The African School of Fundamental Physics and Applications (ASP)

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on behalf of the ASP International Organizing Committee

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Outline

1. Mission of the ASP
2. ASP Organization
3. ASP Editions
4. ASP Activities
5. Conclusions
A non-profit organization created by a small group of worldwide scientists to stimulate and include more African talented physics students in the world scientific community.

The aim of the school is not to set a strictly one-way effort to bring knowledge and experience to African colleagues and students, but rather to establish a genuinely integrating scientific network between Africa and the rest of the world.

- To contribute to a world w/ equal access to knowledge
- To support financially up to 85 African students for 3-week classes attendance
- To establish a biennial educative program to be hosted across Africa
- To provide high quality classes by international renowned Scientists
Mission of the ASP
Committees to build momentum

Build strategic partnership and collect financial support from Africa, Europe, USA and Asia via universities, laboratories, UN, and other organizations.

- Conceptual thinking by **S. Muanza** and **J. Ellis** in 2001 and IN2P3 to trigger
- International Center for Theoretical Physics (ICTP), **B. Acharya**, as incubator and greatly encouraged by CERN and Fermilab.
- Preparation teams led by **K. A. Assamagan** and **C. Darve** (ASP2010).
"If each African country supports its participants, or contributes 2500 Euros every year to the ASP budget, ASP will be entirely financed by African countries. And *2500 Euros* is marginal even for the least developed country".

**ICTP Support major**
- Student participation
- Management of application database
- Arrange student travels

**Host Country Support Significant**
- In-kind support
- Direct Financial contributions
- Human Resources toward ASP Organization

**ASP2016 Sponsors**

**IOC**
- Writes Proposals, Requests for Supports
- Produces Final Reports of Activities
- Seeking permanent financial backing

**African Contributions:**
- SA DST/NRF
- IUCEA

**Fund Management**
- Funds centralized and managed by the South African Institute of Physics (SAIP)

**Lecturers and Organizers Supported by External Sources - Significant**
- Support received then used to maximize student participation
**ASP Organization**

**Objective:**
Increase capacity development in fundamental physics and related applications in Africa

- **Local Organizing Committee (LOC) - in the host country**
  - Local logistics
  - Liaise with Education and Research branches of host country government

- **International Organizing Committee (IOC)**
  - Overall management
  - Fund raising
  - Coordination of activities

- **International Advisory Committee (IAC)**
  - Representatives of funding agencies
  - Advise on the program
  - Advise of the host country selection

- **Assessment of Impact**
  - Survey of students
  - Survey of their Professors
  - Follow academic developments

- **International Lecturers (IL)**
  - Design the scientific Program
  - Help with the student selections
  - Mentor and Coach students continuously

- **Spin-Offs**
  - ASP Mentorship/Coaching Program
  - Networking and sharing of information
  - Align ASP with educational priorities
  - Improve future editions of ASP
  - Promote research collaborations
  - Promote research consortia
Mission of the ASP
ASP Organization
ASP Editions
ASP Activities
Conclusions

ASP Editions

ASP Mentorship / Coaching Program
Introduced since 2016. Runs continuously. Permanent assistance to students even when there is no formal school.

ASP2010
1st Edition in South Africa
August 1-21, 2010
125 Applications and 65 selected from 17 countries

ASP2012
2nd Edition in Ghana
July 15 to August 8, 2012
138 Applications and 50 students selected from 15 countries

ASP2014
3rd Edition in Senegal
August 3-23, 2014
330 Applications and 70 students selected from 21 countries

ASP2016
4th Edition in Rwanda
August 1-19, 2016
429 Applications and 80 students selected from 28 countries
Expansion:
- Pupils Outreach added (3 schools, 150 pupils, 3 days)
- Teachers Workshop Added (20 teachers, 2 days)

ASP2018
5th Edition in Namibia
June 24 to July 14, 2018
523 Applications and 85 students selected from 26 countries
Expansion:
- Pupils Outreach (30 schools, 1500 learners, 1 week)
- Teachers Workshop (63 teachers, 1 week)
- Professional Physics Conference (1 week)

ASP2020 Morocco
Host countries selected 2.5 years earlier through a bidding process

Mounia Laassiri
July 30, 2019
### ASP Activities

The topics of interest

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ASP Activities

ASP Program Expansion

**Student Program**

3-week intensive school
- 3rd year of University to Ph.D.
- Mostly African Students
- 70-85 Students

**Learners Program**

1-week learners Outreach
- 10 – 12th grade learners
- Encourage learners to develop and maintain interests in Physics and Applications
- Up to 1500 high school students

**ASP Conference**

1-week International Conference
- Participation of ASP Alumni
- Participation of Research Faculties
- Networking and collaborations

Introduced since 2016

**High School Teachers Program**

1-week intensive workshop
- Train High School Teachers for improved physics teaching
- Up to 70 high school teachers from the host country

**Forum and Outreach**

- Involve Regional policy makers
- Promote spin-off activities in Africa
- Introduce students to policy

**Mentorship / Coaching Program**

At all times
- Connect Students with Researchers
- Place students at Laboratories
- Listen to students and help address their academic needs if possible
ASP Activities

ASP2016 Students Profile

- **ASP2016 Selected Students by Citizenship**
- **ASP2016 Selected Students by Field of Study**
- **ASP2016 Selected Students by Age**
- **ASP2016 Selected Student Degree Programs**

- **429 Applications**
- **Total Selected: 80 students**
- **Selected from: 28 countries**
ASP Activities
ASP2016 - A Moroccan in Rwanda

- My flight from Morocco (Casablanca) to Rwanda (Kigali)
- Kigali, Rwanda’s capital (Africa’s cleanest city)
- ASP has opened my mind in so many ways; academically, socially, morally...
- ASP Mentorship Program (Dr. Mario Campanelli & Dr. Kate Shaw)
- This school meant a lot for my Ph.D research (Thanks to Dr. K. A. Assamagan (BNL) & Dr. L. Elouadrhiri (JLab))
- Internship at BNL for summer 2019 (3 months)

I will forever be grateful for this privileged scientific adventure.
ASP Activities
Forum & Outreach Day

Dedicated to Knowledge and Transfer of Technology
Dr. D. ADAMS, chief director: Emerging Research areas & Infrastructure, Human Capital and Knowledge Systems.

AfLS and compact acc.
Prof. H. WINICK, Prof. Emeritus, SLAC and Prof. L. SERAFINI (INFN, IT)

UN support
Dr. H. TOURE, UN ITU Secretary General.
Prof. A. WAGUE and O. KA M. NGOM - US Embassy rep.

East Afr. Science and New ICTP Center
Rwandan Ministry of Education

Dr T. TJIVIKUA, Vice-Chancellor, Namibia University of Science and Technology (Namibia)
Dr. R. ADAM (SKA, SA)

Coming up.
Conclusions

- **ASP has evolved since 2010, to include**
  - An intensive 3-week school for students
  - A workshop to train high school teachers
  - An outreach to motivate high school learners
  - A professional physics conference to attract ASP alumni and African research faculties
  - A constant mentorship program even when there is no school

- **Thanks to the support and dedication of**
  - Sponsors
  - International lecturers
  - Host country governments and educational / research institutes

- **ASP constantly improving by**
  - Seeking and integrating feedbacks
  - Working in synergy with other capacity development institutes operating in Africa
  - Aligning ASP scientific program to better serve the education priorities of African countries
ASP2020 - Welcome to Marrakesh

THANK YOU!
BACK-UP
ASP Activities
World-Class Lecturers

- People-oriented lecturers willing to share their experience with African students
- Highly motivated and motivating characters
- Most of ASP lecturers are financially supported by their home institutes
- Provide fruitful interactions with students
- Lecturers typically attend the ASP for 3-7 days
**Objective:**
Support teacher growth in the planning and delivering of instructions

Teachers program is running in parallel with the baseline ASP program

The program consisted of masterclasses, physics demonstrations and experiments

For the **ASP2016**, 20 teachers from all over Rwanda converged to the venue at the University of Rwanda for a 2-day workshop
• Participation of ASP Alumni
• The proceedings of the ASP conference are in preparation to be published as a special issue of the African Review of Physics.
• Participation of Research Faculties
• Networking and collaborations
• Professional presenting key-African-projects
### Summary
- **ASP2016**: 20 students
- **ASP2018**: 36 students registered

### Purpose
- Gauge the impact of ASP
- Support ASP student alumni
- Work with Academic advisor
- Formation of collaborations
- Get African students involved
- Connect Students w/ researcher
- Improve the ASP program

### Strengths & Needs for Improvement
- Enthusiastic Mentors
- Ability to share support beyond the academic level
- Increasing # of Mentors & Mentees
- Expert pairing
- Capacity building
- Funding & Partnerships
ASP Activities

Beyond the Academics

- Social activities to facilitate interactions among students and lecturers
- Create network for student: email, blog, web, FB, WhatsApp
- Provide student with materials: indico, booklets
- Video connection to CERN CCC and ICHEP conf.
- Share experience with public lectures
- Produce movie and press release
- Students poster & oral sessions
- Hands-on and lab-work
- Shipping equipment (cloud chamber, PC, BPM)
- Student Survey and School reports
African Alumni
89 complete records
58 stayed in-country

North America
7%

Europe
10%

Asia
3%

Other Africa
21%

Courtesy Julia Gray
And finally some relaxing time: Excursions & Festivities
Students, lecturers & organizers @

ASP2010

ASP2012

ASP2014

ASP2016

ASP2018