

THE SAMSA MASAMU PROGRAM



SAMSA



The Second Masamu Advanced Study Institute and Workshops in Mathematical Sciences

**November 29 — December 2, 2012
Crossroads Hotel
Lilongwe, Malawi**

THE SAMSA MASAMU PROGRAM

The primary goal of the Masamu (masamu means mathematics in Southern Africa) Program is to enhance 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 Advanced Study Institute and Workshop Series in mathematical sciences that provides a platform for such collaboration. Other 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 Advanced Study Institute are graduate 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 US-Africa Advanced Study Institute and Workshop Series in Mathematical Sciences program is a collaborative effort between African, United Kingdom, 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 UK, US and Southern African mathematicians; and (3) Improve collaboration between US and Southern African colleges and universities.

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 ORGANIZERS

Bruce Ayati (University of Iowa, USA)

Geraldo De Souza (Auburn University, USA)

Suzanne Lenhart (University of Tennessee, USA)

Edward Lungu (University of Botswana)

Anotida Madzvamuse (University of Sussex, UK)

A. J. Meir (Auburn University, USA)

Robert Smith? (University of Ottawa, Canada)

Abdul-Aziz Yakubu (Howard University, USA)

MASAMU PROGRAM STEERING COMMITTEE

Ash Abebe (Auburn University, USA)

Overtoun Jenda (Auburn University, USA)

Moatlhodi Kgosimore (Botswana College of Agriculture)

Edward Lungu (University of Botswana)

Anotida Madzvamuse (University of Sussex, UK)

Sure Mataramvura (University of Cape Town, South Africa)

Farai Nyabadza (Stellenbosch University, South Africa)

Michel Smith (Auburn University, USA)

~2012 RESEARCH WORKSHOP ~

US-AFRICA RESEARCH WORKSHOP ON MATHEMATICAL MODELING OF
BIOLOGICAL SYSTEMS AND BIODIVERSITY

Friday, November 30 – Sunday, December 2, 2012

Organizers: Edward Lungu (University of Botswana), Orou Gaoue (NIMBioS, University of Tennessee), Farai Nyabadza (Stellenbosch University), Moatlhodi Kgosimore (Botswana College of Agriculture), A. J. Meir (Auburn University)

Day 1 Friday, November 30

09:00 - 09:30 Opening and Introductions – Lungu
09:30 - 09:50 Overview of Program, Logistics, Expectations - Jenda
10:00 - 11:15 Models for Biodiversity and Data Handling I - Lungu
11:30 - 12:45 Lunch
01:00 - 01:50 HIV-Malaria Co-infection Research Group Presentation
02:00 - 02:50 Dynamical Systems Research Group Presentation
03:00 - 05:15 Research Groups
05:30 - 07:15 Dinner and Networking Reception
07:30 - 09:30 Research Groups

Day 2 Saturday, December 1

08:00 - 09:15 Models for Biodiversity and Data Handling II – Lungu
09:30 - 10:20 Stochastic Ecological Models – Gaoue
10:30 - 11:20 HIV-Kaposi's Sarcoma Co-infection Research Group Presentation
11:30 - 12:20 Pattern Formation on Spheroidal Surfaces and their Finite Element Approximation – Meir
12:30 - 01:45 Lunch
02:00 - 03:15 Research Groups
03:30 - 04:45 Research Groups
05:00 - 05:45 Discussion of Future Research Collaborations
06:00 - 07:15 Dinner
07:30 - 09:30 Research Groups

Day 3 Sunday, December 2

08:00 – 09:30 Project Outlook and Future Plans – Lungu, Jenda
09:30 – 10:00 Break
10:00 – 12:00 Regional Collaboration Plans – Lungu
12:30 – 01:30 Lunch
01:30 Adjournment

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ORGANIZERS, LECTURERS, AND RESEARCH GROUP LEADERS



Ash Abebe - abebeas@dms.auburn.edu

Associate Professor of Statistics, Auburn University

Research areas include nonparametric statistics, simultaneous inference, discriminant analysis and harmonic analysis.



Chiteng'a John Chikunji - cjchikunji@yahoo.com

Senior Lecturer in Mathematics, Botswana College of Agriculture

SAMSA President

Research interests include classification of finite rings, unit groups and automorphism groups of finite rings, projective representations of rotation subgroups of Weyl groups



Overtoun Jenda - jendaov@auburn.edu

Associate Provost for Diversity and Multicultural Affairs, Auburn University

Professor of Mathematics, Auburn University

Research areas include homological algebra, module theory, and commutative algebra.



Peter Johnson - johnspd@auburn.edu

Professor of Mathematics, Auburn University

Research areas include discrete mathematics: combinatorics; graph colorings; extremal graphs; Euclidean Ramsey problems; Functional Analysis; Information Theory



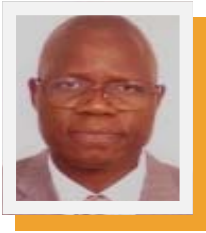
Moathodi Kgosimore - mkgosi@bca.bw

Senior Lecturer of Mathematics, Botswana College of Agriculture

Research interest include mathematical modeling of HIV and AIDS, pediatric TB; TB and HIV coinfection and Hepatitis C modeling.

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Edward Lungu - lunguem@mopipi.ub.bw

Professor of Mathematics, University of Botswana, in Gabarone

Research interests include development of models in hydrology — Botswana relies on storing rainfall; ecology — domestic livestock as well as wildlife are keys to the economy; and epidemiology — to understand the progression of HIV/AIDS and how to help the victims. He is the 2011 recipient of the ICIAM Su Buchin Prize.



A. J. Meir - ajm@auburn.edu

Professor of Mathematics, Auburn University

Research interests include numerical analysis, partial differential equations, scientific computing, applied and industrial mathematics, and interdisciplinary research.



Farai Nyabadza - nyabadzaf@sun.ac.za

Senior Lecturer of Mathematics, Stellenbosch University

Research interests include the application of mathematics to biological systems. Current focus areas are modeling waterborne infections, drug epidemics and HIV related Lymphomas. He serves as the SAMSA Secretary.



Abdul-Aziz Yakubu - ayakubu@howard.edu

Professor and Chair, Department of Mathematics, Howard University

His research investigations focus on nonlinear systems that arise in the diverse fields of ecology, epidemiology and demography.

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GRADUATE STUDENTS AND EARLY CAREER FACULTY

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Megan	Rua	marua@olemiss.edu	Postdoctoral	University of Mississippi	Pathogen-Mutualist Reactions

ACKNOWLEDGEMENTS

Thanks and appreciation to the following sponsors:



The National Science Foundation



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US - Dr. Overtoun Jenda, Auburn University, jendaov@auburn.edu