 2585 | -32415 | 37500 | 17000 | -20500 | 37500 | 37500 | 37500 |
| Developing Countries Workshop | 21000 | 21000 | 0 | 21000 | 21000 | 0 | 21000 | 21000 | 21000 |
| New Programmes | | | 0 | 7000 | 0 | -7000 | 7000 | | 7000 |
| Women in Physics | | | | | | | | 10000 | 15000 |
| General Report/Newsletters | 5000 | 1000 | -4000 | 2000 | 0 | -2000 | 2000 | 2000 | 2000 |
| ICSU | 19400 | 19400 | 0 | 19400 | 19982 | 582 | 19400 | 19400 | 19400 |
| ICST | 1000 | 800 | -200 | 1000 | 800 | -200 | 1000 | 1000 | 1000 |
| Secretariat | 50000 | 54286 | 4286 | 52800 | | -52800 | 57600 | 57600 | 57600 |
| President | 5000 | 267 | -4733 | 5000 | 3896 | -1104 | 5000 | 5000 | 5000 |
| GA | | | 0 | | 0 | 0 | 50000 | 50000 | 40000 |
| Banking and accounting | 11000 | 4066 | -6934 | 11000 | 1545 | -9455 | 11000 | 11000 | 11000 |
| Liability Insurance | 2000 | | -2000 | 2000 | 0 | -2000 | 2000 | 2000 | 2000 |
| Contingency* | 7000 | | -7000 | 7000 | | -7000 | 7000 | 7000 | 7000 |
| Other expenses | | | 0 | | | 0 | | | |
| | | | | | 0 | 0 | | | |
| TOTAL EXPENDITURE | 464400 | 451171 | -13229 | 385200 | 250032 | -135168 | 455000 | 455000 | 467500 |
| SURPLUS | -56400 | -32283 | | 34800 | 47221 | 12421 | -22000 | -22000 | -34500 |
| CUMULATIVE SURPLUS | | | | 34800 | | | 12800 | 12800 | 300 |

These are the figures presented to the meetings in October, modified immediately afterwards re 2014 to reflect decisions made at the meeting. Updates of 2012 and 2013 finances are in progress and will be provided to the C&CC soon.

*2014 contingency to be spent on attendance at the ICSU GA and on the Committee to propose the slate.