


# The African School of Fundamental Physics and Applications (ASP)

THE FIFTH BIENNIAL



## AFRICAN SCHOOL OF FUNDAMENTAL PHYSICS AND APPLICATIONS

University of Namibia, and Namibia University of Science and Technology  
Windhoek, Namibia  
June 24 - July 14, 2018

**APPLICATION** asp2018-registration@cern.ch

**DEADLINE** Open for application from November 1, 2017 to January 31, 2018. Bursaries & full support for selected students. Provide a CV, transcripts, letter of motivation & one recommendation letter with your online application.

**CONTACT** ASP-IOC@CERN.CH

**WEBSITE** www.africanschoolofphysics.org

**The Scientific Program Includes:**

- Workshop for High School Teachers <https://www.africanschoolofphysics.org/teachers/>
- Outreach for Secondary Schools <https://www.africanschoolofphysics.org/learners-program/>
- Physics Lectures and Tutorials for Students <https://www.africanschoolofphysics.org/asp2018/>
- Forum to Discuss Capacity Development & Retention <https://www.africanschoolofphysics.org/forum/>
- African Conference on Fundamental Physics & Applications <https://www.africanschoolofphysics.org/acp2018/>




**LOCAL ORGANIZING COMMITTEE (LOC):**  
E. Kasai (UNAM), M. Backes (UNAM), R. Steenkamp (UNAM), R. Tjingaete (IUM), D. Singh Jat (NUST), A. Zulu (NUST), E. Shivute (MICT), J. Ndjamba (NCRST), A. Philander (NCRST), M. Shahungu (NCRST)



**INTERNATIONAL ORGANIZING COMMITTEE (IOC):**  
B. Acharya (ICTP and King's College London), K. Assamagan (BNL), A. Dabrowski (CERN), C. Darve (ESS), J. Ellis (King's College London), S. Muanza (CNRS-IN2P3), R. Voss (CERN)



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**Dr. Kétévi Adiklè Assamagan**  
Brookhaven National Laboratory (BNL)  
Upton, New York USA

<https://www.africanschoolofphysics.org/ASP-IOC@CERN.CH>

THE FIRST BIENNIAL



## AFRICAN CONFERENCE ON FUNDAMENTAL PHYSICS AND APPLICATIONS (ACP2018)

In parallel to the African School of Physics, ASP2018  
Namibia University of Science and Technology, Windhoek, Namibia  
June 28 - July 4, 2018

**REGISTRATION** <https://indico.cern.ch/event/acp2018/>  
November 1, 2017 Online submission of abstracts opens  
February 20, 2018 Online submission of abstracts closes  
March 27, 2018 Last date to notify applicants of abstract acceptance  
April 17, 2018 Deadline for registration of abstract presenters  
April 30, 2018 Deadline for registration of participants  
Contributed talks from graduate students and post-docs encouraged  
Bursaries & partial support for selected students and post-docs

**CONTACT** ASP2018-CONF@CERN.CH

**WEBSITE** www.africanschoolofphysics.org

**The Scientific Tracks Include:**

- Physics Education
- Physics Communication
- Astrophysics & Cosmology
- Nuclear & Particle Physics
- Accelerators, Medical & Radiation Physics
- Material Physics
- Renewable Energies & Energy Efficiency
- High Performance Computing



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B. Acharya (ICTP & King's College London), K. Assamagan (BNL), M. Backes (UNAM), A. Dabrowski (CERN), C. Darve (ESS), J. Ellis (King's College London & CERN), V. Indongo (NUST), E. Kasai (UNAM), S. Muanza (CNRS-IN2P3), J. Ndjamba (NCRST), S. Onjefu (NUST), A. Philander (NCRST), D. Sahu (NUST), M. Shahungu (NCRST), E. Shivute (MICT), D. Singh (Chair, NUST), R. Steenkamp (UNAM), R. Voss (CERN), and A. Zulu (NUST)

**SCIENTIFIC PROGRAM COMMITTEE:**  
K. Assamagan (BNL), M. Backes (UNAM), B. Becker (Meraka Institute, CSIR), C. Biscari (ALBA Synchrotron), M. Campanelli (UCL), K. Ciacire (U. of Notre Dame), D. Charlton (U. of Birmingham), S. Cornell (U. of Johannesburg), A. Dabrowski (CERN), C. Darve (ESS), T. Ekelof (U. of Uppsala), U. Gorfach (U. of Strasbourg), H. Gray (CERN), V. Indongo (NUST), Y. Kadi (CERN), D. Kobor (U. of Ziguinchor), D. Lawrence (JLab), M. Losasso (CERN), R. Mazini (Academia Sinica), S. Muanza (CNRS-IN2P3), M. de Naurois (Ecole Polytechnique), S. Onjefu (NUST), R. Quick (Indiana U.), D. Sahu (NUST), H. Severini (U. of Oklahoma), M. Sileri (CERN), D. Singh (NUST), J. Uwahahoro (U. of Rwanda) and E. Yizamben (ASP)



# Personal

- **I am Dr. Kétévi A. Assamagan**
  - Member of the International Organizing Committee (IOC) of ASP
  - Born in Gabon
  - Originally from Togo and Ghana (father side), and Bénin (mother side)
  - Naturalized US Citizen
- **Education**
  - “License en Physique et Chimie”, Université de Lomé
  - Ph.D., University of Virginia, USA
    - Ph.D. thesis done at Paul Scherrer Institute in Switzerland
  - Post-doctoral Studies at Hampton University (USA), Jefferson Lab (USA), and CERN (Switzerland)
- **Profession**
  - Physicist (tenured) at Brookhaven National Laboratory (USA)
  - Visiting Researcher at CEA-SACLAY (France)
  - Visiting Researcher at the University of Johannesburg (South Africa)
  - Research Interests: search for new physics beyond the Standard Model of particle physics
    - I am a member of the ATLAS Collaboration that discovered the Higgs Boson
  - I organize my own professional physics workshop. Next one on October 2-5, 2018 at BNL
    - [www.bnl.gov/di2018](https://www.bnl.gov/di2018)
- **Civil Status**
  - Married
  - My wife runs the ASP mentorship program
  - My daughter wants to be drain surgeon
  - They are here
- **Hobbies**
  - African drums, Djembe in particular. I used to travel to physics conferences with my Djembes
  - Writer. My first novel: “Citizen and Traveler (2017)” with French translation “Citoyen et Voyageur (2018)”. Available in [www.amazon.com](http://www.amazon.com) in paperback and e-book

Third Biennial Workshop on  
**Dark Interactions**  
Perspectives from Theory  
and Experiment

October 2 - 5, 2018  
Brookhaven National Laboratory  
<https://www.bnl.gov/di2018/>

**Topics**

- Theoretical Motivation for Dark Sectors
- Experimental Constraints from High Energy Colliders
- Constraints from non-Collider Experiments
- Cosmological Constraints
- Implications for Dark Matter
- Prospects for LHC and future Intensity Frontier Experiments

**The Organizing Committee**

- Ketevi A. Assamagan (Chair, BNL)
- Oliver Keith Baker (Yale University)
- Michael Begel (BNL)
- Mary Bishai (BNL)
- John Paul Chou (Rutgers University)
- Hooman Davoudiasl (BNL)
- Rouven Essig (Stony Brook University)
- Tobias Golling (Université de Genève)
- Christopher S Hill (Ohio State U)
- Eder Izaguirre (BNL)
- William Marciano (BNL)
- Gopaling Mohlabeng (BNL)
- Anze Slosar (BNL)
- Stephane Willcoq (U. of Massachusetts)

Workshop Coordinator  
Linda Fellersband, BNL  
+1631 344 4887  
di2018@bnl.gov

# Overview

## ASP2010

First Edition in South Africa  
August 1-21, 2010

125 Applications and 65 selected  
from 17 countries

## ASP2012

Second Edition in Ghana  
July 15 to August 8, 2012

138 Applications and 50 students  
selected from 15 countries

## ASP2020 Morocco

Host countries selected  
2.5 years earlier  
through a bidding process

Serious efforts to advertise widely

## ASP2018

Fifth 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)

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

## ASP2016

Fourth 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, 2 days)

## ASP2014

Third Edition in Senegal  
August 3-23, 2014

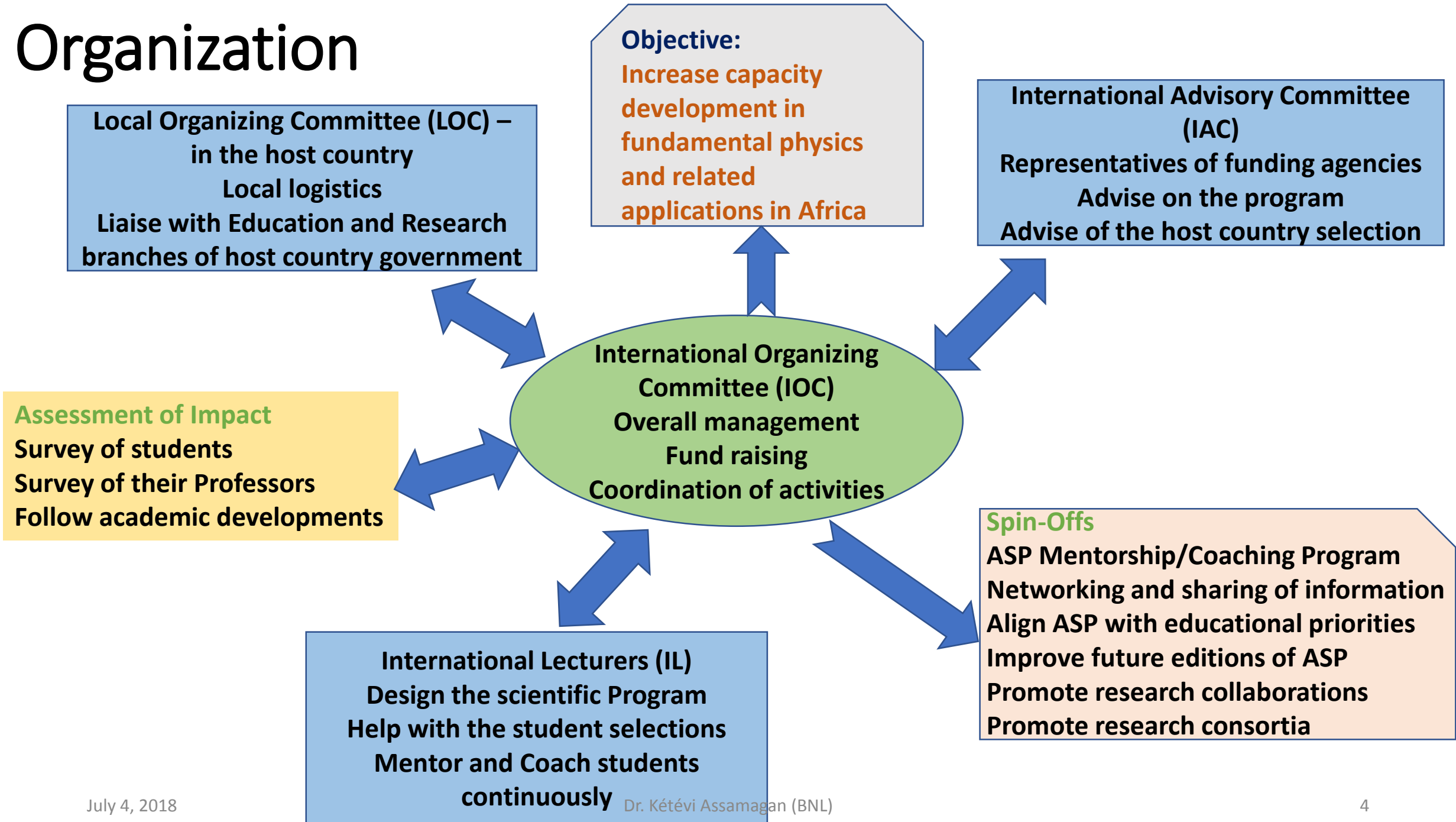
330 Applications and 70 students  
selected from 21 countries

Feedbacks to improve future ASPs

July 4, 2018

Dr. Kétévi Assamagan (BNL)

# Organization



# Scientific Program

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

**Student Program**  
3-week intensive school  
3<sup>rd</sup> year of University to Ph.D.  
Mostly African Students  
70-80 Students

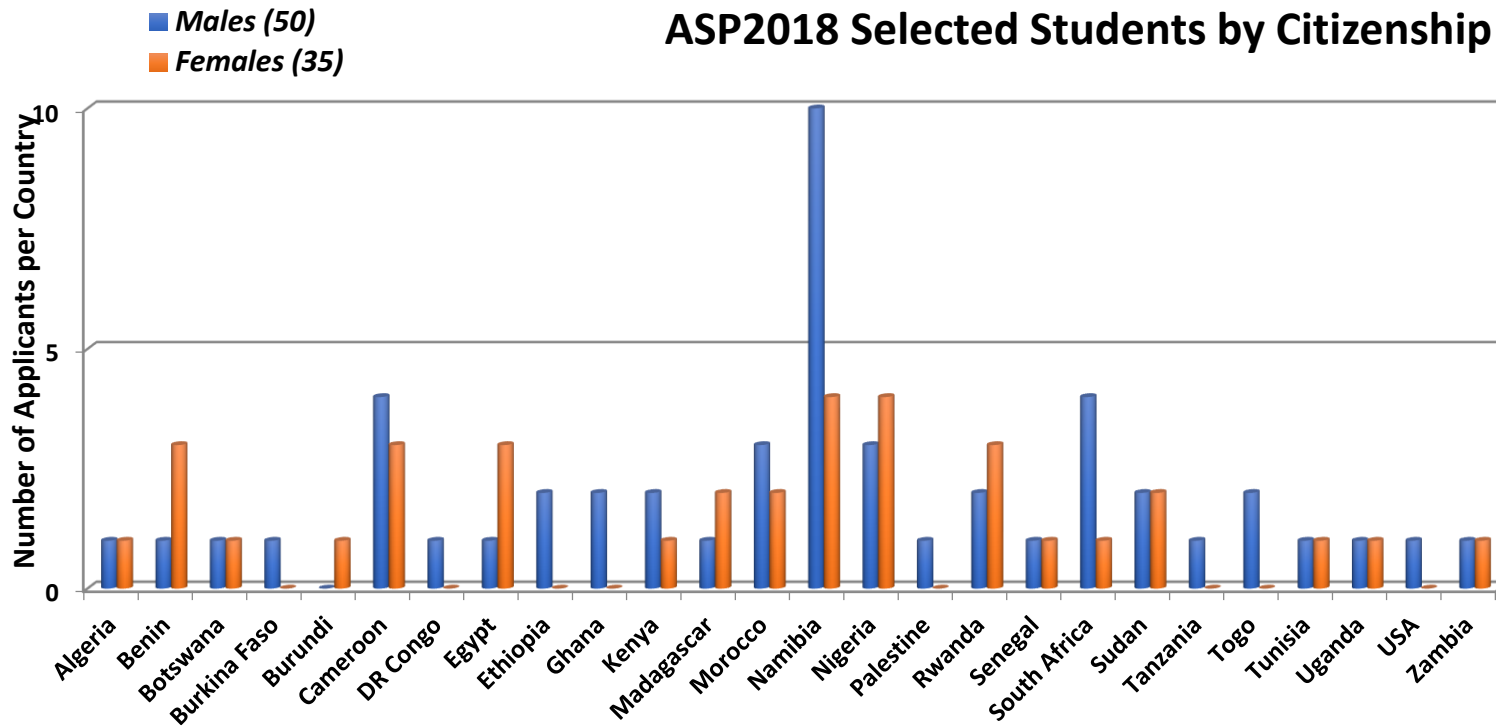
**High School Teachers Program**  
1-week intensive workshop  
Train High School Teachers for improved physics teaching

**Fundamental Physics and Applications**  
*Astrophysics and Cosmology;  
Nuclear and Particle Physics;  
Accelerator, Medical and Radiation Physics;  
High Performance Computing;  
Renewable Energies and Energy Efficiency;  
Material Physics.*

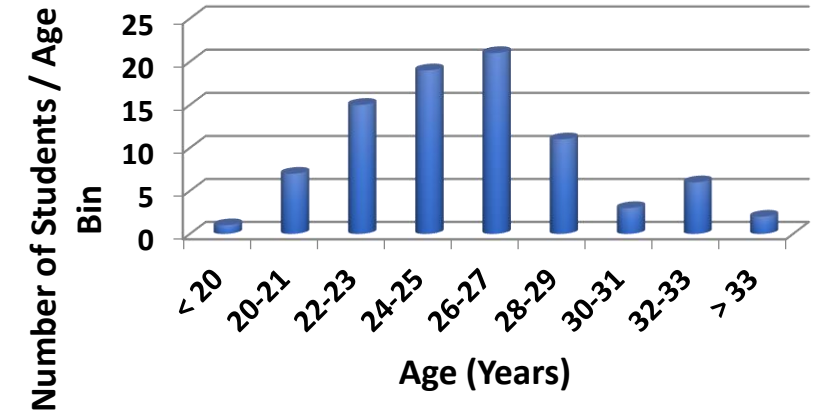
**Mentorship / Coaching Program**  
At all times  
Work with Academic Advisors  
Connect Students with Researchers  
Place students at Laboratories  
Listen to students and help address their academic needs if possible

**Learners Program**  
1-week learners Outreach  
10-12<sup>th</sup> grade learners  
Encourage learners to develop and maintain interests in Physics and Applications

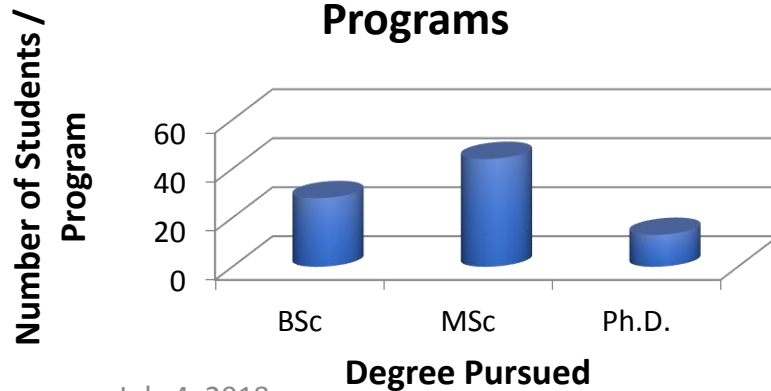
# ASP2018 Students Profile



## ASP2018 Selected Students by Age

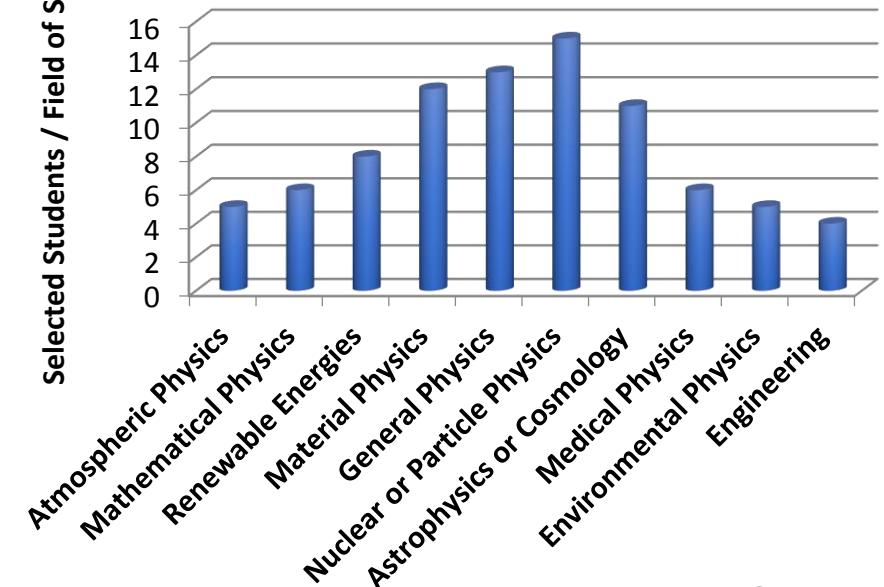


## ASP2018 Selected Student Degree Programs



- **523 Applications**
- **Total Selected: 85**
- **There were 30 good students on the waiting list**
- **Selections constrained by budget and logistics**
- **Replace early declinations**

## ASP2018 Selected Students by Field of Study



# Sponsorships for Student Participations

“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”

## ASP2018 Sponsors in addition to USA DOE Labs (BNL)



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

### African Contributors:

- Namibia
- SA DST/NRF
- IUCEA

**Integrated: ~50%**  
**ASP2018 budget**

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

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

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

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

# ASP2018 – teachers Program

**Objective:**  
Support teacher growth  
in the planning and  
delivering of instructions

**This week July 2-6:**  
We have 63 teachers (all from the 14  
regions of Namibia), identified by  
the Local Organizing Committee and  
the Ministry of Education, Arts &  
Culture

Teachers program  
is running in  
parallel to the  
students program



Program designed  
such that the teacher  
could attend the ASP  
conference – Physics  
Education and Physics  
Communication  
Tracks in particular



# 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