

## **REPORT: THE AFRICAN STRATEGY FOR FUNDAMENTAL AND APPLIED PHYSICS (ASFAP) COMMUNITY TOWN HALL**

### **COMMUNITY ENGAGEMENT AND PHYSICS EDUCATION**

The African Strategy for Fundamental and Applied Physics (ASFAP) held its first Community Town Hall this year from the 12 – 15 July 2021. The virtual Town Hall gathered 147 ASFAP conveners and guest speakers from different parts of the world. The purpose of the Town Hall was to initiate discussions on the African Strategy for Fundamental and Applied Physics (ASFAP) and kick-off a joint active participation and engagement in order to grow the ASFAP.

The Town Hall was organised in 43 talks and discussions grouped in 11 sessions. The talks covered a wide range of topics and each ASFAP working group was given a chance to present their group's scope, structure, and plans. The 'Community Engagement' and the 'Physics Education' working groups presented their talks on the third day of the Town Hall, 14 July 2021.

#### **ASFAP Community Engagement Initiative**

Dr Marie Clémentine Nibamureke (South Africa) representing the Community Engagement group highlighted the importance of a community engagement initiative and why the ASFAP needs it in order to realise its vision which is 'to improve science education and research in African countries in order to position Africa as a co-leader in science research globally'. Community engagement programs are used in different parts of the world as powerful tools to bring about changes in communities and help improve their beliefs, knowledge, skills, and practices. Through C.E initiatives, people are empowered by working together, discussing their problems, and finding effective solutions.

Prof Jamal Mimouni (Algeria), convener of the C.E working group, stressed that in order for the ASFAP to establish a successful C.E program, it is crucial to reflect on the challenges in teaching and learning physics in Africa and on why students are scared to choose physics as their study field. He explained that the leading challenges include the terrible image most students have about physics and the incapacity of some physics lecturers to make the lessons simple and interesting. Prof Mimouni reminded the participants that physics is the "fundamental science", therefore C.E initiatives targeting to improve people's understanding and practices of physics need careful planning and preparation and must be inclusive.

Dr Marie Clémentine Nibamureke underlined that C.E is an integral part of each ASFAP working group; it is in this regard that the C.E working group is seeking to establish collaboration and appoint liaison officers between all the ASFAP working groups. Although it is still at the planning and preparation stage, the C.E group conveners have already identified 12 relevant working topics and are planning to group them in 7 subgroups. She invited all the other ASFAP working groups to propose topics relevant to their areas of interests so that they can be included.

#### **ASFAP Physics Education Initiative**

Sam Ramaila (South Africa) representing the ASFAP Physics Education working group indicated four main points the group has identified as crucial for the transformation and empowering of physics practices in Africa. Those include:

1. *Strengthening teacher training*: About strengthening teacher training, Sam Ramaila explained that the Physics Education group is planning to start a physics teacher training

program and if possible, involve African universities. He stressed that the main focus of these teacher training programs is to establish e-learning programs through open source platforms and to reduce the number of drop outs from doctoral programs. He emphasizes that PhD students' dropouts rate in Africa is very high compared to other continents; and that training teachers would help to resolve the problem.

2. *Development of 21<sup>st</sup> skills and competences*: Sam Ramaila announced that they have identified the skills which are crucial to teaching and learning physics in the 21<sup>st</sup> century. Those skills include critical and computational thinking, collaboration, creativity, and communication.

3. *Introduction of the 4IR in physics teaching and learning*: The Physics Education working group is thus, planning to introduce 4IR techniques including coding and robotics in physics learning and teaching. These techniques can be used to conduct experiments and simulations in remote laboratories through multimedia.

4. *Attraction and retention of students in physics programs*: The physics Education working group is planning to play an active role in sensitizing students to choose physics programs. On this point, Sam Ramaila explained that they plan to collaborate with the "Education in Africa" initiative put in place by the African Union (AU) in 2018. Working together with this initiative will help to achieve the "AU Agenda 2063 goals". The goals of this agenda include to produce "well educated citizens, skills revolution underpinned by science, technology and innovation".

Sam Ramaila underlined some of the strategies the physics group is planning to adopt in order to make physics programs more interesting and to stimulate the curiosity of students. Those include problem based, self-directed, and technology enhanced learnings. One way of enhancing physics practices learning is to establish collaboration and networking between universities through research and student exchanges programs. As all these plans will need to be funded, Sam Ramaila explained that on their agenda, they are planning to approach governments and NGOs to sensitize them on increasing science research funds in African countries.

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