

IUPAP C13 COMMISSION REPORT
on the
ANNUAL C13 MEETING AND OTHER ACTIVITIES

Format of Meeting: Zoom

Prepared by Sekazi K. Mtingwa (C13 Chair)

August 2020

Officers

Chair: Sekazi Mtingwa, TriSEED Consultants, LLC, United States

Vice-Chair: Kuijuan Jin, Chinese Academy of Sciences, China

Secretary: Joseph Niemela, Abdus Salam ICTP, Italy

Members

Aba Bentil Andam, Ghana Academy of Arts & Sciences, Accra, Ghana

Andreas Buchleitner, University of Freiburg, Germany

Jose Daniel Muñoz Castaño, National University of Colombia, Colombia

Mmantsae Diale, University of Pretoria, South Africa

Carlo Saverio Iorio, Free University of Brussels, Belgium

Samia Charfi Kaddour, Université Tunis El Manar, Tunisia (Absent)

Kevin McGuigan, Royal College of Surgeons, Ireland

Ajith Kumar Parambath, Inter-University Accelerator Centre, India

François Piuzzi, French Physical Society, France

Michael Steinitz, St. Francis Xavier University, Canada

Dmitri Wiebe, Russian Academy of Sciences, Russia (Absent)

Associate Members

Lilia Mesa-Montes, Benemérita Universidad Autónoma de Puebla, Mexico

Ernst van Groningen, Int'l Prgms for Phys. Sciences, Uppsala U., Sweden

Sandro Scandolo, Abdus Salam ICTP, Italy



Figure 1. Screenshot, C13 Commission’s 2020 Annual Meeting via Zoom
 (Absent from Photo: Aba Andam and Lilia Mesa-Montes)

The C13 Commission met via Zoom on Monday, 24 August 2020 during the period 14:00-20:00 Trieste, Italy time. A group screenshot is provided in Fig.1.

I. IUPAP Medal Presentation during General Assembly in Beijing

Andreas Buchleitner led a robust discussion on the appropriateness of awarding the *IUPAP Medal for Outstanding Contributions to the Enhancement of Physics in Developing Countries* during the 2021 General Assembly in Beijing, China. One concern was that that was too long a time for the recipient to wait to receive the Medal. More importantly, there was a concern that it was not appropriate given the political situation relative to the treatment of Hong Kong citizens by the Chinese government. In the end, the C13 Members decided that the award should go ahead and be awarded in Beijing in 2021.

II. Global Impact of COVID-19 on Physics Teaching

C13 Members reported on the effect of COVID-19 on education and research in their countries. Many of the experiences were quite similar, having to do with in-person instruction, switching to online instruction, or a combination of both. As for online instruction, there was concern about the inequities involving access to learning tools, especially the Internet. There was concern about the impact on graduate students’ laboratory research. As an example, Jose Muñoz reported that graduate students in Colombia have had to take a semester off. Michael Steinitz stated that the June issue of *Physics Today* discussed the situation in North America. (<https://physicstoday.scitation.org/doi/full/10.1063/PT.3.4492>). Sandro Scandolo stated that the situation has improved in Italy, universities were able to switch to online learning

without major problems, and schools are set to reopen in September. Carlo Iorio reported that many faculty in Belgium are recording their courses for later viewing. Kevin McGuigan made the interesting comment that, after Ireland switched to online learning, student performances have greatly improved. Kuijuan Jin reported that China got an early start in dealing with the pandemic. They endured a half-year shutdown and switched to online learning. Currently, faculty and staff can return to campus. Students who have remained on campus during the pandemic are allowed to continue staying on campus, while students who left campus for such events as the Chinese New Year cannot return at this time. Andreas Buchleitner expressed concern about social segregation in Germany. Ajith Kumar reported that in India, universities are proceeding with online classes wherever possible, but the examinations are being postponed because it requires the physical assembly of students. Lilia Mesa-Montes reported that scholarships are in jeopardy for those students who are performing experimental research. Ernst van Groningen stated that in Sweden, there was no lockdown. As for distance learning, for those under 30 years of age, ~99% have access to the Internet. In Ghana, Aba Andam reported that there have been lockdowns in various regions and final-year students are back at the universities. François Piuzzi stated that French universities will open in September; however, he is concerned that many university student grants are affected and may end soon. Michael commented that satellites could have a major impact on making Internet more widely available. Dmitri Wiebe was not able to attend the meeting but sent the following comments via email:

The current situation in Russia is somewhat difficult to summarize as apparently each university and institution is free to establish its own routine, based on a specific situation. The overall idea is to start the new academic year on time, but with the option to postpone it by no more than two months. Perhaps, everything that can be done online will be done online, but there are rumors that practical lessons will be done in a usual way, in person, save for the new precautions.

Online education both in schools and at universities has not been very successful so far, but this is probably because we have not been prepared to do it in a proper way. Some groups have reported a good experience with online demonstration of physical experiments for various communities, including underserved ones, but this is mostly edutainment [educational entertainment], not regular education.

Finally, François agreed to the following Action Item:

Action Item #1

Generate a survey for C13 member responses to assess the impact of COVID-19 on physics teaching and research. François will work with Joe Niemela in this effort.

III. Selection of Type-D Conference Grants

Jose and Michael presented the highlights of the proposals from the American University in Beirut and the African Physical Society (AfPS), respectively. C13 Members enthusiastically endorsed the AfPS conference for funding for the full amount of 7K Euros. However, since only two proposals were received, thus the possibility of funding at most

two conferences this year, C13 requests that the Council increase the level of funding to at least 8K Euros. C13 notes that the amount of funding was increased last year.

As for the conference in Beirut, C13 Members had a vigorous discussion as to its eligibility, given that Lebanon has restrictions on travelers coming from Israel or any country from which the traveler has an Israeli visa or seal on the passport. See <https://lebanonembassy.ca/visas.html>. This conflicts with IUPAP's Conference Policy on the Free Circulation of Scientists. As such, *C13 endorses the American University Conference for funding only if it is relocated to a country without travel restrictions on the participants*. Furthermore, C13 urges the Council to enforce the IUPAP Conference Policy on the Free Circulation of Scientists for all the Conferences that it supports.

IV. C13 Working Group on Affordable Scientific Equipment

Chair: François Piuzzi

Members: Mmantsae Diale
Carlo Iorio
Samia Charfi Kaddour
Ajith Kumar B.P.
Joseph Niemela
Michael Steinitz

A. Report by François Piuzzi

François first provided the rationale for creating a repository for open-source and low-cost instruments. Generally, a lot of information may be found on the Internet, but it is not easy to navigate, since there is no centralization of information. One must have sufficient knowledge to process the information. Thus, there is a need to do the following:

1. Centralize information by domains or applications.
2. Ensure project quality, utilizing international experts on instrumentation to review projects found on the Web and provide advice on improving them, if necessary.
3. Identify whether instruments are used.
4. Confirm that the projects provide all the information needed to be reproducible.
5. Enable the performance of research that would be difficult to do otherwise.
6. Provide appropriate tutorials (perhaps via YouTube videos) to build selected instruments.

The structure of an international repository for experimental hardware should involve the following:

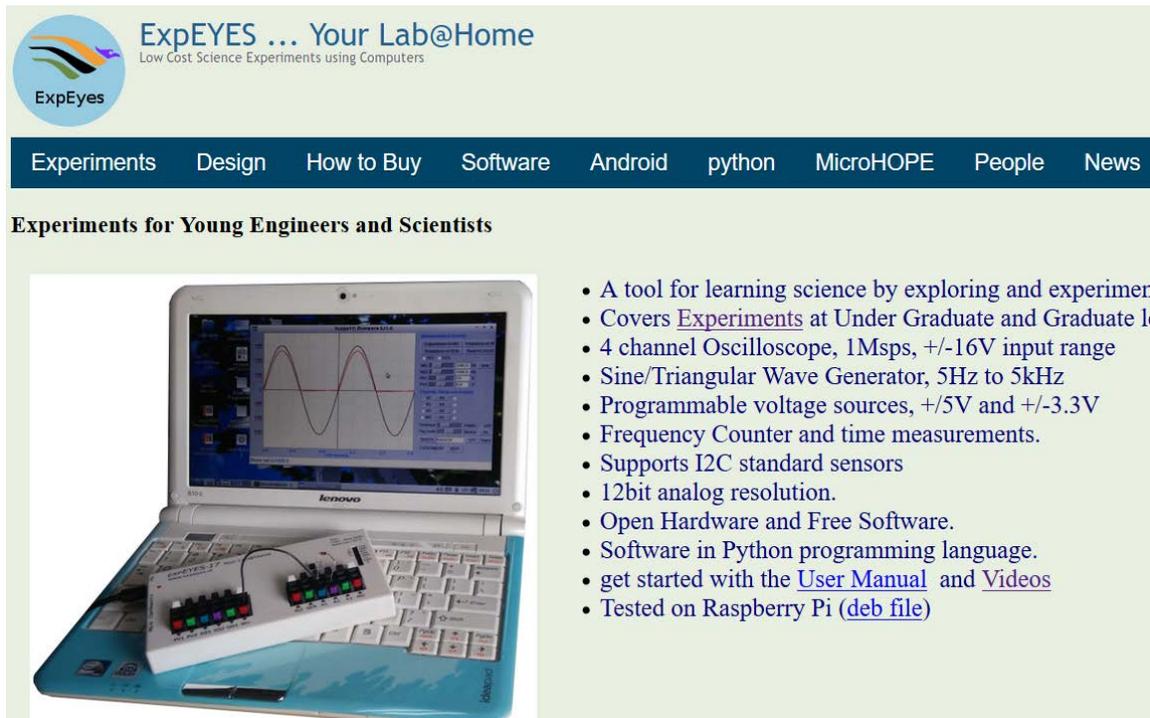
1. Laboratory equipment
2. New practicals
3. Transfer of projects to experts
4. Project papers, for example in a Github file as proposed by Ajith
5. Dissemination of skills associated with new prototyping tools
6. Dissemination of information to students and professors in low-resource countries, e.g. via Twitter, Facebook
7. Regional training on specific topics

8. Funds for activities.

For a Github created by Ajith and others, possibly using <https://iupapc13.github.io/> as a tentative site, do the following:

1. Create a thematic repository for open-source projects in instrumentation and associated tools.
2. Investigate the possibility of rewarding some excellent projects on the IUPAP Website.
3. Launch collaborations between developing countries and sponsor contests.
4. Create a **study group** on sustainable-cost scientific instrumentation and laboratory hardware. This would be the first opportunity to **lobby together for sustainable-cost** instrumentation and laboratory hardware.
5. Assemble the main experts in the field through dedicated Hackathons.
6. Work together to apply for funding from the United Nations Organization's Objectives for Durable Development (UNO ODD) program.

François discussed recent examples of hardware developed under an open-source or low-cost paradigm. One of them, shown in Fig. 2, was developed by Ajith, called Expeyes (www.expeyes.in), which is an introduction to electronics. It is one of the best tools for this purpose and is



The image shows a screenshot of the ExpEYES website. At the top left is the logo for ExpEYES, which consists of a stylized eye shape with colorful lines. To the right of the logo is the text "ExpEYES ... Your Lab@Home" and "Low Cost Science Experiments using Computers". Below this is a dark blue navigation bar with white text for "Experiments", "Design", "How to Buy", "Software", "Android", "python", "MicroHOPE", "People", and "News". Underneath the navigation bar is the heading "Experiments for Young Engineers and Scientists". To the left is a photograph of the ExpEYES hardware, which is a white device with a blue base, connected to a laptop. The laptop screen displays a graph of a sine wave. To the right of the photograph is a bulleted list of features:

- A tool for learning science by exploring and experimen
- Covers Experiments at Under Graduate and Graduate l
- 4 channel Oscilloscope, 1Msps, +/-16V input range
- Sine/Triangular Wave Generator, 5Hz to 5kHz
- Programmable voltage sources, +/5V and +/-3.3V
- Frequency Counter and time measurements.
- Supports I2C standard sensors
- 12bit analog resolution.
- Open Hardware and Free Software.
- Software in Python programming language.
- get started with the User Manual and Videos
- Tested on Raspberry Pi (deb file)

Figure 2. Expeyes Hardware

being used in about 1000 schools. Since it is low-cost and based on the open-source paradigm, it can be modified freely.

As for the importance of open-source hardware, the following statement is found in an article by Moritz, M., Redlich, T., Günyar, S., Winter, L. and Wulfsberg, J.P., 2019, entitled *On the Economic Value of Open-Source Hardware – Case Study of an Open Source Magnetic Resonance Imaging Scanner*, *Journal of Open Hardware*, 3(1), p.2. DOI: <http://doi.org/10.5334/joh.14>.

Open-source technology has enormous potential to spur innovation and enhance technological literacy, and thus contribute to socioeconomic and ecological sustainability. Like software, open-source hardware projects and online communities have evolved in a broad range of technologies and applications. In these communities, people from all over the world with diverse backgrounds (students, researchers, consumers, users etc.) gather online to jointly develop, revise, improve and freely share hardware designs and documentation. Additionally, people may build, adapt, use and sell physical artefacts based on these designs, in accordance with the notion of open source.

B. Report by Ajith Kumar

Ajith provided a report on a Learning Management System (LMS) Initiative called Moodle. First, he noted the following problems with offering online classes using videoconferencing tools, such as Zoom, Googlemeet, Jitsi, and Bigblubutton:

1. Difficulty knowing whether participants are listening
2. High bandwidth requirements
3. No feedback mechanism to gauge the progress
4. Participants always ask for recording of the session.

An LMS could help by

1. Uploading and sharing materials
2. Providing forums and chats
3. Tracking student progress by
 - a. Online quizzes
 - b. Gathering and reviewing assignments
 - c. Recording grades.

The Moodle LMS is open-source; has widespread community support; and has a large user base, including 166K registered sites and 222 million users. Ajith has conducted training for 40 teachers (<https://alpha.scischool.in>) and plans to scale it up with a bigger server (<https://gate.iuac.res.in>).

Ajith proposed and C13 approved establishing an LMS platform under C13. It would do the following:

- Help educators by offering facility/training.
- Build a direct network of teachers/researchers.
- Initiate programs.

- Provide training by volunteers.

A low investment is required that could start with ~USD 500.

After the conclusion of the reports by François and Ajith, the following Action Items were agreed upon:

Action Item #2

Submit a short proposal in the amount of 3K Euros to the IUPAP Council to support a specific project on affordable equipment and online learning.

Action Item #3

Apply for funding from the United Nations Organization's Objectives for Durable Development (UNO ODD) program to support specific projects on affordable equipment and online learning.

Action Item #4

Write a request to the Council to establish a Learning Management System (LMS) platform with the IUPAP C13 logo under C13's Management.

Action Item #5

Host a Zoom C13 International Conference on Affordable Equipment.

V. Women in Physics

Mmantsae led a discussion on Women in Physics Issues. She has been active with those issues in South Africa and would like to get C13 more involved, since they fall under the category of Physics for Development. Lilia stated that she also would like to pursue such issues under the umbrella of C13, and she indicated that she already serves on the IUPAP Working Group on Women in Physics.

C13 Members voted for the establishment of a new C13 Working Group on Women in Physics and appointed Mmantsae as Chair, leading to the following Action Items.

Action Item #6

Establish a C13 Working Group on Women in Physics. Initially, it will consist of the following:

1. *Mmantsae Diale, Chair*
2. *Lilia Mesa-Montes*
3. *Kuijuan Jin*
4. *Sekazi K. Mtingwa.*

Action Item #7

Mmantsae will write a description of the Goals of the new Working Group on Women in Physics.

VI. Updates on the *APS Physics in Africa Project/African Physics Newsletter*

Joe Niemela gave a report on the *Physics in Africa Project*, which is a co-operative project of the American Physical Society (APS), Institute of Physics (IOP), European Physical Society (EPS), Abdus Salam International Centre for Theoretical Physics (ICTP), and the South African Institute for Physics (SAIP). Joe stated that the Project consists of three broad areas:

1. Communications
2. Education
3. Experiments (Mostly tabletop).

The Project's most developed area is Communications; thus, he focused his main remarks on the Project's *African Physics Newsletter (APN)*. It is a quarterly, electronic APS publication and is about physics in Africa as gathered and reported by an Editorial Board of African physicists. Those physicists prepare the APN, and the APS performs the composition and dissemination. The APN has Oversight and Editorial Boards. The Editorial Board executes the essential tasks of preparing the newsletter.

The Editorial and Advisory Boards consist of the following:

Editorial Board

1. *North Africa*
 - a. Prof. Rasha Khafagy, rashakhafagy@asu.edu.eg, Ain Shams University, Cairo, Egypt
 - b. Prof. Mourad Telmini, mourad.telmini@fst.utm.tn, University of Tunis El Manar, Tunis, Tunisia
2. *Southern Africa*
 - a. Editor in Chief, Prof. Igle Gledhill, igle.gledhill@wits.ac.za, University of Witwatersrand, Johannesburg, South Africa
 - b. Dr. Iyabo Usman, Iyabo.Usman@wits.ac.za, University of Witwatersrand, Johannesburg, South Africa
3. *East Africa*
 - a. Prof. George Amolo, georgeamolo862@gmail.com, Technical University of Kenya, Nairobi, Kenya
 - b. Dr. Victor Odari, odarivyc@gmail.com, Masinde Muliro University of Science and Technology, Kakamega, Kenya
4. *West Africa*
 - a. Prof. Moses Jojo Eghan, meghan@ucc.edu.gh, University of Cape Coast, Cape Coast, Ghana
 - b. Prof. Diouma Kobor, dkobor@univ-zig.sn, University Assane Seck, Ziguinchor, Sénégal
5. *Central Africa*

Prof. Stéphane Kenmoe, stphnknm@gmail.com, Universität Duisburg-Essen, Essen, Germany.

Advisory Board

1. Prof. Nithaya Chetty, nithaya.chetty@wits.ac.za, University of the Witwatersrand, Johannesburg, South Africa
2. Prof. Igle Gledhill, igle.gledhill@wits.ac.za, University of Witwatersrand, Johannesburg, South Africa
3. **Chair, Dr. James E. Gubernatis**, jg@lanl.gov, Los Alamos National Laboratory (retired), Los Alamos, New Mexico, USA
4. Prof. Sekazi K. Mtingwa, sekazi.mtingwa@gmail.com, Triangle Science, Education & Economic Development, LLC, Hillsborough, North Carolina, USA
5. Dr. Joseph Niemela, niemela@ictp.it, Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
6. Prof. Florence M. D'ujanga, fdujanga@cns.mak.ac.ug, Makerere University, Kampala, Uganda
7. Dr. Daniel Nyanganyura, Daniel.Nyanganyura@council.science, International Science Council, Regional Office for Africa, Pretoria, South Africa
8. Prof. Ahmadou Wagué, ahmadou.wague@ucad.edu.sn, Cheikh Anta Diop University, Dakar, Sénégal.

Joe noted that two C13 Members, Sekazi and himself, are on the APN Advisory Board. He also noted that there are other physics organizations and activities of interest, including the following:

1. African Physical Society (<https://www.africanphysicalsociety.org/>)
2. African Review of Physics (<http://aphysrev.ictp.it/>)
3. African Light Source (<https://www.africanlightsource.org/>)
4. African Laser Centre (<https://www.africanlasercentre.net/>).

Finally, Joe solicited the following Action Item:

Action Item #8

C13 Members should pass the information about the African Physics Newsletter to their colleagues, who can subscribe at the Web link <https://go.aps.org/africanphysics>, or write and pass along to one of the Editors any articles of interest about physics activities in Africa.

VII. LAAAMP Updates

Sekazi gave an update on the accomplishments and activities of LAAAMP. First, he reported that two additional colleagues have joined the Executive Committee. They are Marielle Agbahoungbata of Benin and Özgül Öztürk, originally from Turkey and currently at the University of Siegen in Germany. They are shown with the other Executive Committee Members in Fig. 3. We provide short biographical backgrounds for them below.

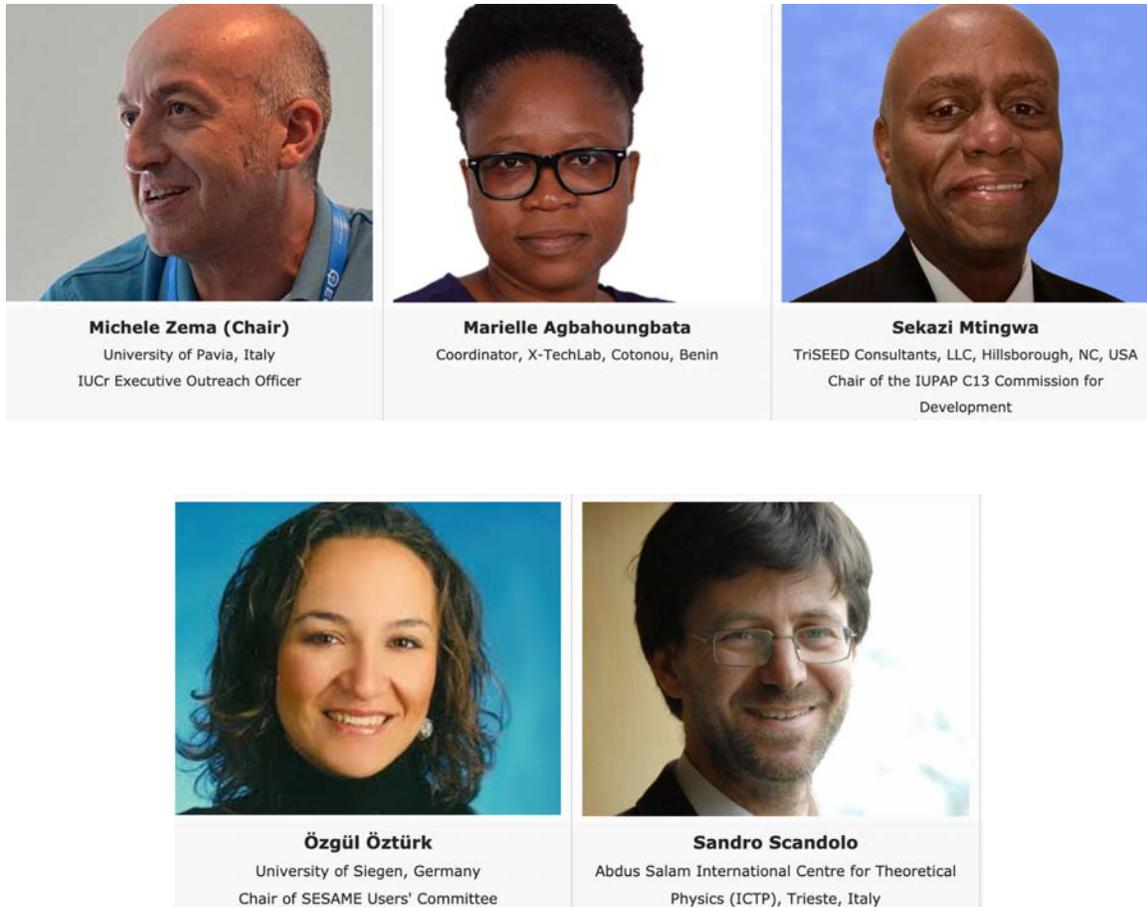


Figure 3. LAAAMP Executive Committee

Özgül Öztürk

Chair of the User Committee of the SESAME synchrotron since 2012, Öztürk has been representing SESAME users in the European Synchrotron and FEL User Organization (ESUO). During 2017-2020, she served as Chair of the *LAAAMP* Usage and Strategic Plan Committee for the Middle East.

Researcher in the Physics Department, University of Siegen, Germany, Öztürk received her Ph.D. and B.Sc. degrees in physics from Boğaziçi University in Turkey. Her research focuses on structural analysis of nanomaterials and the interaction of those nanomaterials with smart materials like graphene to develop highly efficient sensors. She uses synchrotron radiation for the analysis of structure-to-property relations of nanomaterials.

Between 2008 and 2016, Öztürk worked as Assistant Professor at Doğu University in Turkey and took the initiative in that country for the development of a synchrotron user community. She worked as the Coordinator of synchrotron radiation laboratories of the Turkish Accelerator Center Project.

Marielle Y. Agbahoungbata

Coordinator of the X-TechLab (<https://www.xtechlab.co/>), the first X-ray techniques training school in West Africa and established in Benin thanks to a collaboration between *LAAAMP* and the Government of Benin, Agbahoungbata is involved in a number of activities for supporting the development of research and education in Africa. Presently, she serves on the Steering Committee of the African Crystallographic Association and is a member of the West African Chemistry Society. In 2014, Agbahoungbata initiated a crystal growing competition for schoolchildren with the support of UNESCO and the International Union of Crystallography.

Earning B.Sc. and Ph.D. degrees in inorganic chemistry from the University of Abomey-Calavi (UAC) in Benin, Agbahoungbata was a teaching assistant for a crystal-chemistry course at UAC and spent a period of time as a postdoctoral researcher at the University of Zurich, thanks to a Swiss Government Excellence Scholarship. She was awarded several grants for internships and for participation in conferences in Senegal, Cameroon, Burkina Faso, Côte d'Ivoire, Romania, Japan, Switzerland, Belgium, Italy and India. In September 2017, she was awarded the first prize in the International Competition "Ma These en 180s."

Agbahoungbata's research activity focuses on the development of clay-based materials for environmental remediation. She uses X-ray diffraction as the main technique in her studies, and works on the structural analysis of different types of clays and their use in the synthesis of functionalized materials, such as adsorbents and photocatalysts for applications in wastewater treatment.

LAAAMP Accomplishments

Sekazi described the main accomplishments of *LAAAMP* as follows:

1. Task 1 Developed a **Strategic Plan** for each Region: Africa, Mexico, Caribbean, Southeast Asia, Middle East.
2. Task 2 Conducted an AdLS/Crystallography **Colloquium Program** in the Regions.
3. Task 3 Published and Disseminated an AdLS/Crystallography **Informational Brochure** in Arabic, English, French, Portuguese, Spanish.
4. Task 4 Sent **FAculty-STudents (FAST) Teams to Partner AdLS** for 2-Month Visits with some returning in subsequent years for another 2 Months.
5. Task 5 Operated the **SPARC** Sample Mail-In Program.
6. Task 6 Assisted in Establishing the **X-TechLab in Benin** for training in crystallography and related subjects.

Task 1: Strategic Plans

As an example of a Strategic Plan, we present below the highlights from that of Mexico.

A. Short-Term Goals (within 3 years)

1. Train large numbers of Mexican scientists, engineers, students and technicians in the design and utilization of advanced light sources (AdLSs).
2. Establish formal partnerships with existing international AdLSs.
3. Promote the involvement of industry.
4. Obtain the support of international high-profile persons, such as Nobel Laureates, University Presidents, and Filmmakers.
5. Build an AdLS public and media profile.
6. Promote outreach and communication around AdLS-based S&T.
7. Enhance Mexico's critical feeder infrastructures for an AdLS.
8. Advocate for the Mexican Strategic Plan to top governmental officials.

B. LONG-TERM GOALS

1. Continue all the Short-Term activities, as required.
2. Design and construct a latest generation AdLS in Mexico.

For more details from all the Regions, see <https://laaamp.iucr.org/tasks/strategic-plans>.

Task 2 Colloquium Program

This program involves giving presentations about *LAAAMP*'s activities at conferences and other meetings, as well as at institutions in the targeted regions. We show two examples in Figs. 4 and 5.

The gentleman closest in the photo, Professor Tara Prasad Dasgupta, recently passed away due to complications from the COVID-19. He previously served as Professor and Head of the Department of Chemistry at the University of the West Indies, Mona Campus, outside Kingston, Jamaica.



Figure 4. Sandro Scandolo at UNESCO's Opening 2019 Ceremony of the International Year of the Periodic Table



Figure 5. Sekazi Mtingwa (second along the right) attending the Caribbean Academy of Sciences General Meeting & Conference, University of the West Indies, Mona Campus, Jamaica, 2018

Task 3 *LAAAMP Brochure*

The goal of the Brochure is to explain advanced light sources and crystallography to a broad audience, including the general public, governmental officials who are responsible for funding science and technology facilities, university professors, and high school science teachers and their students.

Ian Swainson, who is from the Division of Physical and Chemical Sciences in the Department of Nuclear Sciences and Applications at the International Atomic Energy Agency (IAEA), arranged for his colleagues to translate the Brochure into Portuguese at no cost to *LAAAMP*. Hence, the Brochure is now available in five languages: Arabic, English, French, Portuguese and Spanish. It is available for download in these languages at <https://laaamp.iucr.org/tasks/brochure>. In addition, hard copies are available upon request.

Task 4 **FAculty-**S**Tudent (**FAST Teams**) at **P**artner **A**dvanced **L**ight **S**ources *Eligibility***

1. Faculty members at universities in Africa, the Caribbean, Mexico, Southeast Asia or the Middle East.
2. Interested in using AdLSs to further their research and training endeavors.
3. Previous experience with using AdLSs is limited to a year or less.
4. Ability to spend 2 months as a full-time visitor in residence at an AdLS that is a *LAAAMP* collaborative partner.
5. Student: Registered as full-time Ph.D. student and supervised by the Faculty member.

Financial Support

1. *LAAAMP* provides 1,818 Euros per person to cover transportation and (partially) accommodation costs.
2. The remainder of accommodation and subsistence should be negotiated with the host AdLS and other sources of support.

LAAAMP's Advanced Light Source Partners

1. Advanced Light Source, Lawrence Berkeley National Lab (Berkeley, CA,USA)
2. Advanced Photon Source, Argonne National Lab (~Chicago, USA)
3. ALBA Light Source (Barcelona, Spain)
4. Australian Synchrotron, Australian Nuclear Science & Tech Org. (~Melbourne)
5. Canadian Light Source (Saskatoon, Canada)
6. DELTA Light Source (Dortmund, Germany)
7. Elettra Light Source (Trieste, Italy)
8. European Synchrotron Radiation Facility (ESRF) (Grenoble, France)
9. MAX IV Laboratory (Lund, Sweden)

10. Nat'l Synchrotron Light Source-II, Brookhaven Nat'l Lab (Long Is, NY, USA)
11. Photon Factory, Institute of Materials Structure Science, KEK (Tsukuba, Japan)
12. Pohang Accelerator Laboratory (Gyeongbuk, South Korea)
13. SESAME Light Source (Allan, Jordan)
14. Siam Photon Source, Synchr. Light Res. Inst. (Nakhon Ratchasima, Thailand)
15. SLAC National Accelerator Laboratory (Stanford University, USA)
16. Taiwan Photon Source, Nat'l Synchrotron Radiation Res. Ctr. (Hsinchu, Taiwan)

The current group of FAST Team Faculty Awardees are put on hold because of the COVID-19 pandemic. They are shown below, along with their institutions and AdLS to visit, and they will be accompanied by their graduate students. Thus, the plan is to have 26 faculty and student researchers visiting AdLSs during 2021.

<u>Continuing FAST Teams</u>	<u>Institution/Department</u>	<u>AdLS</u>
Bridinette Thiodjio Sendja	U. of Yaounde I (Cameroon)	Elettra
Pantawat Sampanpanish	Chulalongkorn U. (Thailand)	NSRRC
Julio Villanueva Cab	Benemérita U. Autó. (Mexico)	ALS
René Loredó Portales	U. Nac'l Auto. de México, Sonora	Elettra
<u>New FAST Teams</u>		
Kudakwashe Jakata	Wits U. (South Africa)	ESRF
Sourou Albert Sidoine Bonou	X-TechLab (Benin)	Elettra
Graciela Díaz de Delgado	U. of Los Andes (Venezuela)	APS
Carmen Grisel Méndez Garcia	U. Nacional Autónoma de México	ESRF
Azzuliani Supangat	U. of Malaya (Malaysia)	NLS-II
Magdaleno R. Vasquez	U. of the Philippines, Diliman	SLRI
Abdallah Shaltout	Nat'l Research Center (Egypt)	APS
Neama Gomaa Gomaa Imam	Egyptian Atomic Energy Authority	Elettra
Morteza Mozaffari	U. of Isfahan (Iran)	SESAME

Task 5 SPARC Sample Mail-in Program

SPARC is the acronym for Synchronizing Partners to Advance Research Characterization. The program was recently launched for *LAAAMP* by Tabbetha Dobbins, who is Associate Professor of Physics and Astronomy, Acting Vice-President for Research, and Dean of Graduate Studies at Rowan University in the USA.

In Tabbetha's words, the *SPARC initiative provides "a little bit of light" for measuring samples via mail-in to synchrotrons.*

It facilitates the following:

1. Understanding sample requirements
2. Understanding available techniques
3. Writing of beamtime proposals
4. Providing a list of mail-in sample programs around the world.

For details on applying to the program, see <https://laaamp.iucr.org/headlines/sparc>. The response times to applications is typically 2-3 weeks, and access to measured data could take up to 6 months.

Task 6 X-TechLab

This program was launched in Benin from the enthusiasm generated by the *LAAAMP* Colloquium Program visit of Thierry d’Almeida, who is originally from Benin and currently is employed at France’s CEA (Atomic Energy Agency). It is funded principally by the government of Benin and normally provides training for approximately 100 African students, twice per year in May and November, with roughly half the students from Benin and half from other African countries. The instruction is divided into two parts:

1. Crystallography and X-ray Techniques
2. Tomography and Mathematical Engineering.

D’Almeida is the Project Leader and the Coordinator of X-TechLab is Marielle Agbahoungbata, who is a new Member of the *LAAAMP* Executive Committee as discussed above.

Due to the COVID-19 pandemic, the plan is to have only 50 students train in person during 16-27 November 2020. Most of the students will be local Benin students; however, there will be approximately 5 from other countries, including Ethiopia, Côte d’Ivoire and Senegal. If those students cannot obtain support for their travel, they will be able to join the training sessions online.

LAAAMP to Expand to the Pacific Islands

Finally, the Executive Committee has decided to expand *LAAAMP*’s activities to the Pacific Islands. The new name will be *Lightsources for Africa, the Americas, Asia, Middle East, and the Pacific*; thus, the acronym will not need to change. Soon a Call for Applications will be issued with a deadline for some time in January 2021. The hope is to fund at least one new FAST Team from that region.

VIII. UK-Irish-Africa Partnerships in Physical Sciences

Kevin reported on the recent momentum to increase Institute of Physics (IOP) Partnerships in Africa. During the time of the Fall 2019 C&CC Meeting and dedication ceremonies of the new IOP building and facilities in London, a delegation of C13 Members met at IOP to discuss the Partnerships. Representing C13 were Kevin, Joe, François, Mmantsae and Sekazi.

In his C13 report, Kevin first shared general information about projects involving IOP, which have no firm start or end date, but the vast majority start or end after 2014.

Focus

1. Big Data & Artificial Intelligence (AI)
2. Facilities
3. Energy

4. Climate & Weather.

Dataset

1. 4,000 projects, representing ~£13.6 billion in funding.
2. Not just UK-funded projects, but also those that have a UK focus.
3. Includes all GCRF projects, Newton Projects, Horizon 2020, and various global aid projects published under the IATI standard, plus additional projects highlighted in the IOP survey.
4. All projects have a link to Africa; either by virtue of one of the participants being based in Africa, or the specified focus of the project being an African region or country.

Subjects

1. All projects in the dataset relate to Higher Education or Research.
2. The projects are then classified as to whether they relate to Energy, Climate & Weather, Artificial Intelligence (AI) & Big Data, or Large-scale Facilities.
3. The projects are then further classified as to whether they also relate to Physical Sciences, Engineering & Maths.
4. And finally, whether the project is closely physics-related.
5. Projects have been tagged with none, some, or all the classifications.

Funding

1. 41% (£5.5 billion) of the total funding captured in the dataset relates to physical sciences, and 5.11% (£689 million) directly to physics.
2. 5.5% of the project clusters with UK involvement were physics-related (53), representing 13.5% of the funding.
3. More general capacity-building or institutional support funding may support physics indirectly.
4. The funding for physics projects might not be only for physics. The projects will usually cross over with other subjects or have a non-physics element.
5. 12.16% of the projects in the dataset are UK-funded, by value.
6. A further 9.72% are funded from outside the UK, but involve UK participants.
7. The Department for International Development (DfID) is the largest individual UK funder in the dataset.
8. Research councils combined account for a similar level of funding (about 40% of the total each).

The UK funding breakdown is shown in Figs. 6-9.

UK Funder Breakdown - Physical Sciences Projects (not clusters)

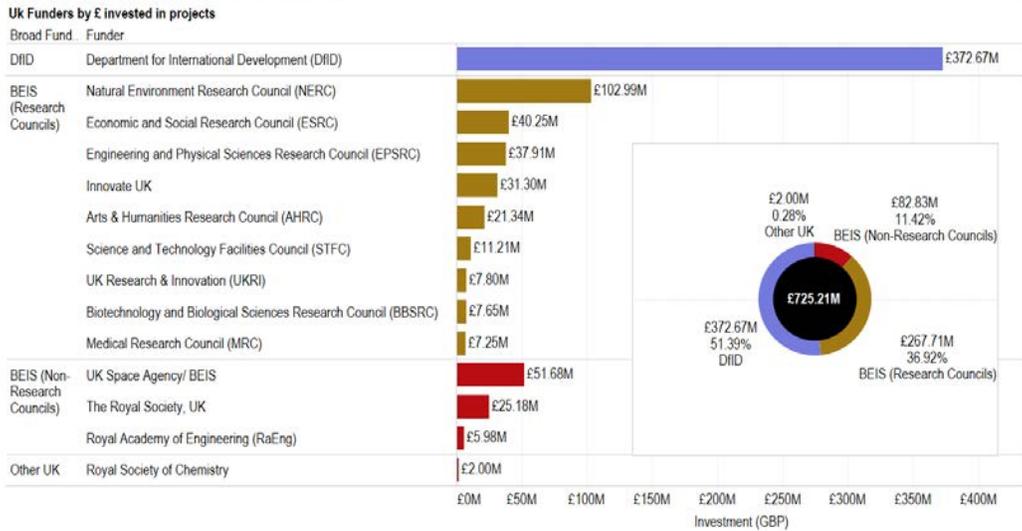


Figure 6

UK Funder Breakdown - Physical Sciences Projects (not clusters)

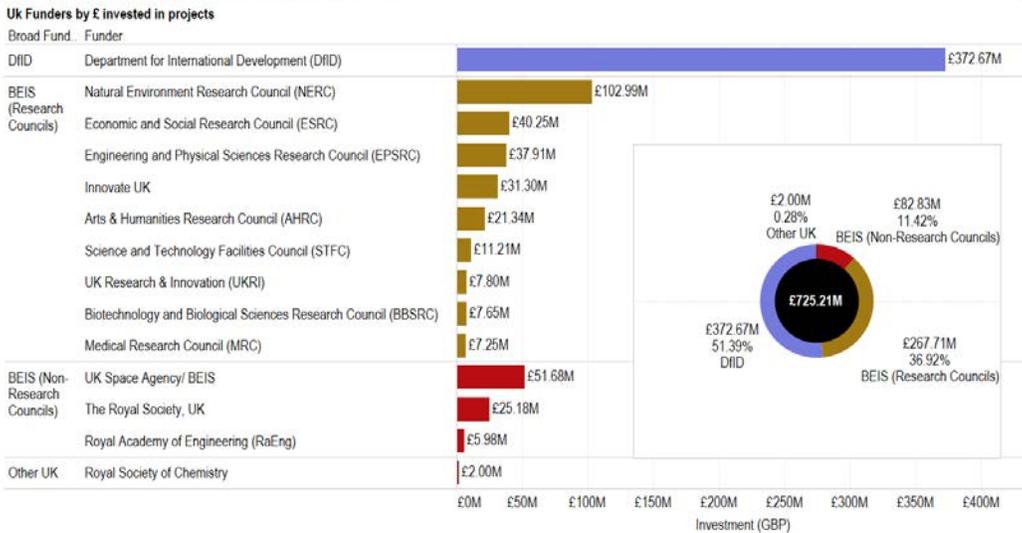


Figure 7

UK-Funded Physical Sciences Projects

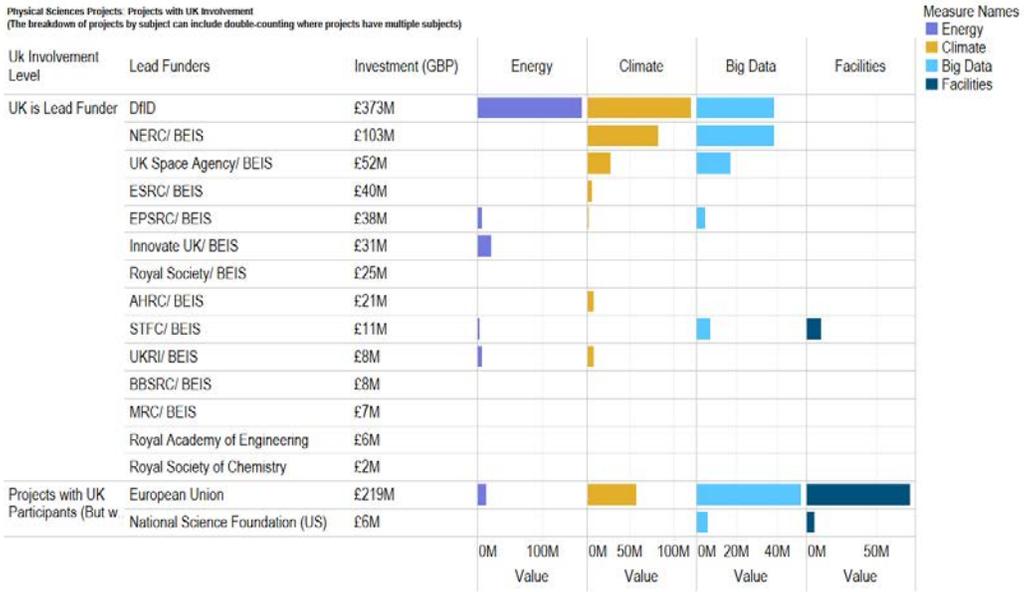


Figure 8

UK-Funded Physics Projects

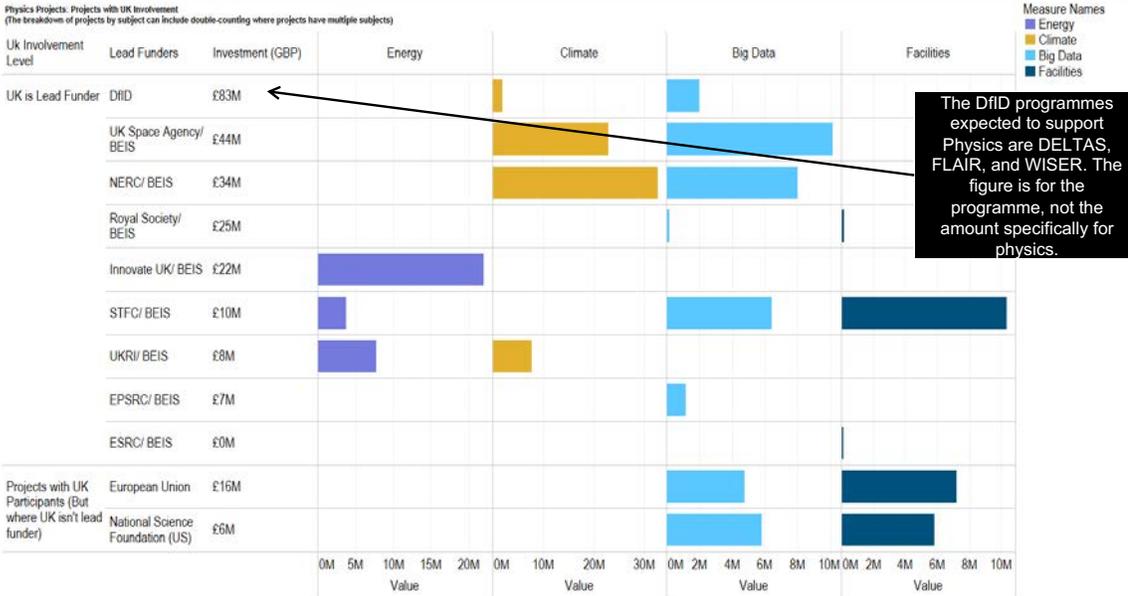


Figure 9

Most Prolific Collaborators

While over 1500 African organizations were identified as participating in at least one research or higher-education project, there were only 31 involved in 10 or more separate projects/programs. Likewise, there were over 500 UK organisations involved in African research or higher-education projects, but only 29 were involved in 10 or more separate projects/programs.

UK and African institutions participating are shown in Figs. 10 and 11, respectively.

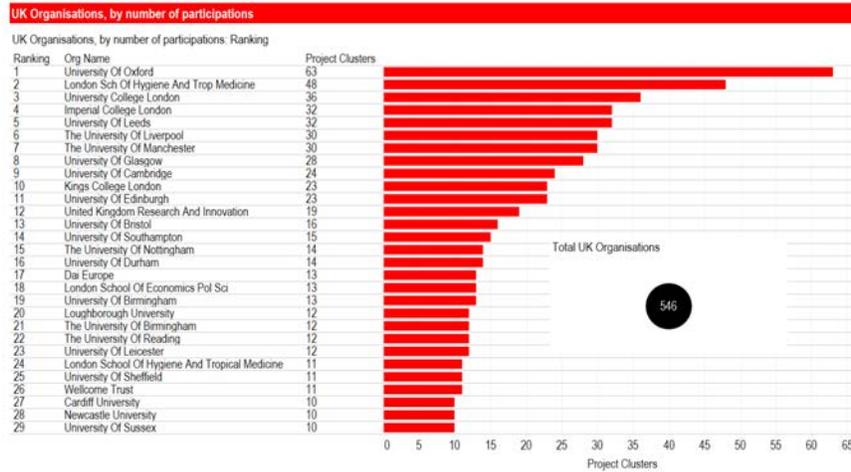


Figure 10

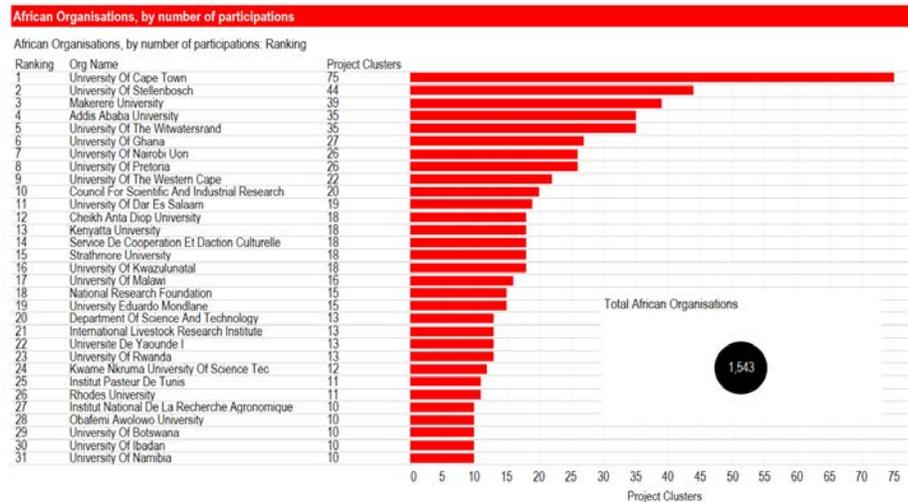


Figure 11

Way Forward

As for the new momentum to increase partnerships in physics, the IOP sent a survey out to many colleagues all over Africa to identify areas of mutual interest and has completed a

feasibility study for future partnerships. Finally, IOP has submitted a proposal to the UK Department for Business, Energy and Industrial Strategy (BEIS) for ~60M Euros.

Kevin will keep C13 updated on IOP's progress on Partnerships in Africa.

IX. Ad Hoc Committee on the Year 2022 Celebrations of the IUPAP Centenary and the International Year of Basic Sciences for Development

François, Michael and Carlo gave an update on their planning for the IUPAP Centenary and IYBSD. Due to the COVID-19 pandemic, progress has slowed on the planning. Their hope is to regain momentum in December 2020.

One of the major efforts will be to organize a conference in 2022. Thus, they are planning to submit proposals to various international funders for ~50K Euros that would pay for the travel of attendees from developing countries, with a major emphasis on young scientists.

Action Item #9

Plan for the Year 2022 Celebrations of the IUPAP Centenary and the International Year of Basic Sciences for Development, including submitting proposals to international funders to organize a conference.

Summary of Action Items

Action Item #1

Generate a survey for C13 member responses to assess the impact of COVID-19 on physics teaching and research. François will work with Joe Niemela in this effort.

Action Item #2

Submit a short proposal in the amount of 3K Euros to the IUPAP Council to support a specific project on affordable equipment and online learning.

Action Item #3

Apply for funding from the United Nations Organization's Objectives for Durable Development (UNO ODD) program to support specific projects on affordable equipment and online learning.

Action Item #4

Write a request to the Council to establish a Learning Management System (LMS) platform with the IUPAP C13 logo under C13's Management.

Action Item #5

Host a Zoom C13 International Conference on Affordable Equipment.

Action Item #6

Establish a C13 Working Group on Women in Physics. Initially, it will consist of the following:

- 1. Mmantsae Diale, Chair***
- 2. Lilia Mesa-Montes***
- 3. Kuijuan Jin***
- 4. Sekazi K. Mtingwa.***

Action Item #7

Mmantsae will write a description of the Goals of the new Working Group on Women in Physics.

Action Item #8

C13 Members should pass the information about the African Physics Newsletter to their colleagues, who can subscribe at the Web link <https://go.aps.org/africanphysics>, or write and pass along to one of the Editors any articles of interest about physics activities in Africa.

Action Item #9

Plan for the Year 2022 Celebrations of the IUPAP Centenary and the International Year of Basic Sciences for Development, including submitting proposals to international funders to organize a conference.

To conclude, the C13 Commission has a number of active Working Groups, Committees and Projects. It looks forward to working closely with the Council and other Commissions and Working Groups to ensure many successes in the future.