

# ASFAP Working Group Summary of Societal Engagements

**African Conference of Fundamental and Applied Physics (ACP2021)  
March 11, 2022**

Mounia Laassiri

On behalf of the ASFAP— Societal Engagements Co-conveners

# At the ASFAP—CPM

## ASFAP Working Groups: **Joint Session on Societal Engagements**

- **Societal Engagements Status and Plan**
  - Physics Education
  - Community Engagement
  - Young Physicists Forum
  - Women in Physics
- **Discussion on Societal Engagements**

## **Acknowledgements!**

Special thanks to the ASFAP— Societal Engagements Co-conveners & Session organizers for their contributions!!!

# ASFAP— Societal Engagements Co-conveners

## Community Engagement

0 LOIs as a 1ry c.  
11 LOIs as a 2ry c.



Dr. M. C. U. Ninamureke  
(UJ, SA)



Prof. J. Mimouni  
(UMC, AG)



Prof. N. A. Boye-Faye  
(UCAD, SN)

## Physics Education

6 LOIs as a 1ry c.  
10 LOIs as a 2ry c.



Dr. S. Ramaila  
(UJ, SA)



Dr. U. Raich  
(CERN, Austria)



Dr. B. T. Fankam  
(UCAD, SN)

~ 28 LOIs  
(several  
overlapping)

## Women in Physics Forum

0 LOIs as a 1ry c.  
0 LOIs as a 2ry c.



Dr. I. Chidinma  
(NASRDA,, NG)



Dr. M. C. Cyulinyana  
(UR,, RWND)



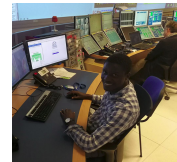
Dr. D. Mathebula  
(UNIVEN,, SA)

## Young Physicists Forum

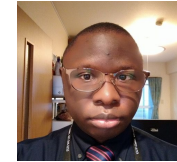
3 LOIs as a 1ry c.  
1 LOIs as a 2ry c.



Dr. M. Laassiri  
(UM5, MA)



Dr. D. Boye  
(BNL, USA)



Dr. B. Mulilo  
(UNZA,, ZA)

# Physics Education

Research in fundamental and applied physics needs to be supported by a strong and effective physics education to train the next generation of physicists.

The objective of the Physics Education working group is identify where improvements are needed and propose improved methods to prepare and deliver physics instructions or lessons.

- Promote science-led development on a sustainable basis
- Contribute to the physics literacy of High Schools and Universities
- Revitalize Higher Education

# Physics Education Activities

## Physics Education 1st Workshop

Held on November 22, 2021: <https://indico.cern.ch/event/1096709/>

- Physics Education at university level

## Physics Education 2nd Workshop

Held on December 7, 2021: <https://indico.cern.ch/event/1096710/>

- Physics Education at university level

## Physics Education 3rd Workshop: Rencontre avec les Francophones

Held on February 18, 2022: <https://indico.cern.ch/event/1128780/>

- Trois tables rondes:
  - La physique dans les universités
  - La physique dans les établissements secondaires
  - La collaboration internationale

## Physics Education 4rd Workshop

Held on February 25, 2022: <https://indico.cern.ch/event/1128494/>

- Physics Working Groups
- Engagement Working Groups

3rd & 4rd workshops have been recorded and provide a nice resource for people trying to get involved with the ASFAP— Physics Education Working Group.

# Physics Education

## LOIs related to Physics Education

1. International Center for Experimental Physics in Africa (ICEPA)
2. **The African School of Fundamental Physics and Applications (ASP)**
3. Computing in physics education
4. Embedded Systems Applications in Agriculture
5. Towards Quantum Research, Quantum Computing and Quantum Technologies
6. **Posing Big Questions and Developing Tools for Learners: Physics Education and Outreach**
7. **Review of Physics Educational System in African Universities**
8. **Peer Assisted Physics Learning**
9. **Learn to make mistakes**
10. Physics Energy Improvement and Application for New Africa
11. Astro-particle and cosmology potential in the Underground of Africa
12. Observational astronomy in North Africa
13. Unique Research Facilities at the SSC Laboratory in South Africa
14. The Use of an Am-Be Neutron Source For Teaching And Applied Research
15. My vision for Physics in Africa
16. The Pan African Virtual Nuclear University

# Physics Education

## Issues raised

### General issues:

- Education system do not fit the African context
- Lack of strategy & policy for physics education
- Lack of infrastructure, research funds & facilities
- Theory dominated curricula (no room for applications, technologies, and experiments)
- Need for training of physics teachers & lecturers (esp. in experimental physics)
- Scientific events needed for networking
- Mobility (in-house regional and pan-African levels)
- No database of African universities, publications (journals) and theses
- Underrepresentation (and/or misrepresentation) of Africa in physical science

### Curriculum related issues:

- Harmonization of curricula (Grading scales)
- Science communication in physics curricula
- Multi and/or interdisciplinary curricula
- Activities at schools and universities (competition, awards)
- Mentorship

# Physics Education Proposals

- Increase investment in infrastructure and equipment
- Foster diversity and African integration – scholarship for intra-African mobility
- Call for more coherence and good collaboration with all stakeholders
- High quality and low fees African Physics journals
- Certified Africa Uniform Evaluation System (harmonization)
- Pan-African Science Foundation (ASF)
- Pan-African association of physics teachers and lecturers
- Establish a platform/Enhance collaboration with the African diaspora
- Curricula that make provision for fundamental and technological applications
- Multidisciplinary curricula that link physics with other fields
- International Centre for Experimental Physics in Africa (ICEPA)
- The Pan African Virtual Nuclear University
- Low-cost experimental physics through microprocessors
- Create awareness of existing research facilities in Africa
- Database of African universities
- African universities ranking system
- Database of Master and PhD theses



# Community Engagement

The Community Engagement working group has the responsibility to:

- Draw a broader engagement and participation of the African and non-African communities in the development of the African Strategy.
- Address issues of physics education and intra-African—national, regional and pan-African—collaborations on education and research.

# Community Engagement Activities

## ASFAP Community Engagement Meeting with other Engagement Groups

Held on February 10, 2021: <https://indico.cern.ch/event/1124350/>

- To discuss collaboration between the ASFAP C.E group and other ASFAP Engagement groups.
  - Topic: Physics Outreach and Education

Societal Engagements agreed to have **bi-monthly** meetings

To discuss a specific topic and how concerned engagement groups can organise themselves to work together on the topic.

This meetings has been recorded and provide a nice resource for people trying to get involved with the ASFAP—Community Engagement Working Group.

# Community Engagement

## Proposed Topics 1/2

- **Physics and Environmental Pollution:**

How can we use Physics to resolve the problem of environmental pollution and to raise awareness of the local community on environmental pollution?

- 1. Waste management methods:**

- a. Waste sorting
- b. Burning of waste without harming the environment
- c. Good recycling methods
- d. Special collection bins of waste such as pharmaceuticals

- 2. Water purification methods**

- 3. Education & Awareness campaigns on the safe disposal of pharmaceuticals and plastic waste (e.g., Community surveys; School visits; Radio Talks; Podcasts; website; etc)**

# Community Engagement

## Proposed Topics 2/2

- **Public outreach & Education:**

To create awareness and broaden community's understanding of Physics.

1. **Conduct a demographic survey on the views of the community on some of the crucial problems concerning Physics education and perception in Africa**
2. **Periodic Trainings of Physics teachers in Africa**
3. **Virtual Physics laboratories**
4. **Annual Physics community fairs: to show the local community how Physics can help them in everyday life & introduce children to the fun of Physics**
5. **Organise campus visits for high school children to observe some fun Physics experiments**
6. **Weekend & holidays science classes**
7. **Physics Olympiads**

**Some of LOIs are related to the C. E. proposed topics!**

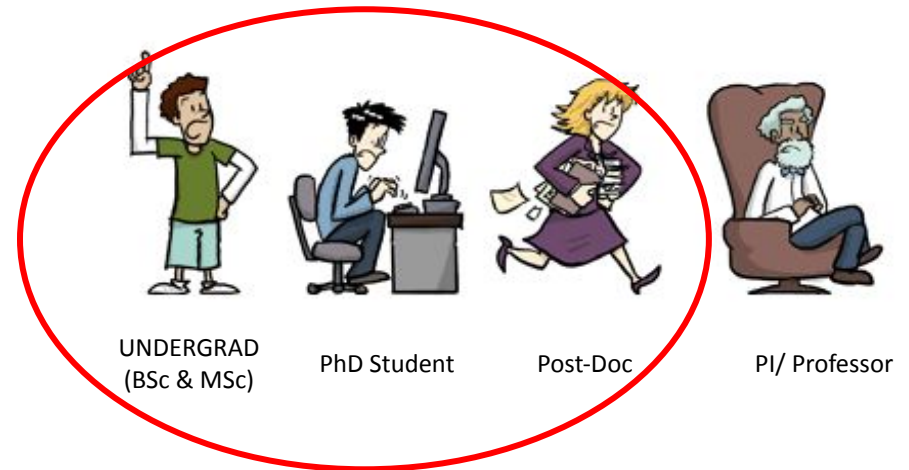
**They Have to look at them and starts working on the most promising one!**

# Young Physicists Forum

**Who we are:** Young African physicists brought together by ASFAP process.

- "Young African Physicists" = Undergrad & grad students; postdocs, young physicists faculty, engineers (<~10 years post-PhD)

- **Encourage** leadership in young researchers in physics
- **Foster** physics among local communities and institutions
- **Connect** young physicists in Africa



Young Physicists Forum

For Young African Physicists

By Young African Physicists

# Young Physicists Forum Activities

## First YPF-wide meetings

Held on June 9, 2021: <https://indico.cern.ch/event/1034900/>

- Overview of the ASFAP process
- Introduction to Young Physicists Forum
- Q&A

## ...why ASFAP is promoting Young African Physicists?

Held on June 23, 2021: <https://indico.cern.ch/event/1034902/>

- Introduction co-convenors and members
- ...why ASFAP is promoting Young African Physicists?
- Q&A

## ASFAP: YPF Survey

Held on July 07, 2021: <https://indico.cern.ch/event/1034904/>

- ASFAP— YPF Survey update
- Overview of LOI
- ASFAP CPM

These meetings have been recorded and provide a nice resource for people trying to get involved with the ASFAP process now.

# Young Physicists Forum Activities

## ASFAP: Young African Physicists' Workshop—Challenges and opportunities

Held on January 26, 2022: <https://indico.cern.ch/event/1105184/>

- ~ > 140 registrations & 80-90 participants
- Speakers (5)
- Panelists (3)



**ASFAP: Young African Physicists' Workshop**  
Challenges and Opportunities  
26th of January 2022 - 14:00 UTC

**SESSION I**  
Slides Presentation

**Diallo Boye**  
YPF Convener

**Mourio Loassiri**  
YPF Convener

**Benard Mulilo**  
YPF Convener

**Marie Chantal Cysilinyana**  
WIP Convener

**Julia Gorski**  
DPF Executive Committee  
Early Career Member

To register, please visit <https://indico.cern.ch/event/1105184/>



**ASFAP: Young African Physicists' Workshop**  
Challenges and Opportunities  
26th of January 2022 - 14:00 UTC

**SESSION II**  
Panel Discussion

**KéNévi Assamagan**  
Co-founder of ASP & ASFAP

**Lowalley Cole**  
Executive Director of CAFOR

**Rolisa Malu**  
Directrice-Investing In People  
(IIP) ASBL

**Young Physicists Forum**  
Moderator

To register, please visit <https://indico.cern.ch/event/1105184/>

The purpose of the workshop was to bring together young physicists and panelists to discuss the challenges facing young African physicists; highlighted existing solutions; and brainstormed new strategies for research and policy.

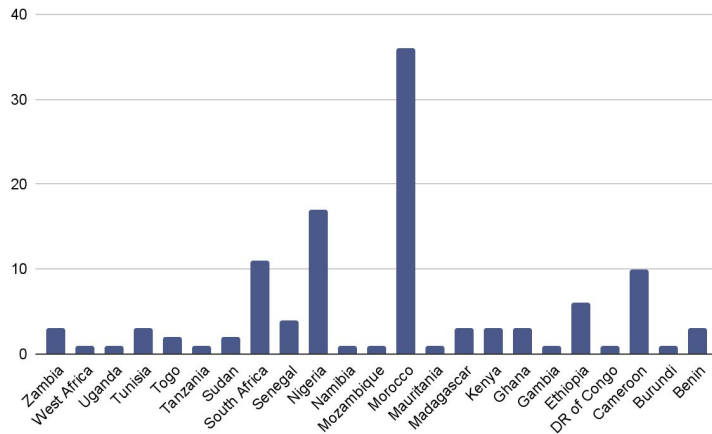
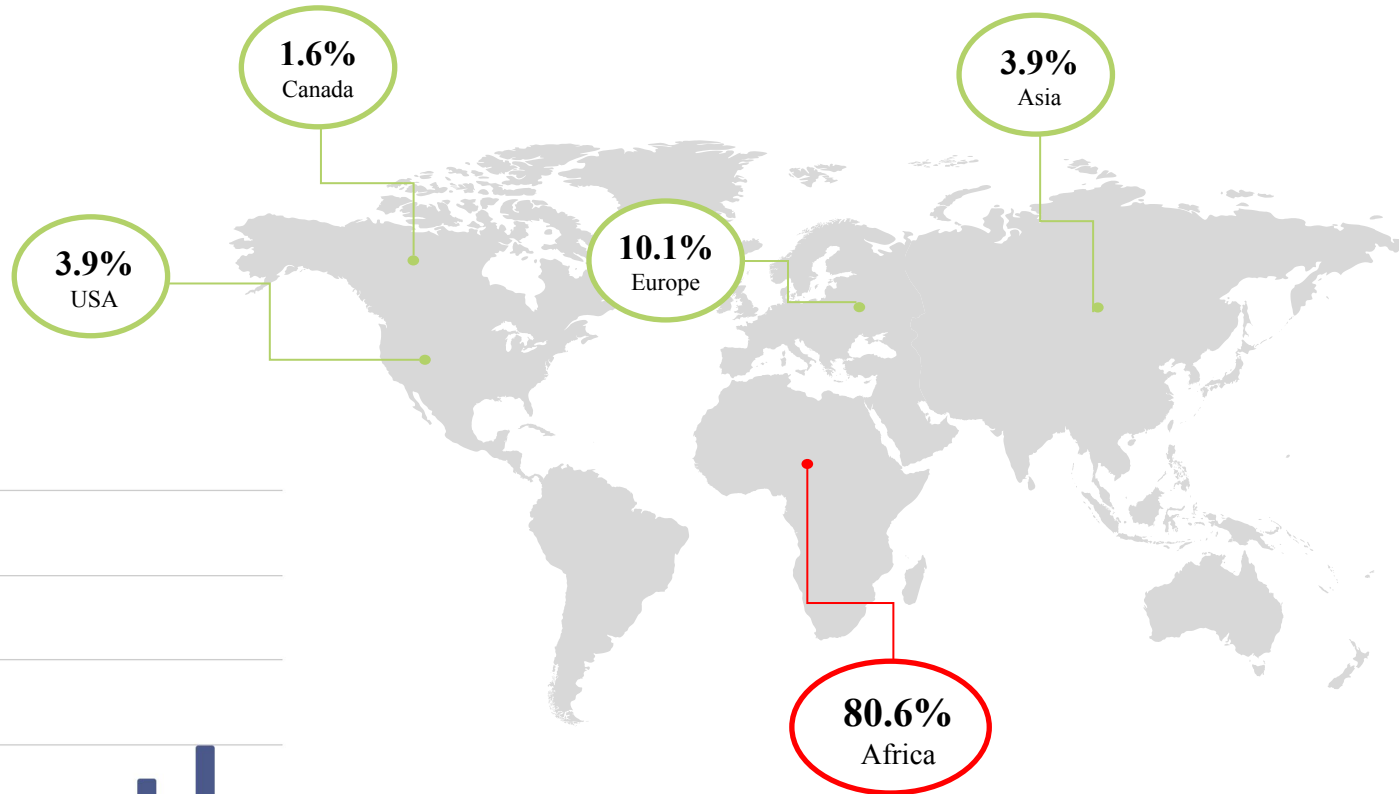
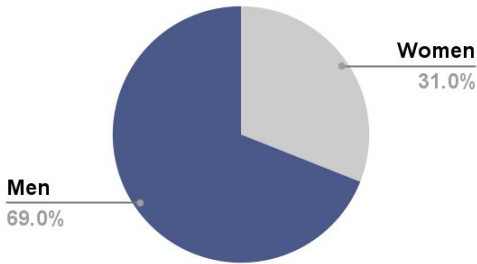
# Young Physicists Forum ASFAP— YPF Survey

Take the survey [here!](#)  
Deadline: Dec. 31, 2022.



Total number of respondents: 129

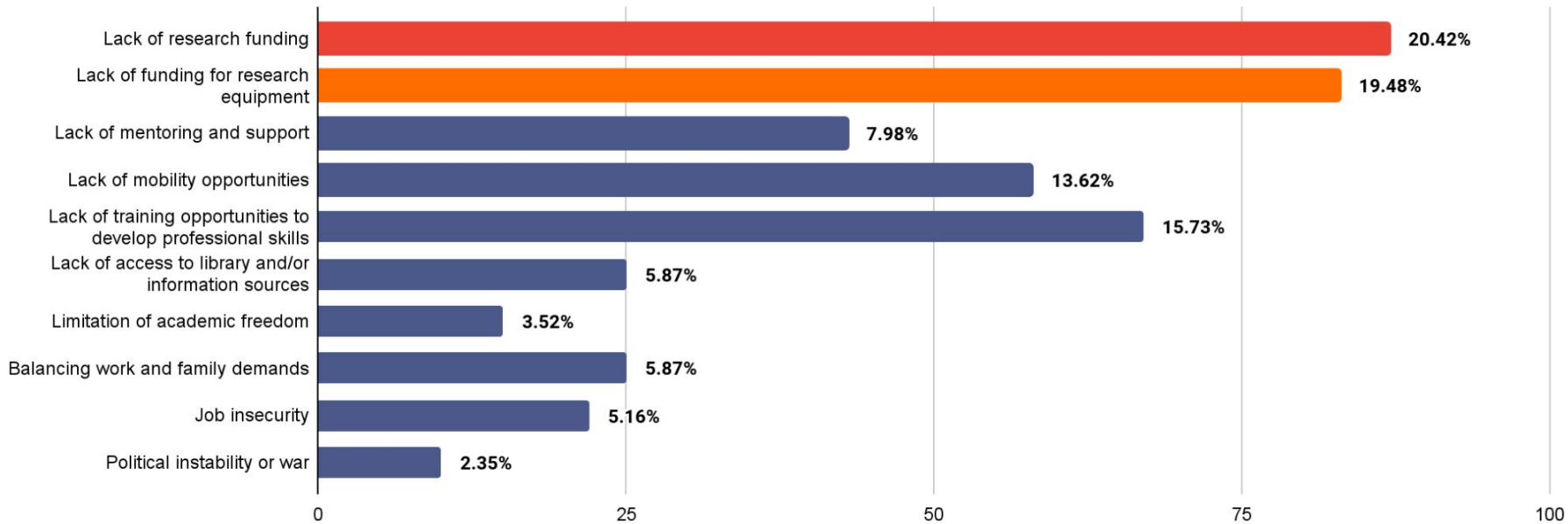
Countries represented: 37





# Young Physicists Forum ASFAP— YPF Survey

A lack of research funding and funding for equipment were identified by all respondents as posing the biggest challenges.



**Q: What are some of the challenges you faced in your university? Please select all that apply.**

# Young Physicists Forum

## ASFAP— YPF Survey

Solutions to brain drain at national, regional and global levels— **Open Question**

"More funding, more partners, more collaboration."

– PhD student male from Cameroon –

"Create a school of excellence within the continent for these students who have just obtained their baccalaureate with honors in order to encourage African excellence..."

– Master's student female from Senegal –

"Government should support more research in physics, physicist should tackle problem which are applicable and relevant to African/local challenges"

– PhD student male from Kenya –

"We need to partner Capacity Building programmes with conversations with African Governments"

– Physicist male from South Africa –

"Just having a look at the developed countries how they have managed to establish a successful education and research system. Africa needs a strategy that helps to identify the real issues and mobilize the society and the Policymakers to take action."

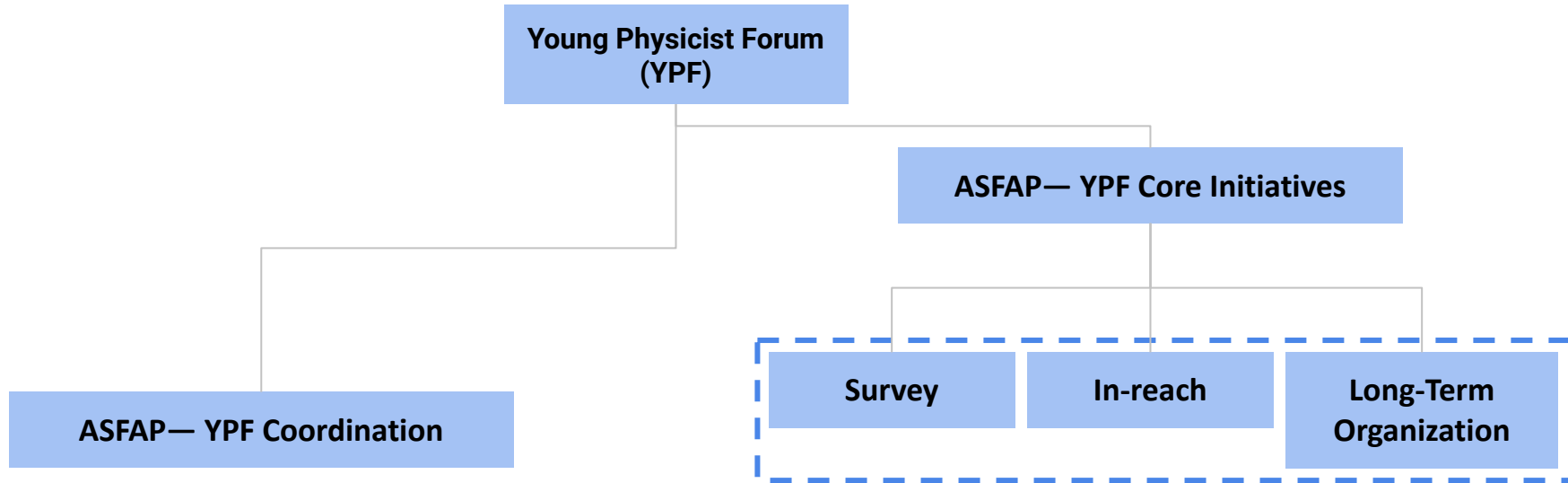
– Physicist female from Morocco –

# Young Physicists Forum

## LOIs related to YPF

1. Challenges facing young African physicists in their research careers: postdoctoral opportunities in Africa
2. Push to Address Long-term Challenges for Young African in physics
3. ASFAP— YPF: Going Beyond the ASFAP Process

# Young Physicists Forum Plans



Coordinate with the ASFAP— Physics working groups and help get young African physicist members involved in the ASFAP process.

- Attend main ASFAP— PWG meetings and interact with PWG co-conveners;
- Help push key YPF initiatives within the ASFAP— PWG;
- Help connect YPF members to ongoing work/projects in their ASFAP— PWG that they might be interested in contributing to.

- **Structure:**

- 2-3 coordinators per ASFAP—PWG at a time

- **Survey:** Collecting ideas, opinions and experiences on careers, physics outlook, workplace culture, and scientific research on the African continent.
- **In-reach:** Professional development and building cohesion within the YPF community.
- **Long-Term Organization:** Define the long-term structure of the young African physicists organization after the ASFAP process.

- **Structure:**

- 2-3 conveners per core initiative at a time

# Women in Physics Forum

Enhancing the participation of women in physics to be involved, how do we treat gender gaps in science/ Physics? What is the future of women in Physics?

- The forum was created to be a dedicated working group to address issues about Women in Physics
- This is a concern of all of us (men or women) and requires our full participation

# Women in Physics Forum Activities

## ASFAP Women in Physics Workshop

Held on February 11, 2021: <https://indico.cern.ch/event/1106203/>

- Women in different fields of Physics in Africa: challenges/needs, opportunities, current status and future perspectives.



ASFAP: Women in Physics forum mini workshop  
Where: via zoom  
Time: 11th Feb, 15h00-16h00, Kigali Time  
To Register Please visit <https://indico.cern.ch/event/1106203/>

*Women in different fields of Physics in Africa: challenges/needs, opportunities, current status and future perspectives*

**Talk Presentations**



Dr. Cyulinyana Marie Chantal  
WIP Co-Convenor



Dr. Kétévi Adiklé Assamagan  
ASFAP Steering committee



Prof. Mmantsae Diale  
University of Pretoria



Dr. Iroka Chidinma Joy  
WIP Co-convenor



ASFAP: Women in Physics forum mini workshop  
Where: via zoom  
Time: 11th Feb, 15h00-16h00, Kigali Time  
To Register Please visit <https://indico.cern.ch/event/1106203/>

*Women in different fields of Physics in Africa: challenges/needs, opportunities, current status and future perspectives*

**Panel Discussion and 11<sup>th</sup> February Celebration**



Dr. Marie Chantal Cyulinyana  
Moderator



Dr. Clementine Uwineza CE  
Co-Convenor



Dr. Raissa Malu  
Investing in People (IIP) ASBL



Dr. Dephney Mathebula  
WIP Co-Convenor



Prof. Mirjana Povic  
AstroCosmo Co-Convenor

## The AERAP Africa-Europe Science Collaboration Platform

Held on December 09, 2021: [Women's Movements in African Science, Technology, and Innovation](#)

This meetings has been recorded and provide a nice resource for people trying to get involved with the ASFAP—WiP Working Group.

# Women in Physics Forum

## Why few women in physics field?

- Lack of Role models in the fields to motivate young generation
- Lack of Career path guidance
- Inappropriate Infrastructure, Lack of Gender inclusivity in Infrastructure
- Lack of Diversity, Equity & Inclusion
- Lack of engagement of the entire society
- Biased society about gender equality

# Women in Physics Forum

## Some of the important topics to be part of LOIs

- How to balance family and career in science for woman to keep the momentum in her career of research?
- Opportunities for women in Physics
- How to increase women in Physics visibility and participation in existing networks?
- The status of women in in Physics and how to increase this low number



# Women in Physics Forum

## Strategy to retain women in Physics

- Mentorship (Women need mentors who are truly in their corner) and networking initiatives
- We need more role models, and we need to support each other.
- To Initiate collaboration strategies on regional and international level
- To establish a system to encourage more girls to study physics and physical science: awareness plans
- To promote the recognition of the scientific achievements of senior women physicists (role models) within Africa and the international community
- To sit and discuss how to bring everyone to gather on the consensus of inclusivity in Physics: breakfast meeting, workshops,
- Data Collection, regular survey to have a database of women in physics
- To emphasize on the gender balance in working place and the role played by men in this
- To strengthen research efforts and training opportunities of young women physicists
- There should be no disparities in salaries
- Women should be train on different soft skills
- They should be given opportunities in the decision-making positions
- Provision for support to hold conferences to exhibit their research and scientific projects
- Making the science course interesting
- Senior figures should work hard to fix legacy problems so that the weight doesn't fall on junior scientists' shoulders
- Evaluation and monitoring any project which is on going to check out the outcome
- Funding of science projects for women and Removing age limit for women in science

# ASFAP— Societal Engagements:

effort on consolidation, coordination & solicitation, leading to studies & Contributed Inputs

- **~28 LOIs**
  - To be re-organized, re-grouped and condensed into topics
  - Encourage authors of related/ merged LOIs to work towards common White Paper
- **Many exciting ideas and proposals came up during the discussion**
  - How can we communicate the excitement of the physics field to the general public and influential groups
  - Plan to increase our manpower
  - Need to introduce intellectual property into the curricula
  - Add activities dedicated to high-school students ( lecture and demonstration programs)
  - The implementation of a Pan-African Network for teachers & lecturers
  - Increase job opportunities (How does the lesson connect to the real world?)
  - How to work on issues raised for the Societal Engagements at the grass-roots level
  - ...

I have editorialized in some cases where I believe extra words might help: [Join session on Societal Engagements Notes](#)  
Saved Zoom Chat also available: [Join session on Societal Engagements Saved Chat](#)

# ASFAP is a community process— Get Involved!



[ASFAP-SteeringCommittee@cern.ch](mailto:ASFAP-SteeringCommittee@cern.ch)



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



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