

AU Receives 5-Year NSF Funding to Launch an International Collaborative Research Network in Mathematical Sciences

Auburn University has received a 5-year \$415,000 grant from the National Science Foundation (NSF) to lead an international collaborative research network (CRN) in the Mathematical Sciences under the [Masamu Program](#). The network consists of over 40 senior research faculty from US, Sub-Saharan Africa, Canada, and Europe. The primary goal of the network is to enhance research in mathematical sciences by producing high quality new PhDs in the US and Sub-Saharan Africa, high quality joint research publications, and developing prominent US-Africa research partnerships comprised of researchers from diverse backgrounds. This NSF support is supplemented by a 5-year \$400,000 grant from the Simons Foundation through the University of Botswana.

The Masamu Program (masamu means mathematics in some Southern African languages) was founded in 2011 by mathematicians at Auburn University, University of Sussex, and [Southern Africa Mathematical Sciences Association \(SAMSA\)](#) through a 2-year \$200,000 award from NSF and additional support from the British Council under UK-US New Partnership Fund as part of the Strategic Alliances and Partnerships strand of the Prime Minister's Initiative for International Education. The program, which serves as a platform for US-Africa research collaboration in the mathematical sciences, has instituted Masamu Advanced Study Institute (MASI) and Workshops in Mathematical Sciences as a SAMSA activity.

The CRN and the Masamu Program are directed by Dr. Overtoun Jenda, Professor of Mathematics and Associate Provost for Diversity and Multicultural Affairs at Auburn University with Dr. Ash Abebe (abebeas@auburn.edu) and Dr. Peter Johnson (johnspd@auburn.edu) of the Department of Mathematics and Statistics serving as co-Directors.

The research network consists of 7 research teams: 4 in Pure Mathematics and 3 in Applied Mathematics. Each research team has at least 4 senior research faculty and at least 4 undergraduate and graduate students. Auburn University researchers work with the SAMSA to implement the activities of the research network. The success of MASI led to the formation of the CRN and, while CRN teams work year-round on several research problems, MASI continues to provide a venue for the constituents of the CRN to immerse in intense group research activities.

The first MASI was held during December 1 – December 14, 2011 in Livingstone, Zambia. Thirty-two graduate students and early career faculty along with 10 senior research mathematicians conducted research in the areas of Analysis, Dynamical Systems, and Mathematical Biology. The first MASI also included a workshop for department heads and senior research scientists that addressed topics such as faculty recruitment and retention, supporting research scientists, and identifying areas for institutional collaboration. The second MASI was held during November 30 – December 2, 2012 in Lilongwe, Malawi. The research in 2012 focused on Mathematical Modeling of Biological Systems and Biodiversity. Ten graduate students and early career faculty and eight faculty/research group leaders took part in the MASI.

The MASIs have resulted in several fruitful research collaborations. Participants have produced numerous peer-reviewed research publications and the research groups that were formed continue to work together on important research problems. Students from both Africa and the US who attended the MASIs have completed dissertations and theses leading to PhD and MS degrees in mathematics and mathematical biology. Several have received prestigious research fellowships and many are employed in postdoctoral and faculty positions.

The first meeting of the CRN took place at the third MASI held at the Stellenbosch Institute for Advanced Study (STIAS) at Stellenbosch University in Cape Town, South Africa, November 23 – December 1, 2013 parallel to the 2013 SAMSA conference. Research groups comprised of 5 undergraduate students, 4 graduate students, and 11 faculty collaborated on several research problems in pure mathematics, specifically algebra, geometry, and graph theory. The 2013 MASI was supplemented by funding from NSF Alabama Louis Stokes Alliance for Minority Participation (LSAMP.) The second meeting of the CRN is scheduled to be held in the city of Victoria Falls, Zimbabwe in 2014 where the primary focus will be on applied mathematics and statistics.

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 Masamu Program: The Masamu program serves as a platform for US-Africa research collaboration in the mathematical sciences with the goal of strengthening the human infrastructure in the mathematical sciences. It is managed by a Steering Committee comprised of Dr. Overtoun Jenda (co-Chair, Auburn University), Dr. Edward Lungu (co-Chair, University of Botswana), Dr. Ash Abebe (Auburn University), Dr. Sure Mataramvura (University of Cape Town), Dr. Moathodi Kgosimore (Botswana College of Agriculture), Dr. Anotida Madzvamuse (University of Sussex), Dr. Farai Nyabadza (Stellenbosch University), and President of SAMSA Dr. Levis Eneya (University of Malawi).