



AIMS

African Institute for
Mathematical Sciences

NEXT EINSTEIN INITIATIVE

AIMS Ecosystem of Transformation

EXCELLENCE • RESPECT • PAN-AFRICANISM • INTEGRITY

1 Value Proposition

AIMS seeks to lead the socio-economic transformation of Africa through innovative scientific training; technical advances and breakthrough discoveries; and strategic foresight and innovative policy design.

Socio-Economic Transformation of Africa

Innovative Scientific Training (Human Capital Development)



Technical Advances and Breakthrough Discoveries



Strategic Foresight & Innovative Policy Design



AIMS Centres of Excellence

Research Centres / Chairs

Quantum Leap Africa

AIMS Industry Initiative

Gender Responsive Teacher Training

Next Einstein Forum

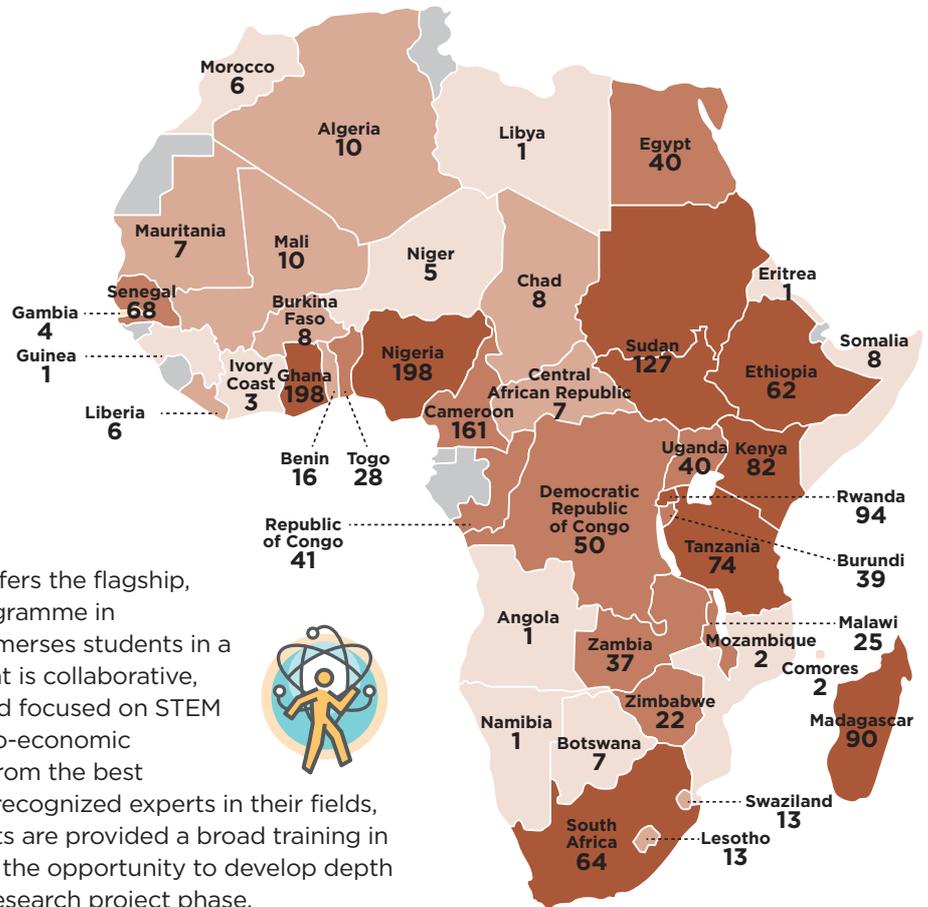
Commitment to Scientific Excellence and Gender Equity

2 AIMS Impact

A. AIMS CENTRES OF EXCELLENCE FACTS & FIGURES

as at June 30th 2018

6 Centres
1682 alumni from
43 African countries,
32% women



AIMS Centres

The AIMS Center of Excellence offers the flagship, one-year structured Master's programme in Mathematical Sciences, which immerses students in a 24-hour learning environment that is collaborative, problems-based, independent and focused on STEM fields which address Africa's socio-economic challenges. Lecturers are drawn from the best international institutions and are recognized experts in their fields, including field medalists. Students are provided a broad training in mathematical sciences and given the opportunity to develop depth in an area of interest during the research project phase.



Nationality	Female	Male	Total
1. Ghana	64	134	198
2. Nigeria	91	107	198
3. Cameroon	46	115	161
4. Sudan	68	59	127
5. Rwanda	30	64	94
6. Madagascar	34	56	90
7. Kenya	36	46	82
8. Tanzania	25	49	74
9. Senegal	11	57	68
10. South Africa	21	43	64
11. Ethiopia	13	49	62
12. Democratic Republic of Congo	9	41	50
13. Congo Brazzaville	6	35	41
14. Egypt	18	22	40
15. Uganda	13	27	40
16. Burundi	5	34	39
17. Zambia	6	31	37
18. Togo	4	24	28
19. Malawi	9	16	25
20. Zimbabwe	8	14	22
21. Benin	3	13	16
22. Lesotho	4	9	13

Nationality	Female	Male	Total
23. Swaziland	2	11	13
24. Algeria	3	7	10
25. Mali	3	7	10
26. Burkina Faso		8	8
27. Chad		8	8
28. Somalia	1	7	8
29. Botswana	2	5	7
30. Central African Republic	1	6	7
31. Mauritania	2	5	7
32. Liberia		6	6
33. Morocco	4	2	6
34. Niger		5	5
35. Gambia		4	4
36. Cote d'Ivoire		3	3
37. Namibia	1	2	3
38. Comores		2	2
39. Mozambique		2	2
40. Angola		1	1
41. Eritrea		1	1
42. Guinea		1	1
43. Libya		1	1
Total	543	1139	1682

Fields where AIMS Alumni pursue post AIMS (Masters and PhD)

Field	Number
Applied Mathematics	201
Physics (including Astrophysics and Astronomy)	194
Pure Mathematics	92
General Mathematics (unspecified)	83
Economics & Finance	72
Statistics	51
Computer Science	38
Engineering Science	38
Epidemiology	31
Other	34
Total	897

N.B. Figures as of December 2017.

B. AIMS INDUSTRY INITIATIVE

AIMS Industry Initiative seeks to maximize the opportunities and potential for mathematical sciences to contribute to African economies through human capital, knowledge transfer and applied research for scientific and technological excellence. The initiative links mathematical sciences to the needs of industry as we focus on filling the skills gap in Africa through strategic partnerships with relevant stakeholders.

- Co-op students across the network: **89** since 2016 (**68** in Senegal, **11** in Cameroon, **10** in Rwanda)
- **220** internships have been facilitated since 2013 for both co-op students and alumni
- Banking sector largest internship provider
- In March 2018, begun process to create AIMS Industry Affiliation Program



What's next?

- Mathematical Sciences for Climate Change Internship Program - **10** Internship by July 2018 and **104** Internship by 2022
- AIMS - GSK Statistical Non-Communicable Diseases Internships Program, **12** internships will be provided over 3 years
- 2018-2020: Diversifying pool of internship providers

Fields/areas or sectors where AIMS Alumni work

Field	Number
Education	206
Research	59
ICT	32
Financial services	15
Government	13
Health	4
Transport & Construction	4
Energy	4
Non-Profit	4
Other	24
Total	365

C. AIMS RESEARCH

The vision of the Research Center, which is being established, is to serve as a catalyst of human progress in Africa and beyond, through knowledge creation, translation (innovation), and dissemination. The Research Center will provide an intellectual safe space for some of Africa's and the world's brightest minds, including Chairs, to conduct world-class research that advances the understanding of nature and of mathematics. Knowledge translation will be facilitated through innovation labs set up inside and outside the Center's premises.

- Current **90** researchers across AIMS Network
 - **21** Researchers (**8** female)
 - **40** PhD students (**13** female)
 - **8** postdocs (**1** female)
 - **17** resident researchers (**5** female)
 - **7** chairs (**1** female)
- **350** publications published as of 2017
- **100** conferences as of 2017
- **340** visiting researchers as of 2017
- **3** Women in Climate Science Fellowship awarded May 2018
- **2** Innovation labs running in Ghana, South Africa



What's next?

- Recruit **3** Chairs in Climate Science in Rwanda, at least **1** female
- Recruitment ongoing for Chairs, postdocs, PhD students
- Award **5** Climate Change Research Fellowships to female researchers
- Award **4** small research grants in Climate Change Science

D. QUANTUM LEAP AFRICA

QLA is a centre of scientific research excellence at the leading edge of information science and technology. The aim of the centre is to rapidly position Africa as a leader in solving critical problems of development through cutting-edge research in data science, smart systems engineering and the emerging area of quantum information science and technology, a new frontier which many believe will drive the next global super cycle. The goal is to prepare Africa for the upcoming global transition to quantum technologies, unlock Africa's scientific potential, and foster major discovery.

2018

- QLA launching the African Masters in Machine Intelligence at AIMS Rwanda in September 2018.
- HIRAX Outrigger to be set up in Rwanda. The HIRAX is a radio telescope array that will map nearly all of the southern sky in radio continuum and neutral hydrogen line emission over a frequency range of 400-800Mhz. The main experiment will be based in South Africa while outrigger station will be in Rwanda, Namibia, Mozambique and Botswana. The HIRAX outrigger telescope in Rwanda is expected to provide an opportunity for cutting edge research and strong collaborations with international professionals in the field of Cosmology, Astrophysics and Data science



E. GENDER RESPONSIVE TEACHER TRAINING

The Mathematics and Science Teachers Training Program is a five-year program (2018 to 2022) targeting in-service and pre-service teachers. The program is a collaborative effort between AIMS, University of Rwanda – College of Education (UR-CE) and Rwanda Education Board (REB) in close partnership with Mastercard Foundation Secondary Education Teachers Initiative (SETI) program.

In Cameroon

- **84** master trainers trained
- **149** in-service teachers trained
- **376** pre-service teachers trained
- More than **30,000** students impacted



In Rwanda

- **53** master trainers trained in Math and Science for Sub-Saharan Africa approach
- **119** secondary school teachers and school subject leaders trained

What's next?

- In Cameroon, Training **1772** in-service, **824** pre-service teachers = impacting **1 million** secondary school students
- In Rwanda:
 - Equip **30** schools piloting smart classrooms
 - Train **1448** school subject leaders for math and science from **744** schools
 - Train over **3000** math and science teachers on gender sensitive pedagogy = improve performance of **200,000** girls and boys at secondary school

F. NEXT EINSTEIN FORUM

NEF is a platform where topics are addressed strategically and holistically, with opportunities for cross fertilization. The forum includes the civil society as well as policy makers, scientists and industry leaders. The NEF has four pillars: The Global Gatherings, Policy Work, the Platform and the Community of Scientists. It also has two cross cutting commitments: to scientific excellence which speaks to both research and education and to gender equity.

NEF Global Gathering 2018

- Over **1500** participants
- Over **90** countries
- Over **75** institutions represented

Launched Scientific African journal to showcase African research globally in partnership with Elsevier



What's next?

- Africa Science Week in **33** countries in September and October 2018
- Africa's Digital Economy Roadmapping Final Workshop: 18-19 October 2018
- Annual Gathering of the NEF Community of Scientists and Scientific Programme Committee: March 2019
- NEF Africa Science and Innovation Index – unofficial first edition March 2019
- NEF Global Gathering 2020: March 2020 in Kenya



3 Key Contact Persons

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