

# Young Physicists Forum

Mounia Laassiri

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ASFAP—towards the final report



## Africa Major Challenges in the 21th century

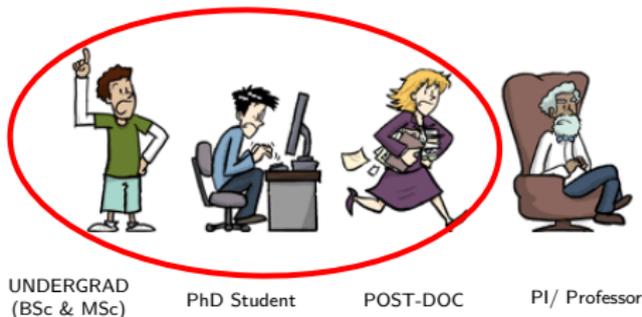
- ▶ Africa is home to 17.89% of the total world population (UNESCO Science Report 2023)
- ▶ Africa has the youngest population in the world with over 420 million people between the ages of 15 to 35 years– the definition of youth used by the African Union.
  - but it produces less than 1% of the world's research out come
- ▶ Only 1.1% of the global investment in R&D is spent in Africa
  - Africa has 198 researchers per million inhabitants in Africa
- ▶ To achieve the world average for the number of researchers per capita,
  - Africa needs another million new PhDs
  - The situation is getting worse
    - Lack of opportunity gets Africa lose roughly 20,000 professionals to high-income countries every year

Africa Population (LIVE)  
**1,492,091,907**



## Overview of ASFAP – Young Physicists Forum

- ▶ The ASFAP process is towards a long-term strategic plan
  - Voices of young physicists members are critically important
  - 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



For Young African Physicists

By Young African Physicists

Young Physicists Forum

## Overview of ASFAP – Young Physicists Forum

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  - Voices of young physicists members are critically important
  - Undergrad & grad students; postdocs, young physicists faculty, engineers (<~10 years post-PhD)

### Two arms of the organization:

#### ASFAP— YPF Coordination:

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

#### ASFAP— YPF Core Initiatives:

to assess and initiate ASFAP-YPF critical issues independently.

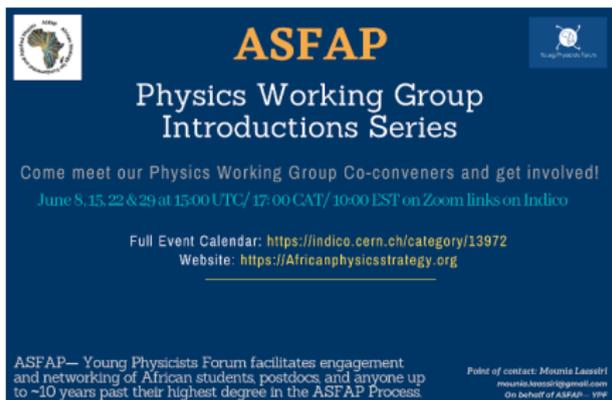


For Young African Physicists

By Young African Physicists

## ASFAP— YPF Coordination Highlights

- What is ASFAP?
- What will fundamental and applied physics look like by the time young physicists are in charge?
- What will each physics working group look like in 10 years? What direction are we headed?



**ASFAP**  
Physics Working Group  
Introductions Series

Come meet our Physics Working Group Co-conveners and get involved!  
June 8, 15, 22 & 29 at 15:00 UTC/ 17:00 CAT/ 10:00 EST on Zoom links on Indico

Full Event Calendar: <https://indico.cern.ch/category/13972>  
Website: <https://Africanphysicsstrategy.org>

ASFAP— Young Physicists Forum facilitates engagement and networking of African students, postdocs, and anyone up to ~10 years past their highest degree in the ASFAP Process.

Point of contact: Mounia Laassiri  
mounia.laassiri@gmail.com  
On behalf of ASFAP— YPF



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# ASFAP— YPF Core Initiatives Highlights

## Survey

Collecting opinions & experiences on careers, physics outlook, workplace culture, the impacts of COVID-19, & more.



## Enrichment

To deal with professional development and building cohesion within the YPF community.

## Long-Term Organization

To define the long-term structure of the young African physicists organization after the ASFAP process.

→ LOI: **ASFAP— YPF: Going Beyond the ASFAP Process**

## 1<sup>st</sup> YPF Members Meeting: June 09, 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? June 23, 2021

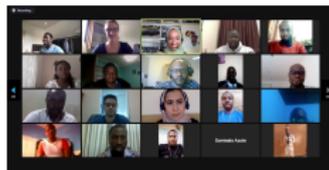
<https://indico.cern.ch/event/1034902/> 

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

## ASFAP: YPF Survey July 07, 2021

<https://indico.cern.ch/event/1034904/> 

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



These meetings have been recorded and provide a nice resource for people trying to get involved within the ASFAP process!

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

**Drithi Bose**  
YPF Convener

**Mourad Lassaf**  
YPF Convener

**Bernard Mullo**  
YPF Convener

**Maria Christodoulidou**  
WP Convener

**Johi Goswami**  
YPF 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

**Kabirul Alamoggan**  
Co-founder of ASP & ASFAP

**Louvelly Cole**  
Executive Director of CAFOR

**Ennio Mita**  
Director: Investing in People  
(IFI/ASB)

**Young Physicists Forum**  
Moderator

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

Workshop was intended to bring together young physicists and experts to discuss challenges and opportunities young physicists face in Africa and some solutions to these challenges.

# Played a useful role in the 2<sup>nd</sup> Edition of the African Conference of Physics, ACP2021

<https://doi.org/10.48550/arXiv.2206.15171>

**11:00** **Young Physicists Forum status and plan** 13m

**Speaker:** Diallo Boye (Brookhaven National Laboratory)

[ASFAP\\_YFP Status ...](#)

**04:30** **Status of Young Physicists Forum and the Importance for Education and Capacity Development for Africa** 25m

The Young Physicists Forum (YFP) was formed in 2021 as one of the engagement groups in the African School of Fundamental and Applied Physics (ASFAP) strategy. The forum was instituted to engage rising-star researchers, and is devoted to developing research and science for the benefit of the public. The main objectives of the forum are among others, to create a diverse continent of next-generation scientific leaders committed to playing an active role in collaborations pertaining to scientific research and educational issues in Africa. Furthermore, the Young Physicists Forum aims at developing the knowledge and skills of young African physicists, grooming them to acquire a fuller understanding of industrial, regional as well as global agendas. In addition, the forum focuses on communicating cutting-edge scientific research and positioning education on the continent within the context of science. Since its inception last year, the forum has played an active role in identifying the challenges and remedies for young scientists to flourish in various physics fields. To this effect, the forum has so far conducted several virtual meetings to share the knowledge. In the just ended January workshop, for example, the forum invited stakeholders to discuss some of the challenges and opportunities for young African physicists. Notable speakers included Dr. Marie Chantal (University of Rwanda) and Dr. Julia Conski (Columbia University, United States). The panel discussion included experienced panelists who included Dr. Kébé Assamagan (Brookhaven National Laboratory), Dr. Lawalley Cole (CAFOR), and Dr. Raissa Malu (IIP). To engage the community, the forum has also conducted a survey on various issues affecting young physicists on the continent. This talk, thus, focuses on the status of the Young Physicists Forum and the importance for education and capacity development for Africa. To join this forum, please start here, <https://twiki.cern.ch/twiki/bin/view/AfricanStrategy/AYoungPhysicists>.

**Speaker:** Benard Mulilo (University of Zambia)

[Benard\\_Mulilo\\_Marc...](#) [Benard\\_Mulilo.mp4](#)

**11:30** **Discussion on Societal Engagements: Community Engagement, Young Physicists, Women in Physics and Physics Education** 30m

**Speakers:** Benard Mulilo (University of Zambia), Bertrand Thanche Fankam (Aboisso Diop University), Diallo Boye (Brookhaven National Laboratory, USA), Iroka Chidinma Joy (National Space Research and Development Agency, Nigeria), Jamal Mirmouni (University Mentouri Constantine1), Marie Chantal Oulyinyana (University of Rwanda), Marie Clementine Uwineza Nibamureke, Mounia Laassiri (Mohammed V University, Morocco), Nôye Arame BOYE FAYE (University Cheikh Anta Diop, Senegal), Sam Ramallo (University of Johannesburg), Uli Raich (CERN-reired)

Submitted to the Proceedings of the African Conference on Fundamental and Applied Physics Second Edition, ACP2021, March 7-11, 2022 - Virtual Event

**Young Physicists Forum and the Importance for Education and Capacity Development for Africa**

Benard Mulilo<sup>1\*</sup>, Mounia Laassiri<sup>2</sup>, Diallo Boye<sup>3</sup>

<sup>1</sup>University of Zambia, Zambia  
<sup>2</sup>Mohammed V University, Morocco  
<sup>3</sup>Brookhaven National Laboratory, US

**Abstract**  
Higher education and advanced scientific research lead to social, economic, and political development of any country. All developed societies like the entire 2022 G7 countries: Canada, France, Germany, Italy, Japan, the UK, and the US have all not only invested heavily in higher education but also in advanced scientific research in their respective countries. Similarly, for Africa countries to develop socially, economically, and politically, they must follow suit by investing heavily in higher education and local scientific research.

**Keywords:** Young Physicists Forum, YFP, Africa Strategy for Fundamental and Applied Physics, ASFAP, Second Edition of the African Conference on Fundamental and Applied Physics, ACP2021, African School of Physics, ASF, Physics Working Groups, YFP Survey

<https://doi.org/10.48550/arXiv.2205.11362>

Submitted to the Proceedings of the African Conference on Fundamental and Applied Physics Second Edition, ACP2021, March 7-11, 2022 - Virtual Event

**ASFAP Working Group Summary of Societal Engagements**

Mounia Laassiri<sup>1\*</sup>, Marie Clementine Uwineza<sup>2</sup>, Bertrand Thanche Fankam<sup>3</sup>, Sam Ramallo<sup>4</sup>, Nôye Arame Boze-Faye<sup>5</sup>, Diallo Boye<sup>6</sup>, Mounia Chantal Oulyinyana<sup>7</sup>, Uli Raich<sup>8</sup>, Jamal Mirmouni<sup>9</sup>, Benard Mulilo<sup>10</sup>, Iroka Chidinma Joy<sup>11</sup>

<sup>1</sup>Mohammed V University, Morocco  
<sup>2</sup>University of Johannesburg, South Africa  
<sup>3</sup>Mohammed El Bacha El Ghajer  
<sup>4</sup>Mohammed El Bacha El Ghajer  
<sup>5</sup>National Space Research and Development Agency, Nigeria  
<sup>6</sup>University of Zambia, Zambia  
<sup>7</sup>UNSW, Australia  
<sup>8</sup>University of Constantine 1, Algeria  
<sup>9</sup>University of Johannesburg, South Africa  
<sup>10</sup>UNSW, Australia  
<sup>11</sup>UNSW, Australia

**Abstract**  
The second African Conference of Fundamental and Applied Physics (ACF2021) took place in the week of March 7-11, 2022. During this conference, all the African Strategy for Fundamental and Applied Physics (ASFAP) working groups had been invited to present oral sessions to discuss their work, activities (past & current) and topics of common interests. The aim of this report is to summarize the discussion of the ASFAP working groups in societal engagements, namely Physics Education, Community Engagements, Young Physicists and Women in Physics. The recommendations for future activities in societal engagements are summarized in this report as well.

**Keywords:** The African Strategy for Fundamental and Applied Physics, ASFAP, Physics Education, Community Engagements, Young Physicists, Women in Physics

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APS March Meeting 2023



## International Perspective for Young Physicists from Particle to Materials

<p> <a href="#">Home</a>  <a href="#">M. Laassiri</a>  <a href="#">Editorial</a>  <a href="#">Author Index</a>  <a href="#">Session Index</a>  <a href="#">Book Reviews</a>  <a href="#">Contact Us</a>  <a href="#">Sitemap</a>  <a href="#">Privacy Policy</a>  <a href="#">Terms of Use</a> </p>	<p> <b>APS March Meeting 2023</b>  <b>Volume 66, Number 3</b>  <b>Las Vegas, Nevada (March 5-10)</b>  <b>Virtual (March 20-21) Time Zone: Pacific Time</b> </p> <p> <b>Session Q06: International Perspectives for Young Physicists from Particle to Materials</b>            3:00 PM-4:00 PM, Wednesday, March 8, 2023            Room: Room 508         </p> <p> <b>Speaking Order, PFCF PMP</b>            Chair: Christian David, Sandia National Labs         </p> <p> <b>Abstract: Q06 0005 : The Perspectives of the Young Physicists Forum of the African Strategy for Fundamental and Applied Physics (ASFAP)</b>            3:24 PM-4:00 PM         </p> <p> <b>Presenter:</b>            Mounia Laassiri            (University of Fes, Fes, Morocco)         </p> <p> <b>Author:</b>            Mounia Laassiri            (University of Fes, Fes, Morocco)         </p> <p> <b>Coauthor(s):</b>            African Strategy for Fundamental and Applied Physics (ASFAP)            Young Physicists Forum (YFP)         </p> <p>           Considering scarce resources, it is important for the world community of scientists, engineers, technicians, funding agencies and policymakers to come together and define a concerted strategy. Such efforts have been or are currently conducted in other regions, including Japan, China, India, Europe, the US and Latin America, at different levels: regional or national strategies (strategic planning created by a government and community organizations) or strategic alliances to improve research and education. The purpose of ASFAP is a true spirit of international cooperation that faces the inherent characteristics of today's world of fast scientific activities, setting priorities for domestic and inter-regional projects to be supported.         </p> <p>           In this talk, we will report progress on the African Strategy for Fundamental and Applied Physics, <a href="http://africanstrategyforphysics.org/">http://africanstrategyforphysics.org/</a>. Then, we will discuss the focus and scope of the Young Physicists Forum (YFP), one of the working groups in several engagements under the ASFAP.         </p>
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APS DeltaPhy Africa

African Strategy for Fundamental and Applied Physics  
(ASFAP) – Young Physicists Forum (YFP)



ASFAP— Young Physicists Forum



APS DeltaPhy Africa  
Sep 6th, 2024

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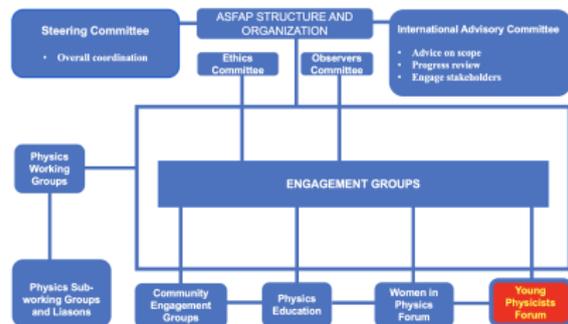
APS DeltaPhy Meeting



Mounia Laassiri  
On behalf of the ASFAP – YFP co-convenors

## ASFAP— YPF Report

- ▶ The Young Physicists Forum has a chapter in the ASFAP Book!
  - Includes a summary of the YPF survey report and Young Physicists recommendations for ASFAP Process



Young Physicists Forum:  
[ASFAP-YoungPhysicists@cern.ch](mailto:ASFAP-YoungPhysicists@cern.ch)

### ASFAP– YPF Conveners

- Current registered and active YPF members ~ 110
- YPF project is managed by a co-conveners consisting of:



Dr. Mounia Laassiri  
(BNL, USA)



Dr. Diallo Boye  
(BNL, USA)

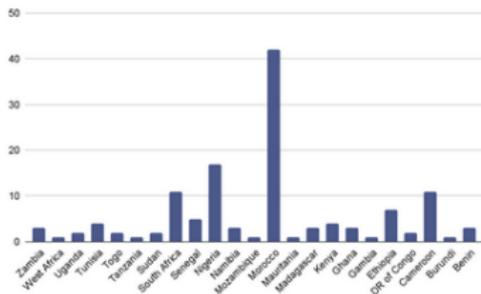
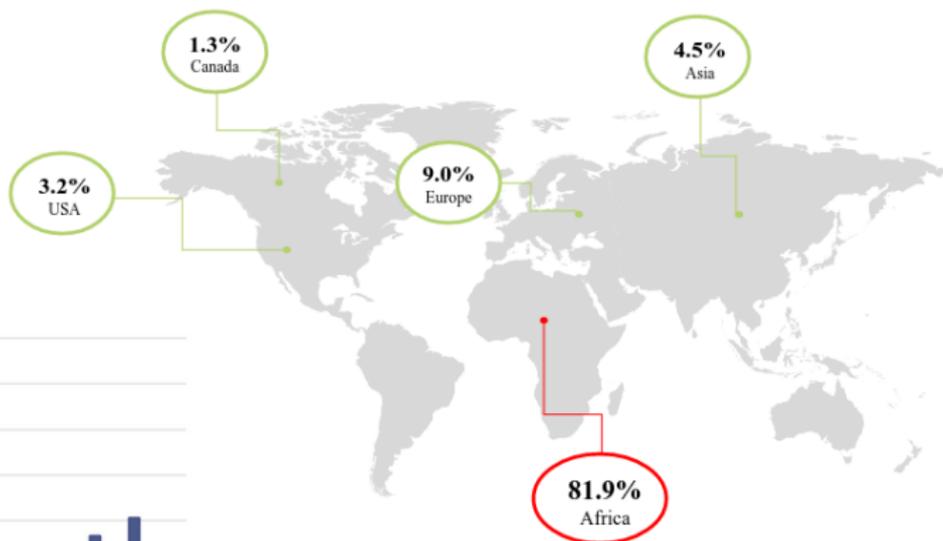
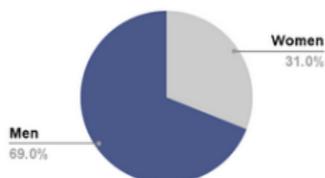


Dr. Benard Mulilo  
(UNZA, ZM)

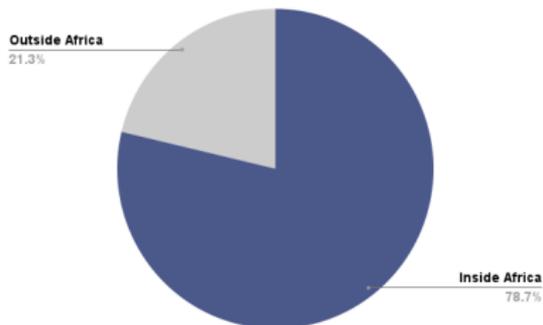
## Geographical location

Total number of respondents: 155

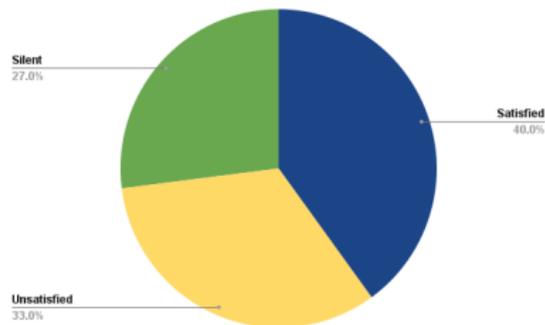
Countries represented: 38



## Geographical location where respondents pursued highest level of education

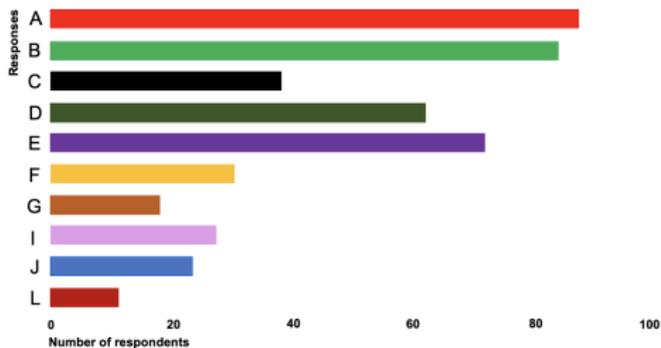


## African Education Satisfaction Rate



Q: Did your university meet or exceed expectations in providing you with training toward the professional future you are seeking?

## Challenges of African Education Background



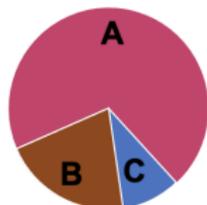
Responses	Challenges	Rate (%)
A	Lack of research funding	20.35%
B	Lack of research equipment	19.26%
C	Lack of mentoring support	7.88%
D	Lack of mobility opportunities	13.57%
E	Lack of proper skills training	15.75%
F	Lack of access to libraries	6.35%
G	Limitation of academic freedom	3.50%
H	Imbalance between work and family demands	5.91%
I	Job insecurity	4.81%
J	Political instability and wars	2.63%

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

## Ways in which respondents overcame Educational Challenges in Africa— Open Question

- Research grants to buy equipment.
- Self-funding & money from relatives & foreign labs.
- Part-time jobs to source funds for studies.
- Online training (YouTube, Twitter, LinkedIn, etc.) & internships.
- Universities, companies & funding organizations collaborations.
- Participation in overseas conferences and seminars.
- Worked with open-minded & well linked research advisors.
- Resorted to theoretical work instead of experimental work.
- Did part-time jobs & went abroad to work on completion of studies.
- ...

## Occupation and percent representation of respondents according to the survey conducted by YPF



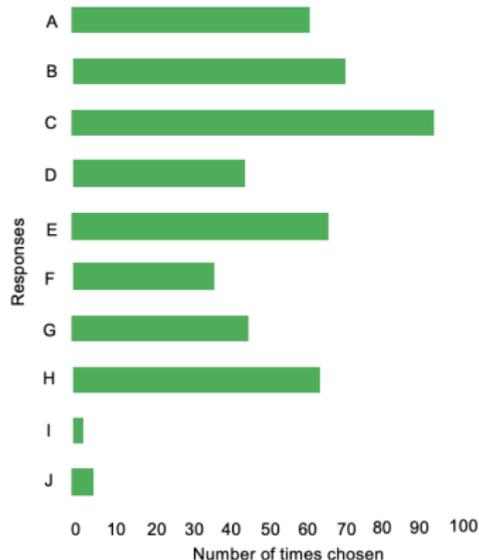
- A: **Academia**, i.e., teaching or conducting research in universities or national laboratories (85.82%)
- B: **Non-academia** (12.06%)
- C: **Preferred not to answer** (2.13%)

Occupation and present representation of sample

Current position	Bachelors students	Masters students	PhD students	Postdocs	Engineers	Technicians	Faculty	Physicists	other
Percent (%)	3.55	10.64	44.68	8.51	0.71	0.71	14.18	9.93	7.09

## Impact of the nature of the workplace and COVID-19 pandemic on research institutions in Africa.

	Nature of workplace and COVID-19 impact	(%)
A	Reduction of research funding	12.50
B	Reduction of experimental activities	14.52
C	Reduction of academic interactions	19.35
D	Less productivity of online classes	8.87
E	Less advisor and student interaction	13.91
F	Physical healthy problems	7.26
G	Mental healthy problems	9.48
H	Financial hardship	13.10
I	None	0.40
J	Not applicable	0.60



## 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 –

## Lessons Learned & Takeaways

## Recommendations

The recommendations in this section were prepared by the YPF community and are a supplement to the survey recommendations in Sec. 21.2. They include recommendations from contributed white papers and community feedback obtained throughout the ASFAP process.

**Recommendation 1: Raise Awareness and Secure Research Funding** - African policymakers and private enterprises should be made aware of the importance of funding research in education in Africa. The provision of grants could enable universities to purchase experimental equipment and conduct research thereby reducing reliance on foreign facilities and fostering collaboration with overseas institutions.

**Recommendation 2: Invest in Higher Learning Institutions** - African governments should invest in building well-equipped higher learning institutions with modern research facilities. This includes establishing modern laboratories where students and academic staff can bridge the gap between theory and practical experimentation.

**Recommendation 3: Improve Internet Connectivity in Higher Learning Institutions** - Reliable internet access greatly enhances scientific research output and improves the overall quality of teaching and learning. The collaboration between public and private sectors is, therefore, essential in ensuring that internet connectivity across African universities and research facilities is enhanced.

**Recommendation 4: Revise Science Curricula and Expand Research Facilities** - Reduce overemphasis on theoretical work by revising school and university curricula. Investing in scientific research facilities and securing laboratory equipment can encourage hands-on research among African students, fostering valuable skills and knowledge acquisition.

**Recommendation 5: Promote Science Research Projects and Mentorship Programs** - Encourage academic staff members to engage in scientific research projects and mentor students closely. The availability of research grants from governments and private enterprises can facilitate this process. Establishing a strong link between theoretical and experimental work is crucial for student development.

**Recommendation 6: Provide Structured Feedback and Foster Collaboration** - Academic staff members should offer structured feedback to students and facilitate research collaborations within and outside the continent. Exposure to diverse scientific environments enhances students' scientific understanding and skills.

**Recommendation 7: Offer Occupational and Career Guidance** - Faculty staff should provide students with guidance on future academic and career paths within Africa, motivating them to pursue their endeavors in academia. This guidance plays a crucial role in shaping the future of African students in the global scientific community.

**Recommendation 8: Retain Skilled Humanpower within Africa and Minimize Brain Drain** - Policymakers should provide a conducive work-place environment that is fairly comparable to workplaces in other scientifically advanced continents. This will greatly help in minimizing the brain-drain syndrome in Africa. Attracting skilled manpower will entail high-quality service delivery within the continent.

- **Young physicists representation in decision-making**
- **Career development:** adequate salaries, workplace resources, training for various sectors
- **Community equity & wellbeing:** addressing harassment, caregiver resources, visa/immigration policies, proper incentives/ rewards for community work

## Long-Term Organization

- ▶ We have a chance with ASFAP to address our community principles & make sure they are enabling the brightest physics future
- ▶ Competition is everywhere (scarcity of money, projects, positions. . . )
- ▶ What is best for the young African physicists community is to unify & come together; for this ASFAP final report and for future of Fundamental and Applied Physics in Africa!

### ASFAP— Letter of Interest

#### *ASFAP— YPF*

#### *Going Beyond the ASFAP Process*

Mounia Laassiri<sup>1\*</sup>, Benard Mulilo<sup>2</sup>, and Diallo Boye<sup>3</sup>

<sup>1</sup>Mohammed V University, Morocco

<sup>2</sup>University of Zambia

<sup>3</sup>Brookhaven National Laboratory

- Builds a single constituency with a stronger voice
- YPF seat at the table in community governing bodies (AfPS connection?)
- Networking & peer connectivity

Future of Fundamental and Applied Physics in Africa needs a unified young physicists perspective, and the time is right to instantiate a formalized long-term young physicists organization to coordinate this

## Conclusions

- ▶ Work of YPF (2021-2024) summarized in YPF chapter of ASFAP final report
- ▶ Very motivated YPF community ready for ASFAP Symposium and to execute the future of the field!
- ▶ More than ever, young physicists are joining the dialogue, and senior physicists are listening
- ▶ Now facing the essential work of unifying around common goals: a long-term YPF organization should be a priority
- ▶ Get in touch!
  - [ASFAP-YoungPhysicists@cern.ch](mailto:ASFAP-YoungPhysicists@cern.ch)

## Connect with ASFAP



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



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



[ASFAP-LinkedIn](#)



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