

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

**Format of Meeting: Zoom**

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

**August 2021**

**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 Meza-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 2021 Annual Meeting via Zoom**  
(Absent from Photo: Dmitri Wiebe)

The C13 Commission met via Zoom on Thursday-Friday, 26-27 August 2021, during the period 14:00-18:00 Trieste, Italy time. A group screenshot is provided in Fig.1.

### **I. Selection of Type-D Conference Grants**

C13 discussed the following Type-D Conference proposals for possible funding:

1. Int’l Conference on Critical Point & Onset of Deconfinement (Azerbaijan)/ Kevin
2. New Horizons in Quantum Correlated Materials (Brazil)/ Kuijuan
3. 4th CFPLP-Physics for a Sustainable Development (Cape Verde)/ Carlo
4. Improving Physics Education & Research in West Africa (Ghana)/ Dmitri
5. Int’l Workshop on Astronomy & Relativistic Astrophysics (Guatemala)/ Andreas
6. Dev. Workshop with Gender Perspective for Early Career (Honduras)/ Mmantsae
7. Regional Colloquium of Physics & Applications (Nigeria)/ François
8. Quantum Africa Conference Series 6<sup>th</sup> Edition (Rwanda)/ Aba
9. Joint School/Workshop on Application of Machine Learning (Rwanda)/Aba
10. 22nd Int’l Conference on Superlattices, Nanostructures, etc. (Vietnam)/Michael
11. Quantum materials in the Post Covid-19 Era (Vietnam)/Michael.

Following each enumerated conference above is the name of the C13 member who presented the conference for discussion along with a recommendation on whether or not

to fund it. After careful and extended deliberations, C13 chose the following conferences for funding along with the suggested amount:

- 1. Quantum Africa Conference Series 6th Edition**  
Location: Kigali, **Rwanda**  
Start date: 12/09/2022/ End Date: 16/09/2022  
Name of organiser/contact person: Omololu Akin-Ojo  
**Suggested amount: 6,000 Euros**
  
- 2. 4th CFPLP-Physics for a Sustainable Development**  
Location: Praia, **Cape Verde**  
Start date: 11/09/2022/ End Date: 16/09/2022  
Name of organiser/contact person: Sónia Semedo  
**Suggested amount: 5,000 Euros**
  
- 3. Quantum Materials in the Post Covid-19 Era**  
Location: Quy Nhon, **Vietnam**  
Start date: 10/07/2022/ End Date: 16/07/2022  
Name of organiser/contact person: Gregory Fiete  
**Suggested amount: 5,000 Euros**
  
- 4. Development Workshop with Gender Perspective for Early Career**  
Location: Tegucigalpa, **Honduras**  
Start date: 26/07/2022/ End Date: 29/07/2022  
Name of organiser/contact person: Angie Alejandra Sanchez Lopez  
Suggested amount: 5,000 Euros.

## **II. Nominations to the C13 Commission**

Sekazi updated C13 on the status of nominations for new members who are to assume their roles as members and officers starting the beginning of 2022. As for nominations from C13, there was a vigorous discussion and it decided to nominate two potential candidates:

- 1. Roknizadeh, Rasoul**  
Professor of Physics  
University of Isfahan  
Isfahan, Iran
  
- 2. Angie Sanchez**  
Professor of Physics  
National University of Honduras  
Tegucigalpa, Honduras

Sekazi agreed to seek the necessary information from both candidates in order to submit the nominations. However, Sekazi noted that the time to secure the nominations is quite short, since nominations are due 9 September 2021.

**Action Item #1**

***Sekazi will submit to the Council up to two (2) nominees for new membership on the C13 Commission.***

**III. Report from *APS Physics in Africa Project***

Joe gave an update on the quarterly *APS African Physics Newsletter*. He reported that there are approximately 700 subscribers, with ~60% from Africa and ~20% from the USA. He would like for the numbers to be much higher.

The new Editor-in-Chief is Moses Jojo Eghan, who is Professor of Physics and Provost of the College of Agriculture and Natural Sciences at the University of Cape Coast in Ghana.

The new Editor for Northern Africa is Mohamed Abdel Harith, who is Professor of Physics and Head of the Applied Laser Spectroscopy Laboratory at the National Institute of Laser Enhanced Sciences (NILES) at the University of Cairo in Egypt.

The driving force behind the Newsletter is Jim Gubernatis, Scientist at Los Alamos National Laboratory in the USA. He heads the Newsletter's International Advisory Board.

Joe noted that two C13 Members, Sekazi and himself, are on the APS Newsletter's International Advisory Board.

Finally, Joe urged C13 members to spread the word about the Newsletter.

During the discussion, Aba suggested that C13 start a project where it links African researchers with senior researchers in highly developed countries. This type of connection would go a long way to keeping African researchers up-to-date on the latest breakthroughs in physics research and teaching. Aba agreed to work on this effort.

**Action Item #2**

***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 #3**

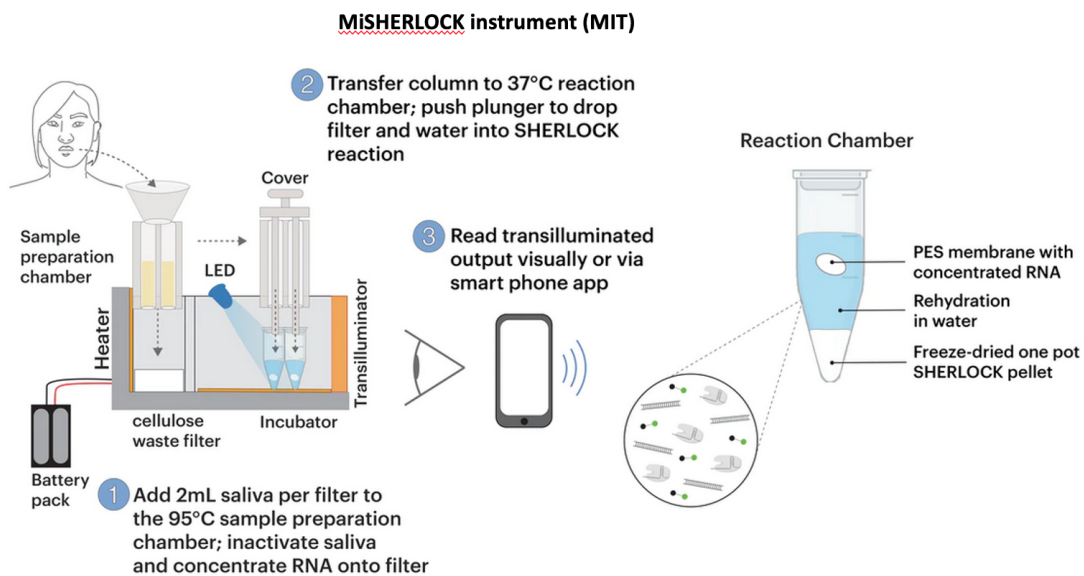
*The C13 Commission should institute a project to link African researchers with senior researchers in highly developed countries.*

#### 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

##### Report by François Piuzzi

Many affordable instruments were recently developed in response to Covid-19. Some were dedicated to low resource countries. Even if biological science was the most important part of these projects, physics also played an important role, which highlights the importance of multidisciplinary. A recent example (August 5th) from MIT focused on a Covid-19 detector using samples of saliva: <https://wyss.harvard.edu/news/a-test-that-detects-covid-19-variants-in-your-spit/>. See Fig. 2.



**Figure 2**

As for the characteristics of developed instruments, we have the following:

### A need for multidisciplinaryity

- Chemistry
- Physics (use of light - optics- electronics – energy supply)
- Biology
- Prototyping of instrument structure with 3D printing (now 3D printing is becoming ubiquitous for prototyping and recently for manufacturing)
- Mechanics (respirators).
- It should be pointed out that 3D printing is now possible to a high level in some Fablabs in Africa, like the STICLAB located in Tanzania and funded by Cambridge and Bath Universities to manufacture the Open Flexure Microscope.

### Problems

- The authorization of use depends on the local health system and thus upon bureaucracy!
- Availability of reagents.
- Staff training, even for simple instruments.

Sometimes, the bottleneck for instrument development is neither scientific nor technologic, but rather bureaucratic, which limits its availability and use.

### ***More on Affordable Equipment***

1. Ajith Kumar is implementing a Github for the WG's projects.
2. The WG should test selected project ideas in order to know whether the equipment is really usable and useful.
3. The WG should integrate young scientists from Africa into this group.
4. The WG should establish and involve student chapters for performing tests. Senior experimental scientists could mentor these chapters.
5. The WG should select a project and buy the electronic components. The problem is sending them to different countries, considering custom duties and shipment costs. This would be useful for countries where it is difficult to obtain materials rapidly.

### ***Celebrations of the IUPAP Centenary and International Year of Basic Sciences for Development***

Together with Ernst, François has been working on a *Physics for Development Conference* with a tentative venue at the Academy of Sciences in Brussels. The WG anticipates involving other organizations, including Abdus Salam ICTP, TWAS, and UNESCO.

Due to the necessity of raising conference funding, it may not be possible to convene the conference in 2022; thus, the WG is now looking toward 2023 and connecting the conference with the International Year of Basic Sciences for Development.

Those volunteering to work on the Conference Organizing Committee are the following:

1. François – Chair
2. Aba
3. Ajith
4. Carlo
5. Ernst
6. Michael
7. Mmantsae
8. Joe.

***Survey of C13 members to assess the impact of Covid-19 on physics teaching and research***

Last year, François received reports about the impact of Covid-19 from C13 Commission members. The following was extracted from those reports:

1. There were strong differences between developed and low resource countries.
2. The impact was not only about studies, but also about living conditions, including access to food.
3. Some universities were providing computers to their students to enable distance learning.
4. Experimental work was understandably more affected than theoretical work.
5. Poor Internet connectivity affected many of the students.
6. Some students encountered problems in receiving extensions to their Ph.D. grants.
7. Some students encountered various social problems.
8. Last but not least, a touch of optimism: Some creative faculty arranged for students to perform home experiments using apparatus available at home. Examples may be found on You Tube channels, such as seen at <https://youtu.be/HqV3B3CWC9o>

**Action Item #4**

***Complete the implementation of a Github to serve as a repository of affordable equipment projects.***

**Action Item #5**

*Establish student chapters with senior scientist mentors for performing tests on potential affordable equipment and its applications.*

**Action Item #6**

*Plan a conference for the Year 2023 to celebrate the IUPAP Centenary and International Year of Basic Sciences for Development.*

**V. LAAAMP Updates**

Sekazi gave an update on the accomplishments and activities of *LAAAMP*. The Executive Committee members are shown in Fig. 3. He briefly described an advanced light source as consisting of an electron storage ring, supported by other accelerator components, as shown in Fig. 4 for the Advanced Photon Source in the USA. There are many beamlines resulting from electron radiation caused by both bending magnets and various kinds of insertion devices as shown in Fig. 5. To give size perspective, Fig. 6 shows a man standing next to an insertion device called an undulator.



**Michele Zema (Chair)**  
University of Pavia, Italy  
IUCr Executive Outreach Officer



**Marielle Agbahoungbata**  
Coordinator, X-TechLab, Cotonou, Benin



**Sekazi Mtingwa**  
TriSEED Consultants, LLC, Hillsborough, NC, USA  
Chair of the IUPAP C13 Commission for  
Development



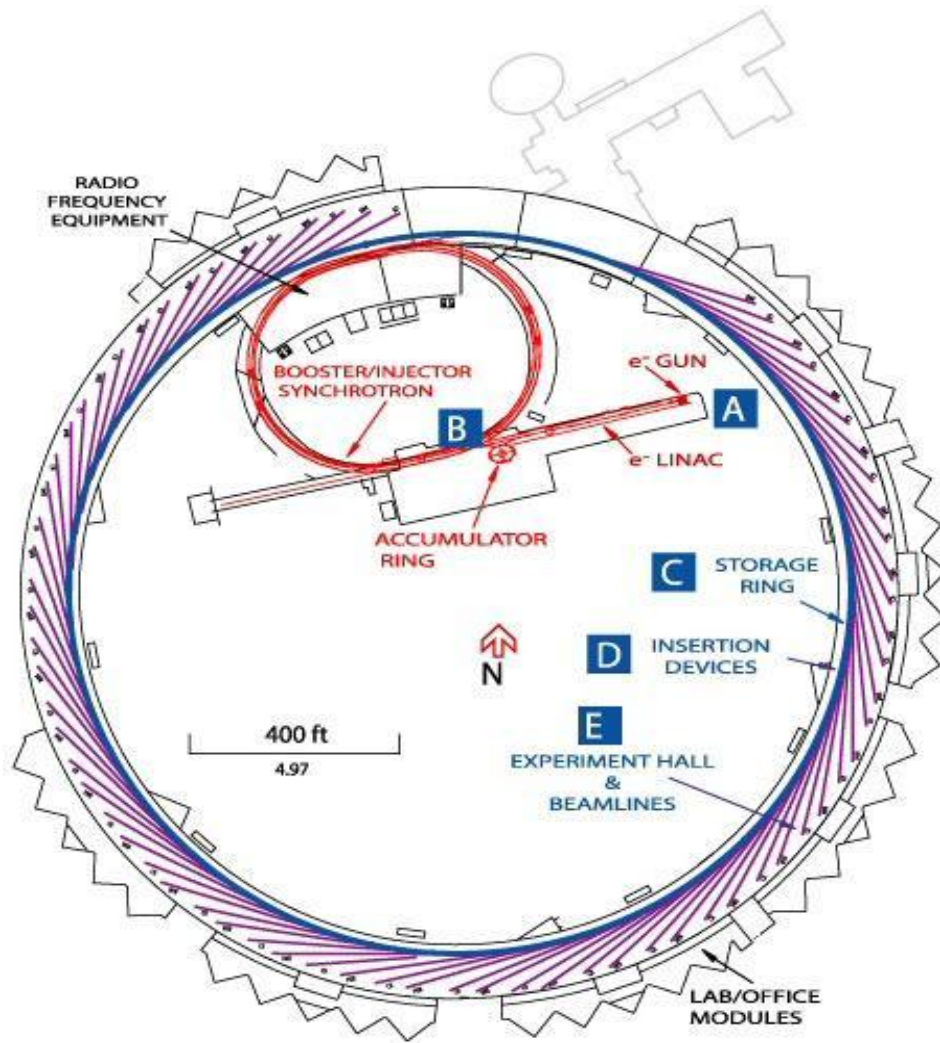
**Özgül Öztürk**  
University of Siegen, Germany  
Chair of SESAME Users' Committee



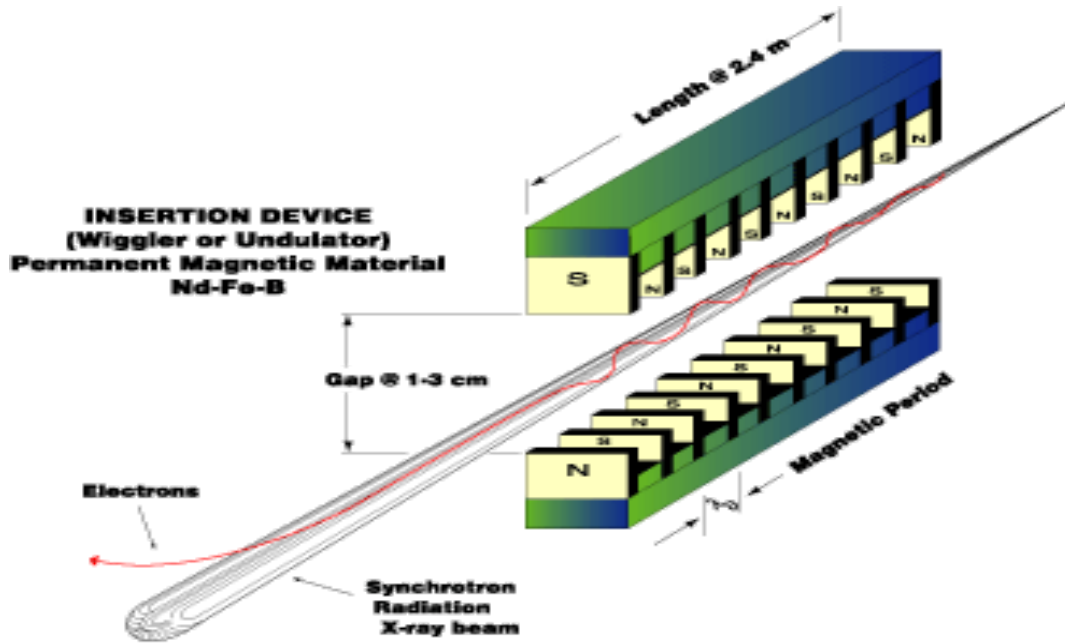
**Sandro Scandolo**  
Abdus Salam International Centre for Theoretical  
Physics (ICTP), Trieste, Italy



Figure 3. LAAAMP Executive Committee



Schematic of the Advanced Photon Source (USA)  
Figure 4



Schematic of Insertion Device  
 Figure 5



Undulator Insertion Device at the Advanced Photon Source (USA)

## Figure 6

The current set of partnering Advanced Light Sources (AdLSs) are the following:

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. National 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, Synchrotron 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 set of Tasks for *LAAAMP* are the following:

- TASK 1**      Develop a **Strategic Plans** for each Region.
- TASK 2**      Establish an AdLS/Crystallography **Colloquium Programme**.
- TASK 3**      Publish and Disseminate an AdLS/Crystallography **Informational Brochure** for government officials and public.
- TASK 4**      Send Researchers and Students for **Training** at International AdLS and Crystallography Facilities and Schools.

**Task 1 is complete**, except for the latest region, the Pacific Islands.

## TASK 2: LAAAMP Colloquium Programme

The Colloquium Programme dispatches experienced AdLS users and crystallographers to universities and other institutions to give presentations on the capabilities of AdLSs and crystallography and engage in discussions on how they can enhance researchers' investigations and offer career opportunities for university students. While in a given location, the lecturers will visit government officials to inform about the importance of investing into science and AdLS/crystallographic disciplines in particular.

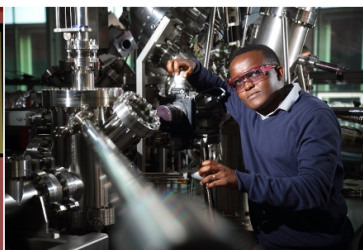


### COSTA RICA

4 Dec 2017

#### Diego G. Lamas

National University of San Martín and CONICET, National Scientific and Technical Research Council, Argentina; President of the Latin American Crystallographic Association



### RWANDA

15-20 Dec 2017

#### Prosper Ngabonziza

Max-Planck-Institute for Solid State Research, Department of Solid State Quantum Electronics, Stuttgart, Germany



### BENIN

4-5 May 2018

#### Thierry d'Almeida

Senior Research Scientist at CEA, Commissariat à l'Énergie Atomique

### X-TechLab at Sèmè City, Benin

X-Ray Techniques for Sustainable Development



Thierry d'Almeida presenting LAAAMP and the X-TechLab project to the Cabinet of the Government of Benin.



X-TechLab is aimed at **training** Master and Ph.D. students from Benin and neighbouring countries every year, and at **establishing a permanent user research facility** with experienced, permanent staff to act as a hub for the region.

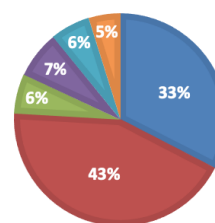
### LAAAMP success stories



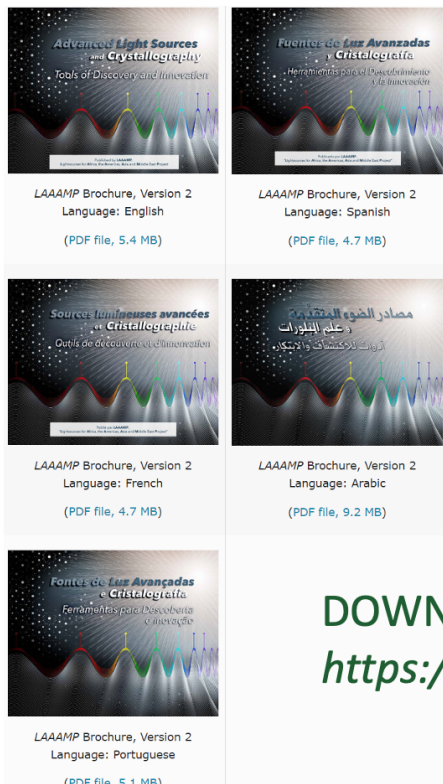
**3 training sessions in 2019-2020:** 84 learners from 12 African countries: Benin, Burkina Faso, Burundi, Cameroon, Congo-Brazzaville, the Democratic Republic of Congo, Senegal, Togo, Ghana, Ethiopia, Nigeria and Côte d'Ivoire. 20 invited experts.



- Chemistry
- Material sciences
- Biochemisrty
- Physics
- Engineering
- Pharmaceutical sciences



### TASK 3: LAAAMP brochure



The LAAAMP brochure “*Advanced Light Sources and Crystallography: Tools of Discovery and Innovation*” is available in **English, Spanish, French, Arabic and Portuguese**.

Translations have been made available thanks to a collaboration with the International Atomic Energy Agency (IAEA).

Brochure editor: **Ernie Malamud**

**DOWNLOAD FOR FREE at**  
<https://laaamp.iucr.org/tasks/brochure>

### LAAAMP > Tasks > 4. Faculty-Student (FAST) Teams to AdLSs and Crystallography Facilities

#### **Eligibility**

**Faculty** members at universities in Africa, the Caribbean, Mexico, Southeast Asia, Middle East or Pacific Islands.

Interested in using AdLSs to further their research and training endeavors.

Previous experience with using AdLSs is limited to a year or less.

Ability to spend 2 months as a full-time visitor in residence at an AdLS that is a **LAAAMP** collaborative partner.

**Student:** Registered as full-time Ph.D. student and supervised by the Faculty member.

#### **Financial Support**

LAAAMP provides 2,000 Euros per person to cover transportation and (partially) accommodation costs.

The remainder of accommodation and subsistence should be negotiated with the host AdLS and other sources of support.

The FAST Teams Program has been stalled since the outbreak of the Covid-19 pandemic. As of this meeting, only two FAST Teams anticipate using their awards. They are Kudakwashe Jakata and his student from Wits University in South Africa and Pantawat Sampanpanish and his student from Chulalongkorn University in Thailand,. The full set of awardees is the following:

<b><u>Continuing FAST Teams</u></b>	<b><u>Institution/Department</u></b>	<b><u>AdLS</u></b>
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
<b><u>New FAST Teams</u></b>		
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)	NSLS-II
Magdaleno R. Vasquez	U. of the Philippines, Diliman	SLRI
Abdallah Shaltout	Nat'l Research Center (Egypt)	APS
Morteza Mozaffari	U. of Isfahan (Iran)	SESAME

## **VI. UNESCO Recommendation on Open Science**

Samia reported on her involvement as a Member of the Open Science Advisory Committee. UNESCO is preparing an international standard-setting Recommendation on Open Science to be adopted by Member States in November 2021. The context is as follows:

- Complex and interconnected environmental, social and economic challenges for the people in the world, including poverty, health issues, access to education, climate changes
- Vital importance of science, technology and innovation to respond to these challenges by providing solutions
- The opportunities and the potential provided by the expansion of information and communication technologies and the global interconnections to accelerate human progress
- Science is a global common good and should be accessible and bring benefit to all.

- Open Science is a movement to transform scientific practice and to adapt to the changes and challenges to increase societal impact of Science.
- Quality of science can be improved by an open, collaborative and inclusive way.
- A greater access to scientific inputs and outputs can improve the effectiveness and the productivity of scientific systems by reducing duplication costs and allowing more research on the same data.
- Open Science means Open Access, Open Data, Open Sources/Open Hardware, Open Science Infrastructure, Open Evaluation, Open Educational Resources, Open Engagement of societal actors (collective intelligence for problem solving).



## Core values and guiding principle

### The core values of open science

Quality and integrity  
 Collective benefit  
 Equity and fairness  
 Diversity and inclusiveness

### The guiding principles for open science

Transparency, scrutiny, critique and reproducibility.  
 Equality of opportunities  
 Responsibility, respect and accountability  
 Collaboration, participation and inclusion  
 Flexibility  
 Sustainability





## Aim and objectives of the recommendation

1. Provide an international framework for open science policy and practice that recognizes disciplinary and regional differences in open science perspectives
2. Common definition, shared values, principles and standards for open science at the international level

## Areas of actions

- (i) Promoting a common understanding of open science, associated benefits and challenges, as well as diverse paths to open science
- (ii) Developing an enabling policy environment for open science
- (iii) Investing in open science infrastructures and services
- (iv) Investing in human resources, training, education, digital literacy and capacity building for open science
- (v) Fostering a culture of open science and aligning incentives for open science
- (vi) Promoting innovative approaches for open science at different stages of the scientific process
- (vii) Promoting international and multi-stakeholder cooperation in the context of open science and with a view to reducing digital, technological and knowledge gaps

Physics was one of the earliest scientific communities to embrace Internet-enabled Open Science with the arXiv repository. In the last decade, SCOAP3 (Sponsoring Consortium for Open Access Publishing in Particle Physics), an initiative coordinated by CERN, enabled most journals in particle and high energy physics to transition fully to an open access publication model.



## Open Science for low income countries

- Moving to a fully open publishing model may erect **new financial barriers to those in relatively less well-funded subject areas and geographical regions.**
- Researchers based in lower-income economies have fewer resources to cover the costs of open access article publication charges.
- In many countries, it is difficult to find funds for open access publication **especially when funds have been devoted to subscription-based journals.**
- To provide some shorter-term support many publishers **reduce or even remove open access charges for researchers based in lower-income economies.** But this model is unlikely to be sufficiently sustainable to support transition to open publishing globally.

From the paper of **Daniel Keirs** (associate director at IOP Publishing),  
<https://www.researchinformation.info/analysis-opinion/accelerating-open-science-physics>

### Action Item #7

*Samia will keep the C13 Commission up-to-date on the progress of UNESCO's Open Science Initiative.*

## **VII. C13 Working Group on Women in Physics**

**Chair:** *Mmantsae Diale, Chair*  
**Members:** *Lilia Mesa-Montes*  
*Kuijuan Jin*  
*Sekazi K. Mtingwa*

Mmantsae reported on a Workshop that she hosted in the Department of Physics at her institution, the University of Pretoria in South Africa. The Workshop convened on 23 August 2021, and the title was *Early Career Researchers – Women in Physics*. The following gave presentations:

Sarah Pearce, Australia, *Entrepreneurship*  
Florence Mutonyi D'ujanga, Uganda, *Personal Experience*  
Marie Chantal Cyulinyana, Rwanda, *Early Career Researcher Experience*  
Mmantsae Diale, South Africa, *Navigating Alone*  
Igle Gledhill, South Africa, *Leadership*.

There were 80 in attendance, mostly women, and they held quite fruitful discussions. There was general agreement on the lack of opportunities and mentors for women in physics.

Mmantsae stated that Celline Omondi from the Masinde Muliro University of Science and Technology in Kenya, and Saphina Biira from Busitema University in Uganda, will be funded by her lab to visit her at the University of Pretoria.

Mmantsae reported that she is looking for other funding opportunities for early career researchers to visit her group.

### **Action Item #8**

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

## **VIII. Promotion of the Movie Series *Science in the City* -- Campaigning for Physical Sciences across Africa by Stéphane Kenmoe**

Sekazi presented a proposal that he received from Stéphane Kenmoe, an early career Cameroonian physicist, who makes and distributes short films in Africa to promote science and technology literacy. He currently works at the University of Duisburg-Essen in Germany. The proposal states the following motivation and goals:

*Most developing countries have a common denominator: the lack of scientific culture. Africa, for example, has about 200 scientists per million inhabitants, compared to a world average of 1200. African culture has a strong musical, political and sports connotation. To achieve its sustainable development objectives, the African continent will have to produce many more researchers. The promotion of sciences in order to create more vocations is therefore more than ever necessary. It is imperative to build a solid scientific culture, in line with the aspirations of the continent and taking into account the culture and heritage because it is in fact the real basis of any scientific development and technological growth. The success of this vast project relies on the promotion of science popularization and communication around science issues.*

Originally, Stéphane requested a total of US\$12, 440 to visit and show his films in Senegal, Togo, Cameroon, Ghana, Morocco, Rwanda and South Africa. However, he has been able to raise most of the funds and currently only needs US\$2,000.

**Action Item #9**

***Sekazi will investigate whether IUPAP can provide US\$2,000 in support of this project.***

**IX. Request for Assistance in the Democratic Republic of Congo**

François and Michael presented a request for teaching personnel and equipment from someone named Elie Mutula Nzigo. who is originally from the Democratic Republic of Congo but immigrated to Norway at a young age. She has an engineering degree and wants to facilitate STEM education in the Congo. She started a private school there in the District of Uvira, focusing on science and technology. The school has been operating for six years. According to Nzigo, the school is taught in French.

Nzigo would like to develop some projects together with the C13 Commission, especially as regards teacher training and summer activities where experts come and teach their students.

**Action Item #10**

***François and Michael will communicate with Elie Mutula Nzigo to determine how C13 can partner with her in the Democratic Republic of Congo.***

**X. News from Physique sans Frontières**

François gave updates on Physics without Borders.

## News from Physique sans Frontières in Applied Physics



Commission «Physique sans Frontières»  
commune à la SFP et à la SFOG



«Le Savoir est une arme, l'ignorance nous désarme, partageons-le savoir!»

Some news from commission « Physics without borders » (**French Physical Society and French Optical Society**)

American Physical Society and Mali. The Prof. **Sylvester James Gates APS chair** presented a conference (by Zoom) for the Mali “Douzième symposium sur les sciences appliquées” (August 1-6) **MY LIFE IN AND OUT OF PHYSICS**. (Ancien conseiller en Science et Technologie du Président Barack Obama).

**Diasporeines Africa**: A recent initiative from a colleague, **Prof Odette Fokapu**, « **Diasporeines** » which is dedicated to training young female students to make young African girls aware of the digital professions and to support female digital entrepreneurship in Africa.

It begun in Cameroun with the support of Prof. Paul Wofo at Science Tech Service facility (Yaoundé) and this year in Burkina Faso with the support of **Arouna Darga**. Mali will be the next.

[diasporeines.africa@gmail.com](mailto:diasporeines.africa@gmail.com)

and [website https://www.lesdiasporeinesafrica.org/](https://www.lesdiasporeinesafrica.org/)



### Training in solar energy:

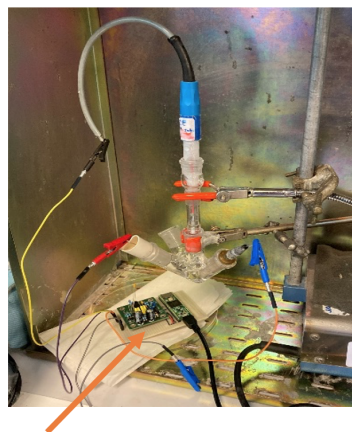
We organized our first training in solar applications at Ouagadougou (BURKINA FASO), the participants were university assistants as well as high school teachers. A second one will take place in September. The trainer was **Arouna Darga** (senior lecturer Sorbonne Université). In order to fund future trainings we decided to try crowdfunding.



**“Electrochemistry for development”:**

We were involved by an electrochemistry professor Emmanuel Maisonhaute (Sorbonne University) in a call entitled « Sciences frugales » (CNRS – IRD). The project named ELABORE was selected and aims to develop practical applications based on a miniaturised “potentiostat” for field detection of fake medicine and detection of traces of heavy metals in water. This will be done in cooperation with scientists of Abomey Calavi University (Benin). *The duration of the project is two years.*

I also want to point out that Emmanuel Maisonhaute created a Youtube chain on “at home electrochemistry experiments”(for COVID times) for his students, the name is “Le courant passe” (current is going through), which I found very interesting.



Miniaturized potentiostat developed by Emmanuel Maisonhaute et Raymond Campagnolo (under open source paradigm)

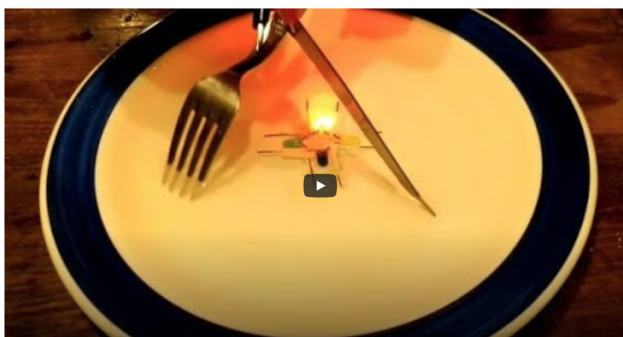
Youtube chain « Le courant passe » épisode 3 [https://www.youtube.com/watch?v=bifEBSB1\\_9Y](https://www.youtube.com/watch?v=bifEBSB1_9Y)

« The led soup : electrochemistry at home! » by Dodzi ZIGAH Bordeaux University and Emmanuel Maisonhaute Sorbonne University



What is needed:

- ✓ Soup plate
- ✓ Fork
- ✓ Knife
- ✓ Water
- ✓ Salt
- ✓ 9V battery
- ✓ Leds

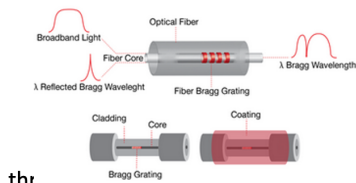


## CROWDFUNDING FOR LEBANON :

A **CERN** engineer **Martin Gastal** launched an action to get the funds to transfer computing equipment (hardware) from CERN to Lebanon. This is the first step to build a local computing hub. CERN has agreed to provide recycled computing hardware (servers and disks) as a donation, while CMS is training the specialists who will operate the HPC4L facility in Beirut. Some funds have also been secured from the EU to train Lebanese specialists in disciplines required for the autonomous operation of the facility. <https://home.cern/news/news/knowledge-sharing/cms-launches-initiative-support-lebanese-colleagues>

### From CERN experiment to monitoring irrigation in Lebanon

Martin Gastal also developed applications for monitoring agricultural irrigation through Fiber optics sensor used at CMS experiment at CERN. <https://cms.cern/content/agriculture>



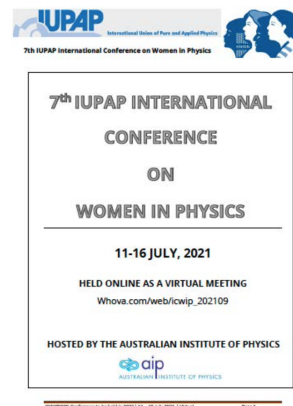
The CMS's fibre optic sensors use **fibre Bragg gratings (FBG)**, a sensing technique that was invented in 1978. To make an FBG sensor, microscopic reflectors are etched into the core of an optical fibre using a laser. When light is shone into one end of the fibre and the light meets an FBG sensor, some of it reflects back at a specific wavelength of light (determined by the spacing between reflectors) and the rest continues through (to the left). The reflected light reaches the sensors where a **data acquisition system (DAQ)** translates it into electric signals. A rise or fall in temperature will cause the optical fibre to expand or contract, respectively. This changes the amount of spacing between the reflectors. This change in separation will cause the DAQ to sense a shift in wavelength of the reflected light, signaling to scientists that the environment around the sensors has changed.

## XI. 7<sup>th</sup> IUPAP Conference on Women in Physics

Lilia reported on the latest IUPAP Conference on Women in Physics that convened virtually during 11-16 July 2021 by invitation only.

### General info

- 377 delegates
- 64 countries (4 for the first time)
- 5 plenary sessions
- 5 workshops
- 118 posters (situation of women, research)
- On line
- Instead of travel grants, support was given to have access as for devices and internet connection (around 20).
- Proceedings to be published in AIP Conference Proceedings



# WIP website and Proceedings

2017

<http://icwip2017.iopconfs.org/home>

<https://aip.scitation.org/toc/apc/2109/1>

2014

[5th International Conference on Women in Physics, Canada,](#)

[AIP Conference Proceedings 1697 , 050001 \(2015\)](#)

2011

[4th International Conference on Women in Physics, South Africa,](#)

[AIP Conference Proceedings 1517 \(2013\)](#)

2008

[3rd International Conference on Women in Physics, Korea,](#)

[AIP Conference Proceedings 1119 \(2009\)](#)

2005

[2nd International Conference on Women in Physics, Brazil,](#)

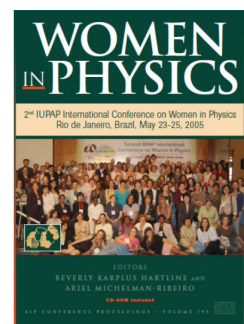
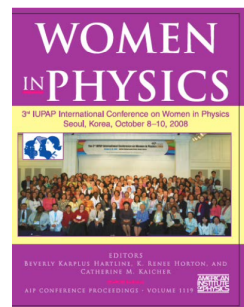
[AIP Conference Proceedings 795\(2005\)](#)

2002

[1st International Conference on Women in Physics, France,](#)

[AIP Conference Proceedings 628 \(2013\)](#)

Del WORKING GROPUO <http://wgwip.df.uba.ar/>



## Summary of Action Items

### **Action Item #1**

*Sekazi will submit to the Council up to two (2) nominees for new membership on the C13 Commission.*

### **Action Item #2**

*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 #3**

*The C13 Commission should institute a project to link African researchers with senior researchers in highly developed countries.*

### **Action Item #4**

*Complete the implementation of a Github to serve as a repository of affordable equipment projects.*

**Action Item #5**

*Establish student chapters with senior scientist mentors for performing tests on potential affordable equipment and its applications.*

**Action Item #6**

*Plan a conference for the Year 2023 to celebrate the IUPAP Centenary and International Year of Basic Sciences for Development.*

**Action Item #7**

*Samia will keep the C13 Commission up-to-date on the progress of UNESCO's Open Science Initiative.*

**Action Item #8**

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

**Action Item #9**

*Sekazi will investigate whether IUPAP can provide US\$2,000 in support of this project.*

**Action Item #10**

*François and Michael will communicate with Elie Mutula Nzigo to determine how C13 can partner with her in the Democratic Republic of Congo.*

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.