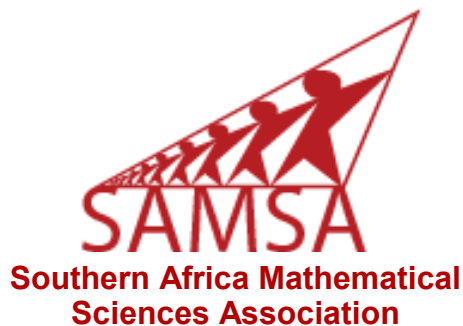


THE SAMSA MASAMU PROGRAM



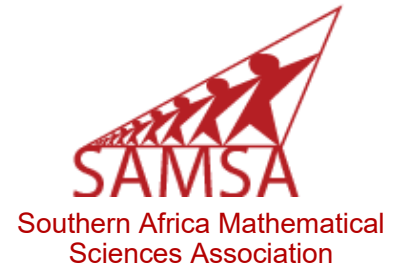
**The Sixth Annual Masamu
Advanced Study Institute (MASI) and
Workshops in Mathematical Sciences**

November 18th - 27th, 2016

**University of Pretoria
Pretoria, South Africa**

ACKNOWLEDGEMENTS

The Masamu program expresses our appreciation to the following sponsors:



The program wishes to extend its special thanks to Keri Hesson (Academic Programs Administrator) and Brittany McCullough (Analyst, Planning & Assessment) in the Auburn University Office of the Provost, Special Projects & Initiatives.

THE SAMSA MASAMU PROGRAM

The Masamu (masamu means mathematics in Southern Africa) Program was established in 2010 through a grant from the US National Science Foundation (NSF). The primary goal of the program is enhancing research in mathematical sciences within Southern Africa Mathematical Sciences Association (SAMSA) institutions through promotion of international research collaboration. A key component of the Masamu Program is the Masamu Advanced Study Institute (MASI) and Workshop Series in mathematical sciences that provides a platform for such collaboration. Other planned activities include Research Workshop, Career Development Workshop, Department Heads and Chairs and Senior Research Scientists Workshop, Colloquia and Webinar Series, and AfricaMath. The target audiences of the MASI are graduate and undergraduate students and early career faculty (rank less than associate professor) while the workshops are open to students, faculty, and other researchers in the mathematical sciences.

The Masamu Advanced Study Institute (MASI) and Workshop Series in Mathematical Sciences program is a collaborative effort between African, European, Canadian, and US mathematicians. This program has three main goals: (1) Strengthen the US and Southern African human infrastructure in mathematical sciences research; (2) Drastically increase and sustain research collaboration between US, European, and Southern African mathematicians; and (3) Improve collaboration between US, European and Southern African colleges and universities.

In order to effectively use the MASI and Research Workshops, the Masamu Program has created a Collaborative Research Network consisting of 55 research faculty (26 Sub-Saharan Africa, 21 US, 2 Canada, and 6 Europe) forming 4 research teams in Pure Mathematics (Algebra and Geometry, Analysis and Topology, Coding Theory and Information Theory, and Graph Theory) and 4 research teams in Applied Mathematics (Epidemiological Modeling, Numerical Approximation of Solutions of Partial Differential Equations, Mathematics of Finance, and Statistics). Each research team has at least 4 faculty and at least 4 undergraduate and graduate students. The primary objectives of the network are to drastically increase both the quantity and quality of research publications and the number of PhD degrees, especially among women and underrepresented minorities, in each of the areas represented by the eight research teams in both the US and Sub-Saharan Africa, and promote research collaboration between European, Sub-Saharan Africa, and US mathematicians. Participants in this Collaborative Research Network take advantage of the annual SAMSA conferences, Masamu Institutes, and Workshops to meet face to face, work on research problems, plan research activities for the following year, and present their research findings.

About SAMSA: The Southern Africa Mathematical Sciences Association (SAMSA) was established in 1981 to further the mathematical sciences in the Southern African region (Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe) and beyond.

About the NSF: The National Science Foundation (NSF) is an independent US federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..." In many fields such as mathematics, computer science and the social sciences, NSF is the major source of federal backing for America's colleges and universities.

Institute and Workshop inquiries should be directed to:

- Sub-Saharan Africa - Dr. Moatlhodi Kgosi, mkgosi@bca.bw
- United States - Dr. Ash Abebe, abebeas@auburn.edu

General inquiries about the Masamu Program should be directed to:

- Sub-Saharan Africa - Dr. Edward Lungu, lunguliz@gmail.com
- United States - Dr. Overtoun Jenda, jendaov@auburn.edu



2014 Masamu Program in Victoria Falls, Zimbabwe

2016 ADVANCED STUDY INSTITUTE AND RESEARCH WORKSHOP PROGRAM

SENIOR RESEARCH FACULTY

| | | |
|---|---|--|
|  | <p>Dr. Ash Abebe Statistics abebeas@auburn.edu</p> | <p>Auburn University Professor</p> |
|  | <p>Dr. Peter Dankelmann Graph Theory pdankelmann@uj.ac.za</p> | <p>University of Johannesburg Professor</p> |
|  | <p>Dr. Levis Eneya Analysis and Optimization leneya@cc.ac.mw</p> | <p>University of Malawi Senior Lecturer</p> |
|  | <p>Dr. Jean-Baptiste Gatsinzi Algebraic Topology jgatsinzi@unam.na</p> | <p>University of Namibia Associate Professor</p> |
|  | <p>Dr. Overtoun Jenda Algebra jendaov@auburn.edu</p> | <p>Auburn University Professor and Assistant Provost for Special Projects & Initiatives</p> |
|  | <p>Dr. Peter Johnson Discrete Mathematics: Graph Theory, Information Theory johnspd@auburn.edu</p> | <p>Auburn University Professor</p> |
|  | <p>Dr. Moatlhodi Kgosimore Mathematical Biology mkgosi@bca.bw</p> | <p>Botswana University of Agriculture & Natural Resources Senior Lecturer</p> |

2016 ADVANCED STUDY INSTITUTE AND RESEARCH WORKSHOP PROGRAM

SENIOR RESEARCH FACULTY

| | | |
|---|--|---|
|  | <p>Dr. Neal Koblitz Number Theory and Cryptography koblitz@u.washington.edu</p> | <p>University of Washington Professor</p> |
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|  | <p>Dr. Edward Lungu Mathematical Biology, Stochastic Analysis lunguliz@gmail.com</p> | <p>Botswana International University of Science & Technology Professor</p> |
|  | <p>Dr. A.J. Meir Numerical Analysis and Partial Differential Equations ajmeir@mail.smu.edu</p> | <p>Southern Methodist University Professor</p> |
|  | <p>Dr. Farai Nyabadza Mathematical Biology nyabadzaf@sun.ac.za</p> | <p>Stellenbosch University Professor</p> |
|  | <p>Dr. Jane White Mathematical Biology k.a.j.white@bath.ac.uk</p> | <p>University of Bath Senior Lecturer</p> |
|  | <p>Dr. Abdul-Aziz Yakubu Mathematical Biology ayakubu@howard.edu</p> | <p>Howard University Professor</p> |

2016 ADVANCED STUDY INSTITUTE AND RESEARCH WORKSHOP PROGRAM PARTICIPANTS

| Name | Institution | Country | Research Group |
|------------------------|--------------------------------------|----------------|----------------------|
| Adam Blumenthal | Iowa State University | United States | Discrete Mathematics |
| Danielle Burton | University of Tennessee | United States | Mathematical Biology |
| Filister Chinake | University of Stellenbosch | South Africa | Mathematical Biology |
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| Davide Cusceddu | University of Sussex | United Kingdom | Mathematical Biology |
| Christina Edholm | University of Tennessee | United States | Mathematical Biology |
| Bradley Fain | University of Delaware | United States | Discrete Mathematics |
| Lauren Heller | Wellesley College | United States | Algebra and Geometry |
| Aziza Juma Iddi | University of Dar es Salaam | Tanzania | Mathematical Biology |
| Cadavious Jones | Alabama State University | United States | Discrete Mathematics |
| Victor Ogesa Juma | University of Sussex | United Kingdom | Mathematical Biology |
| Roselyn Kaondera-Shava | Botswana Int Univ Sci & Tech (BIUST) | Botswana | Mathematical Biology |
| Khumbo Kumwenda | Mzuzu University | Malawi | Discrete Mathematics |
| Adam LaClair | University of Tennessee | United States | Algebra and Geometry |
| Ben Levy | Fitchburg State University | United States | Mathematical Biology |
| Sonwabile Mafunda | University of Johannesburg | South Africa | Discrete Mathematics |
| Theresia Marijani | University of Dar es Salaam | Tanzania | Mathematical Biology |
| Eric Mwambene | University of Western Cape | South Africa | Discrete Mathematics |
| Fadekemi Janet Osaye | University of Johannesburg | South Africa | Discrete Mathematics |
| Katherine Perry | Auburn University | United States | Discrete Mathematics |
| Notice Ringa | Botswana Int Univ Sci & Tech (BIUST) | Botswana | Mathematical Biology |
| Sarajane Roenke | Hartwick College | United States | Discrete Mathematics |
| Claire Zhang | Auburn University | United States | Discrete Mathematics |

MASAMU PROGRAM STEERING COMMITTEE

| |
|---|
| <p>Dr. Ash Abebe Auburn University, USA abebeas@auburn.edu</p> |
| <p>Dr. Overtoun Jenda, Co-Chair Auburn University, USA jendaov@auburn.edu</p> |
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| <p>Dr. Abdul-Aziz Yakubu Howard University, USA ayakubu@howard.edu</p> |

**2016 MASAMU ADVANCED STUDY INSTITUTE (MASI) AND
RESEARCH WORKSHOP**

FRIDAY, NOVEMBER 18 - SUNDAY, NOVEMBER 27, 2016

DAILY SCHEDULE

| <i>Friday, November 18:</i> | | |
|-------------------------------|---------------|-----------------------------|
| Registration | 10:00 – 12:00 | Court Classique Suite Hotel |
| Lunch | 1:00 – 2:00 | Court Classique Suite Hotel |
| Institute | 2:00 – 6:00 | Court Classique Suite Hotel |
| Break | 6:00 – 7:00 | |
| Dinner | 7:00 – 8:00 | Court Classique Suite Hotel |
| <i>Saturday, November 19:</i> | | |
| Institute | 9:00 – 12:00 | Court Classique Suite Hotel |
| Lunch | 12:00 – 2:00 | Court Classique Suite Hotel |
| Institute | 2:00 – 5:00 | Court Classique Suite Hotel |
| Break | 5:00 – 6:00 | |
| Dinner | 6:00 – 7:00 | Court Classique Suite Hotel |
| <i>Sunday, November 20:</i> | | |
| Institute | 9:00 – 12:00 | Court Classique Suite Hotel |
| Lunch | 12:00 – 2:00 | Court Classique Suite Hotel |
| Institute | 2:00 – 5:00 | Court Classique Suite Hotel |
| Break | 5:00 – 6:00 | |
| Dinner | 6:00 – 7:00 | Court Classique Suite Hotel |
| <i>Monday, November 21:</i> | | |
| SAMSA Conference (w/ Lunch) | 8:30 – 5:30 | University of Pretoria |
| SAMSA Poster Session | 5:30 – 6:00 | University of Pretoria |
| SAMSA Cocktail | 6:00 – 7:30 | University of Pretoria |
| Dinner | 7:30 – 8:30 | Court Classique Suite Hotel |
| Institute | 8:30 – 9:30 | Court Classique Suite Hotel |

**2016 MASAMU ADVANCED STUDY INSTITUTE (MASI) AND
RESEARCH WORKSHOP**

FRIDAY, NOVEMBER 18 - SUNDAY, NOVEMBER 27, 2016

DAILY SCHEDULE

| | | |
|---------------------------------------|--------------|-----------------------------|
| <i>Tuesday, November 22:</i> | | |
| SAMSA Conference (w/ Lunch) | 8:30 – 5:30 | University of Pretoria |
| Reception and Exhibits | 5:30 - 6:00 | University of Pretoria |
| STEM Workshop | 6:00 – 7:30 | University of Pretoria |
| Dinner | 7:30 – 8:30 | Court Classique Suite Hotel |
| Institute | 8:30 – 9:30 | Court Classique Suite Hotel |
| <i>Wednesday, November 23:</i> | | |
| SAMSA Conference (w/ Lunch) | 8:30 – 6:00 | University of Pretoria |
| SAMSA Conference Dinner | 7:00 – 10:00 | TBA |
| <i>Thursday, November 24:</i> | | |
| SAMSA Conference (w/ Lunch) | 8:30 – 1:00 | University of Pretoria |
| SAMSA Excursion | 1:00 – 8:00 | TBA |
| Dinner | 8:00 – 9:00 | Court Classique Suite Hotel |
| <i>Friday, November 25:</i> | | |
| Research Workshop | 9:00 – 12:00 | Court Classique Suite Hotel |
| Lunch | 12:00 – 2:00 | Court Classique Suite Hotel |
| Research Workshop | 2:00 – 5:00 | Court Classique Suite Hotel |
| Break | 5:00 – 6:00 | |
| Institute Dinner | 6:00 – 8:00 | Court Classique Suite Hotel |
| <i>Saturday, November 26:</i> | | |
| Research Workshop | 9:00 – 12:00 | Court Classique Suite Hotel |
| Lunch | 12:00 – 2:00 | Court Classique Suite Hotel |
| Research Workshop | 2:00 – 5:00 | Court Classique Suite Hotel |
| Break | 5:00 – 6:00 | |
| Dinner | 6:00 – 7:00 | Court Classique Suite Hotel |
| <i>Sunday, November 27:</i> | | |
| Group Presentations/Closing | 9:00 – 12:00 | Court Classique Suite Hotel |
| Lunch | 12:00 – 2:00 | Court Classique Suite Hotel |
| Depart Pretoria | 2:00 | |

Preliminary Schedule
Southern Africa Mathematical Sciences Association (SAMSA) Annual Conference, 2016
21 – 24 November 2016, University of Pretoria, Pretoria, South Africa

| | Monday, November 21 | Tuesday, November 22 | Wednesday, November 23 | Thursday, November 24 |
|---------------|-------------------------------------|-----------------------|------------------------|--|
| 07:30 – 08:00 | Registration | | | |
| 08:00 – 08:30 | Refreshments | | | |
| 08:30 – 09:00 | Opening Ceremony | Plenary Presentations | Plenary Presentations | Parallel Sessions |
| 09:00 – 09:30 | Plenary Presentations | | | |
| 09:30 – 10:00 | Refreshments | Refreshments | Refreshments | Refreshments |
| 10:00 – 10:30 | Refreshments | Parallel Sessions | Parallel Sessions | Parallel Sessions |
| 10:30 – 11:00 | Plenary Presentations | | | |
| 11:00 – 11:30 | Plenary Presentations | | | Lunch Break and Closing |
| 11:30 – 12:00 | | | | |
| 12:00 – 12:30 | Lunch Break | Lunch Break | Lunch Break | Excursions [Cheetah Farm or Lesedi Village] |
| 12:30 – 13:00 | | | Conference Photo | |
| 13:00 – 13:30 | Parallel Sessions | Parallel Sessions | Parallel Sessions | |
| 13:30 – 14:00 | Parallel Sessions | Parallel Sessions | Parallel Sessions | |
| 14:00 – 14:30 | Refreshments | Refreshments | Refreshments | |
| 14:30 – 15:00 | Parallel Sessions | Parallel Sessions | Parallel Sessions | |
| 15:00 – 15:30 | Parallel Sessions | Parallel Sessions | Parallel Sessions | |
| 15:30 – 16:00 | Parallel Sessions | Parallel Sessions | Parallel Sessions | |
| 16:00 – 16:30 | | | | |
| 16:30 – 17:00 | | | | |
| 17:00 – 17:30 | | | SAMSA Elections | |
| 17:30 – 18:00 | Poster Session and Welcome Cocktail | STEM Workshop | | |
| 18:00 – 18:30 | | | | |
| 18:30 – 19:00 | | | | |
| 19:00 – 19:30 | | | | |
| 19:30 – 21:00 | | | Conference Dinner | |

