

# PHYSICS EDUCATION WORKING GROUP

## Activities and Letters of Intent

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# Presentation Outline

- Goals
- Letters of Intent (LOIs)
- Issues raised and proposals
- Conclusion

## Goals

This community engagement 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.

# Physics Education Working Group – activities

## Meetings and workshops:

- Physics Education at university level (1<sup>st</sup> Workshop) (22 November 2021)
- Physics Education at university level (2<sup>nd</sup> Workshop) ( 7 December 2021)
- Physics Education (3<sup>rd</sup> Workshop) - Rencontre avec les Francophones  
(18 February 2022)
- Physics Education (4<sup>th</sup> Workshop) – with co-conveners of other groups (25 February 2022)

# LOIs related to Physics Education

## Letters of Interest Submission



ID de Contribution: 17

Type: Non spécifié

**16 LOIs !**

## Unique Research Facilities at the SSC Laboratory in South Africa

The intention of this letter is to engage with the organizers of the African Strategy for Fundamental and Applied Physics (ASFAP) and create awareness of the research facilities at the Separated Sector Cyclotron (SSC) Laboratory as well as its training and research mandates. These are elaborated on in the recently developed Long Range Plan which plays a prominent role in the future strategy of accelerator-based research and training on the African continent. We believe, that this Letter of Intent and associated research activities fits into the ASFAP Physics Groups such as Nuclear Physics, Medical Physics, Instrumentation and Detectors, Applied Physics, as well as Accelerators.

Research and training on nuclear reactions, structure, astrophysics, applications as well as radiation biophysics take place primarily at the SSC Laboratory of iThemba LABS. iThemba LABS is the largest multi-disciplinary accelerator facility in the southern hemisphere and competitive with other similar-sized facilities worldwide.

# LOIs related to Physics Education

## LOIs (16)

1. International Centre 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

# LOIs related to Physics Education

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

# 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



# Issues raised

## 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

# 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

# Proposals

- 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

## Conclusion

- 16 LOIs and 4 workshops
- Material and proposals
- Focused attention on universities
- There is a critical need to focus on the complexity of the articulation gap between school and higher education