

THE BIENNIAL AFRICAN SCHOOL OF FUNDAMENTAL PHYSICS AND APPLICATIONS (ASP)



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<http://www.africanschoolofphysics.org/>

Outline



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- Issue
- Program
- Organization
- Financial support
- School Report; Feedback & Outlook



Objectives



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- **Increase capacity in fundamental physics and related applications**
 - Organizing a biennial school rotating in different African Countries
 - Networking among African Students
 - Sharing of information on high education opportunities around the world
- **First edition of the school, ASP2010**
 - August 1-21, 2010 (3 weeks) in Stellenbosch, South Africa. Attended by 65 students from 17 African countries
- **Second edition of the school, ASP2012**
 - At the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi Ghana. July 15 – August 8, 2012 (3.5 weeks). Attended by 50 students from 15 African countries
- **Third edition, ASP2014**
 - At the Cheikh Anta Diop University in Dakar Senegal. 3-23 August 2014. Attended by 56 students from 17 countries. 330 applications were received.
- **4th Edition, ASP2016**
 - 1-19 August 2016 in Rwanda
- **School participation is free of charge to the selected students**
 - Full bursaries for selected students





The issue and the context

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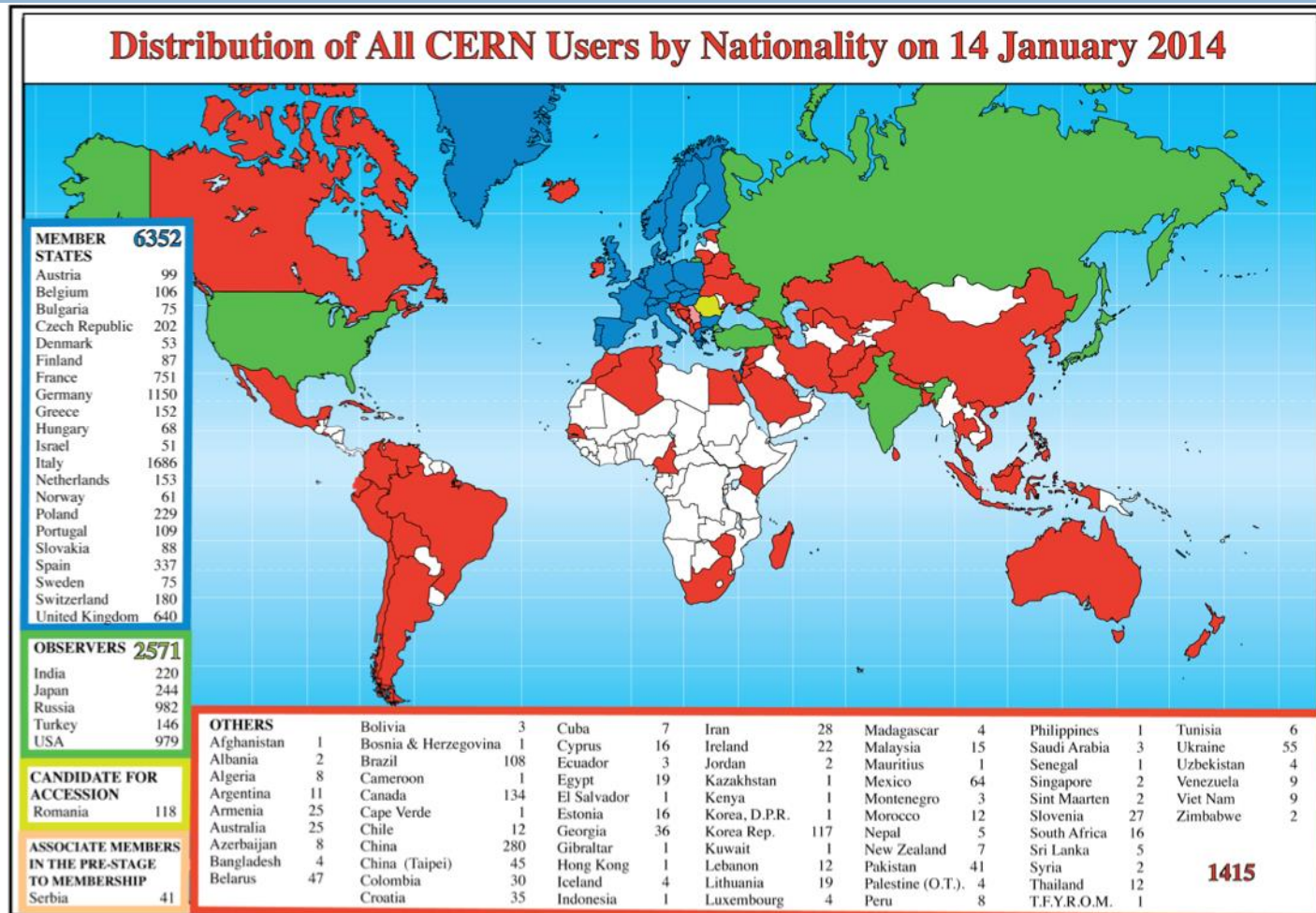
- Low participation of African scholars in major research labs around the world. Some examples:
 - CERN users
 - Users of LHC experiments
- Not limited to CERN. Broader issue



About 0.5% of CERN users are African Nationals



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African Participation in the ALICE Experiment



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Only South
Africa: 2
institutes with
5 members.
Collaboration
over 1000
members



LHCb: 60 institutes, over 800 members. No African participation.
There may be a few Africans through participating institutes.



African Participation in the ATLAS Experiment



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In ATLAS,
Morocco and
South Africa.
Several
institutes, about
35 members
total. Size
of the
collaboration:
over 3,000



In CMS, only Egypt with 1 institute, 10 members.
Size of the collaboration: over 3,000



The program



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- Theoretical physics
- Experimental physics
- Applications
 - ▣ Nuclear medicine
 - ▣ Accelerator physics
 - ▣ Light sources
- Simulations, data analysis
- Information technology, grid computing

<http://www.africanschoolofphysics.org/wp-content/uploads/2014/11/asp2014-agenda.pdf>



Organization



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□ **International Organizing Committee (IOC)**

- The IOC is the main organizer of the school
- The IOC Members:
 - B. Acharya (ICTP & King's College London)
 - K. A. Assamagan (BNL)
 - A. Dabrowski (CERN)
 - C. Darve (ESS)
 - J. Ellis (CERN & King's College London)
 - S. Muanza (CNRS-IN2P3)
 - R. Voss (CERN)

□ **Local Organizing Committee (LOC)**

- Local committee in the host country

□ **International Advisory Committee (IAC)**

- Advises on various aspects of the organization including fund raising

How to contact the IOC: ASP2016-IOC@CERN.CH



Financial Support



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- Voluntary contributions from individuals and institutes. So far from
 - Europe
 - US
 - South Africa
 - Asia
 - In-kind support from the host country
 - Institutional representatives in the IAC
- Need to improve fundraising and outreach efforts

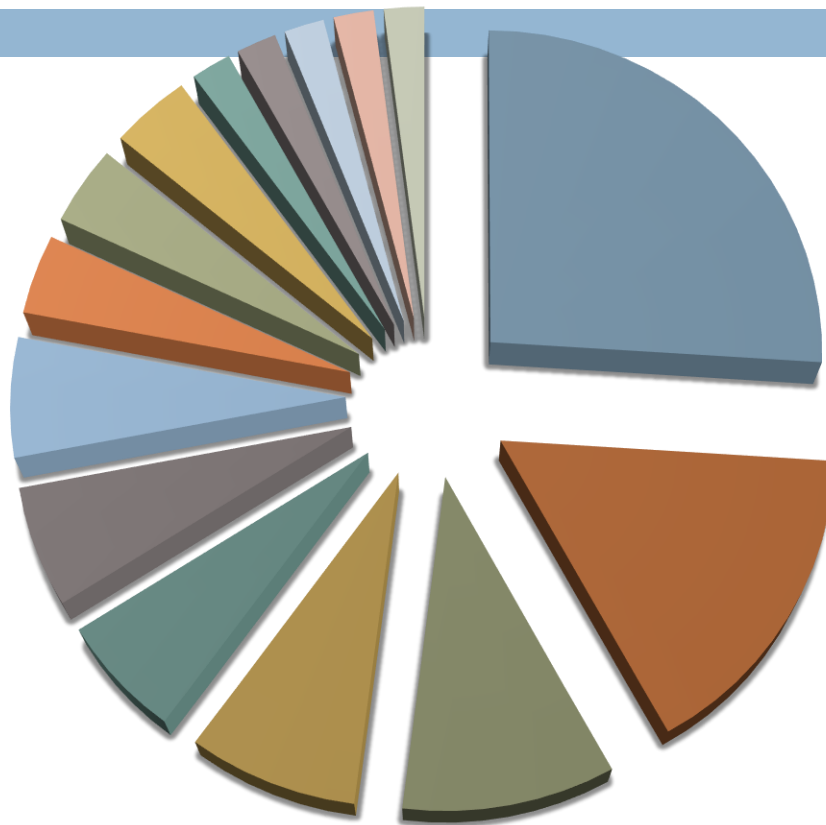


Student Distribution



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ASP2012



■ Ghana (13)

■ Sudan (4)

■ South Africa (3)

■ Kenya(2)

■ Iran(1)

■ Nigeria (8)

■ Cameroon (3)

■ Algeria(2)

■ Benin(1)

■ Tanzania(1)

■ Madagascar (5)

■ Senegal (3)

■ Congo (2)

■ Egypt(1)

■ Zambia(1)



ASP2012 Support from



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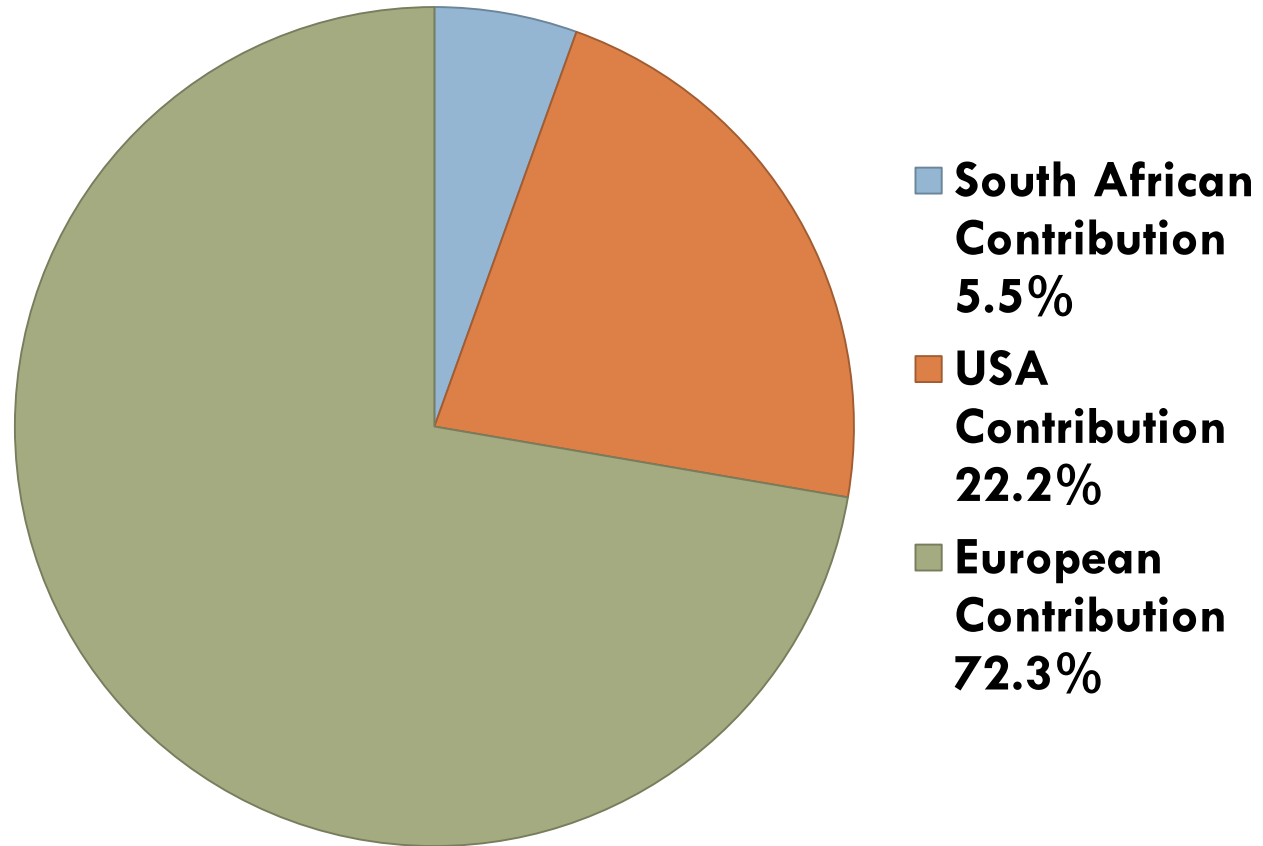
Total Support received: €1 19730

In addition to transportation and accommodation coverage for most lecturers from their own institutes





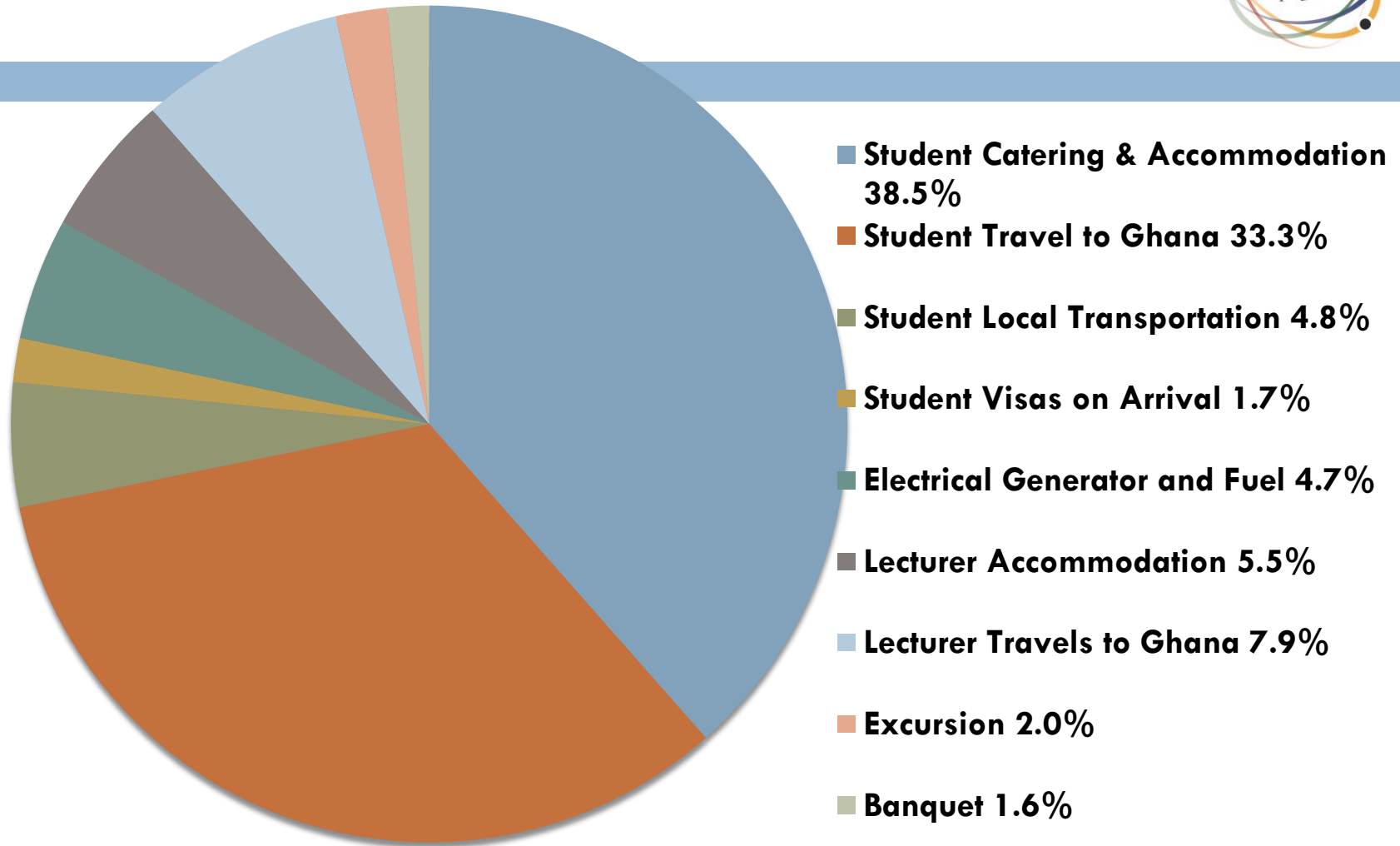
Financial Support



ASP2012 Expenditures



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The funds were mostly spent on the students

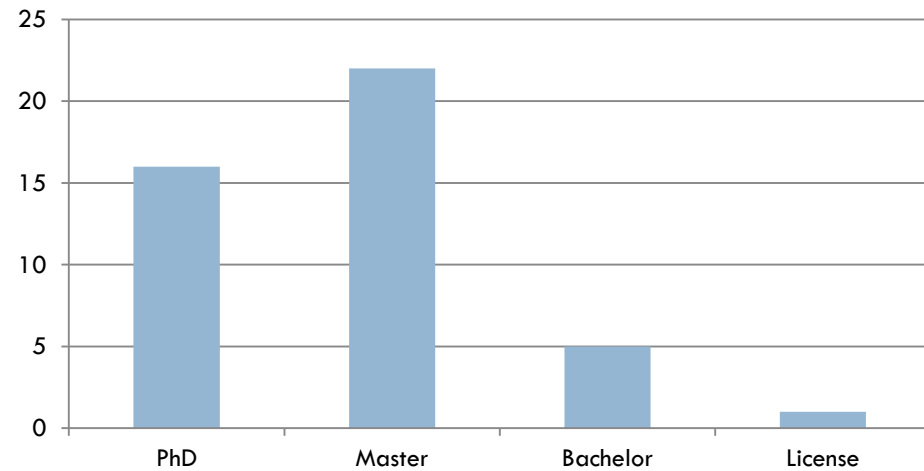


ASP2014 Student Survey

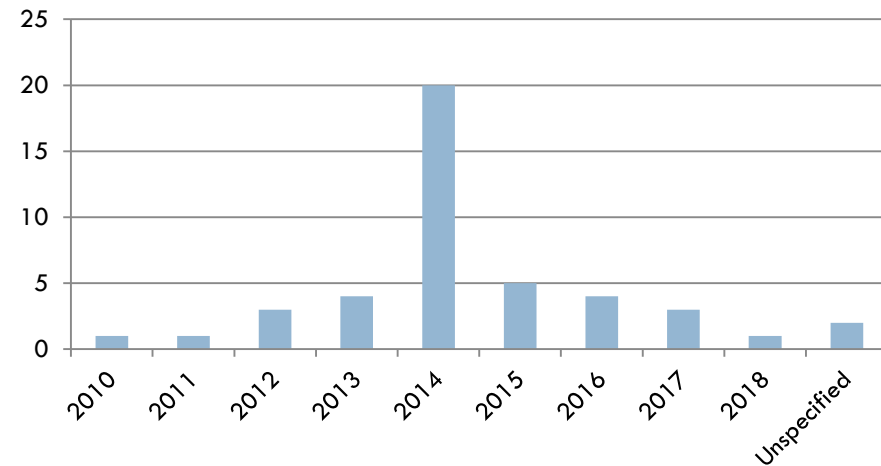


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Degree



Expected Year of Graduation



ASP2012 Students and Lecturers

1st Week



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ASP2014 Students and Lecturers

1st Week



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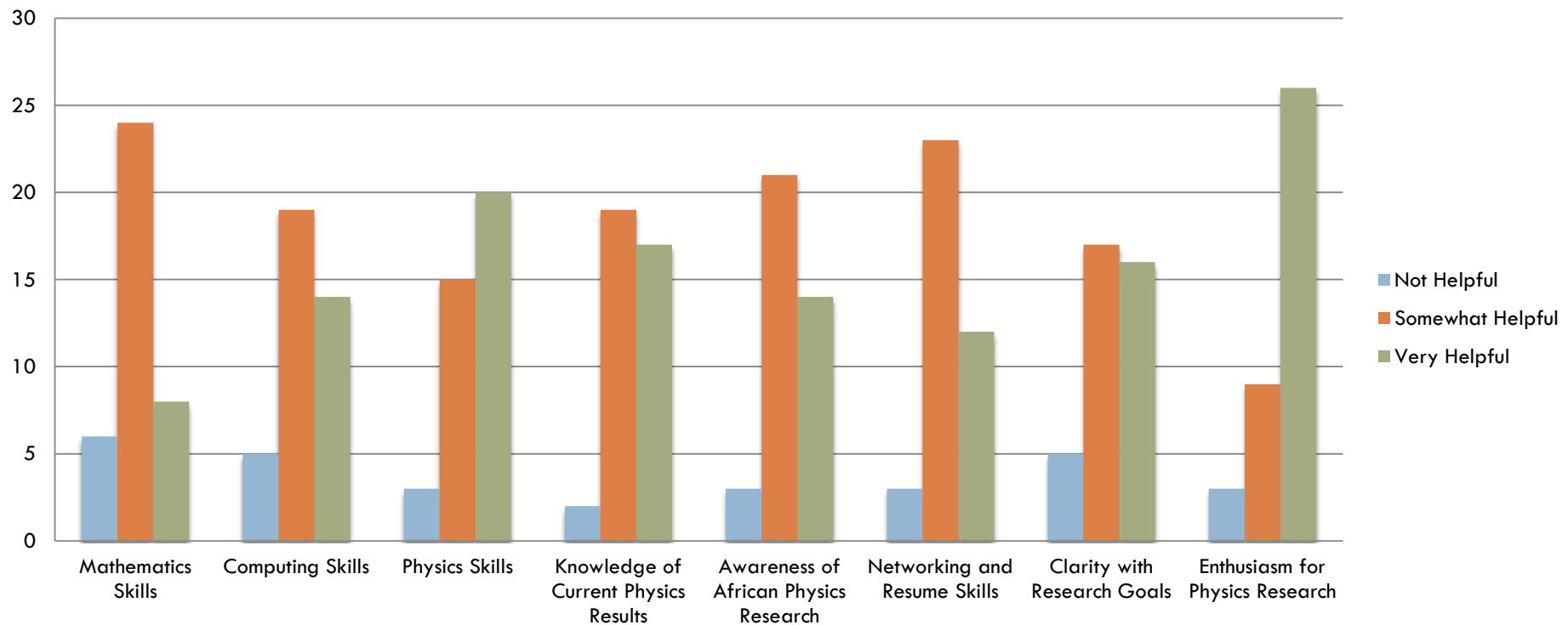


Feedback from African Institutes



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Did you see improvement in your student's skill after their attendance at the African School of Physics?

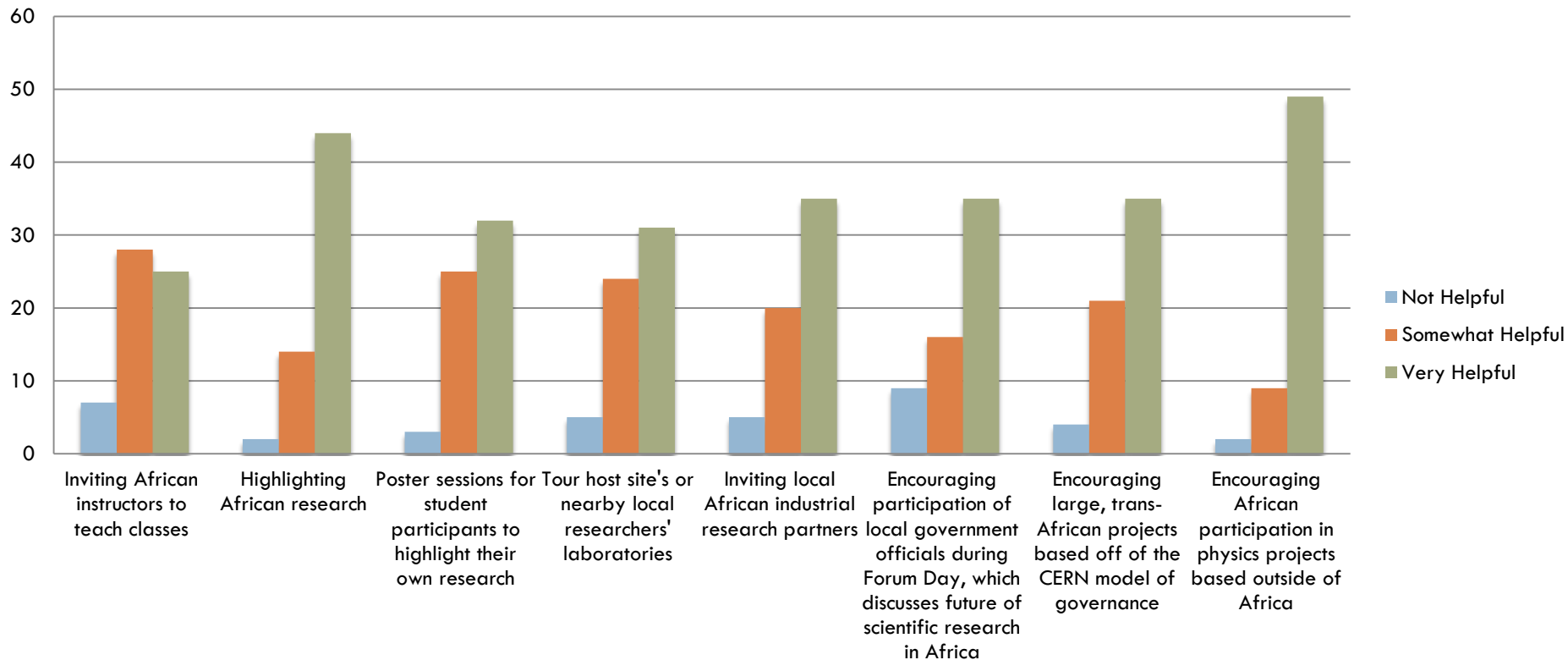


Feedback from African Institutes



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How could the African School of Physics contribute to strengthening research networks between African universities and stop "Brain Drain"?

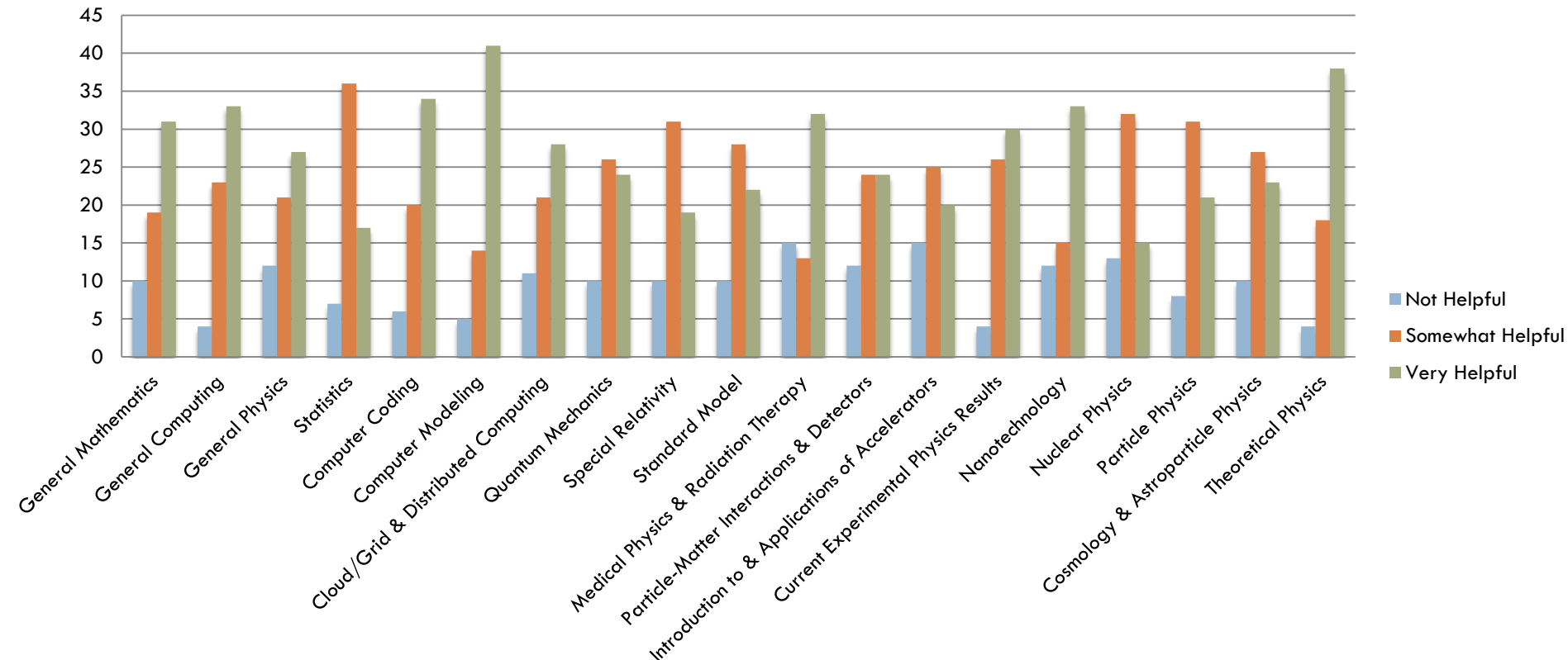


Feedback from African Institutes



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Which skills do you feel need improvement for the graduate students at your institution?



ASP Follow ups



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- Maintaining contacts with the students ASP-Students-Network@cern.ch
 - ▣ This list contains students from ASP2010, ASP2012 and ASP2014
 - ▣ Exchange of information on higher education around the world
- Direct contacts with individual students
- Laza Rakotondravohitra (Madagascar), a student of ASP2010, awarded Fermilab International Fellowship to pursue Ph.D. there on the MINERvA Neutrino Experiment http://www.symmetrismagazine.org/article/september-2012/african-school-of-physics-student-awarded-fermilab-international-fellowship?email_issue=23
 - ▣ He recently got his Ph.D.
- Suzan Bvumbi (South Africa). Attended ASP2012. Ph.D. Nuclear Physics 2014
 - ▣ Currently lecturer at the University of Johannesburg
- **Other students from ASP2010, ASP2012 and ASP2014 are pursuing MSc. And Ph.D. in the US and Europe**





Opportunities for the host country

401 Since ASP2012, a strategic plan has been drawn between INFN and KNUST for the de-
402 velopment of a "Ghana Multi-disciplinary Compact Laser Synchrotron at KNUST". It is a
403 research infra-structure that will cost less than 15 M€, that can be installed inside the KNUST
404 campus in a dedicated building ($25 \times 40 \text{ m}^2$) and can feed several fields of scientific and techno-
405 logical research and serve a wealth of multi-disciplinary applications, based on a Compact Laser
406 Synchrotron. It may constitute a national infrastructure to provide Ghana with an advanced
407 resource to develop science and technology at the national and international level.



ASP2016 – 4th Edition

ASP2018



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- The 4th edition of the school, ASP2016, is currently taking place in Rwanda on 1-19 August 2016
<http://www.africanschoolofphysics.org/>
 - ▣ Received 429 applications and accepted 76 of one is a USA student.
 - ▣ ASP2016 is currently on-going in Kigali Rwanda
 - <http://www.africanschoolofphysics.org/asp-2016/>
- We are also seeking the host country for ASP2018
 - ▣ We must identify the host country of ASP2018
 - ▣ There is still time to receive bids from interested countries
 - ▣ Your support would be essential
 - The total cost per student for 3 weeks is €3200 (international student) and €2000 (local student). This includes transportation, lodging and board for the entire 3 weeks





- **The first 3 editions of the African School have been very successful and well received. Due to:**
 - ▣ Support from institutes, Foundations and individuals in Africa, Europe, Asia and the US
 - ▣ Dedication of students and lecturers
 - ▣ Motivation of organizing committee
- **ASP2016 currently taking place in 2016 in Rwanda**
 - ▣ There was a live feed from Kigali yesterday and the engagement was very dynamic.
- **We will identify the host country for ASP2018 by December 2015**
 - ▣ Still time for interested countries to submit a bid to host ASP2018

Footage of ASP2012: <http://cdsweb.cern.ch/record/1472184>

