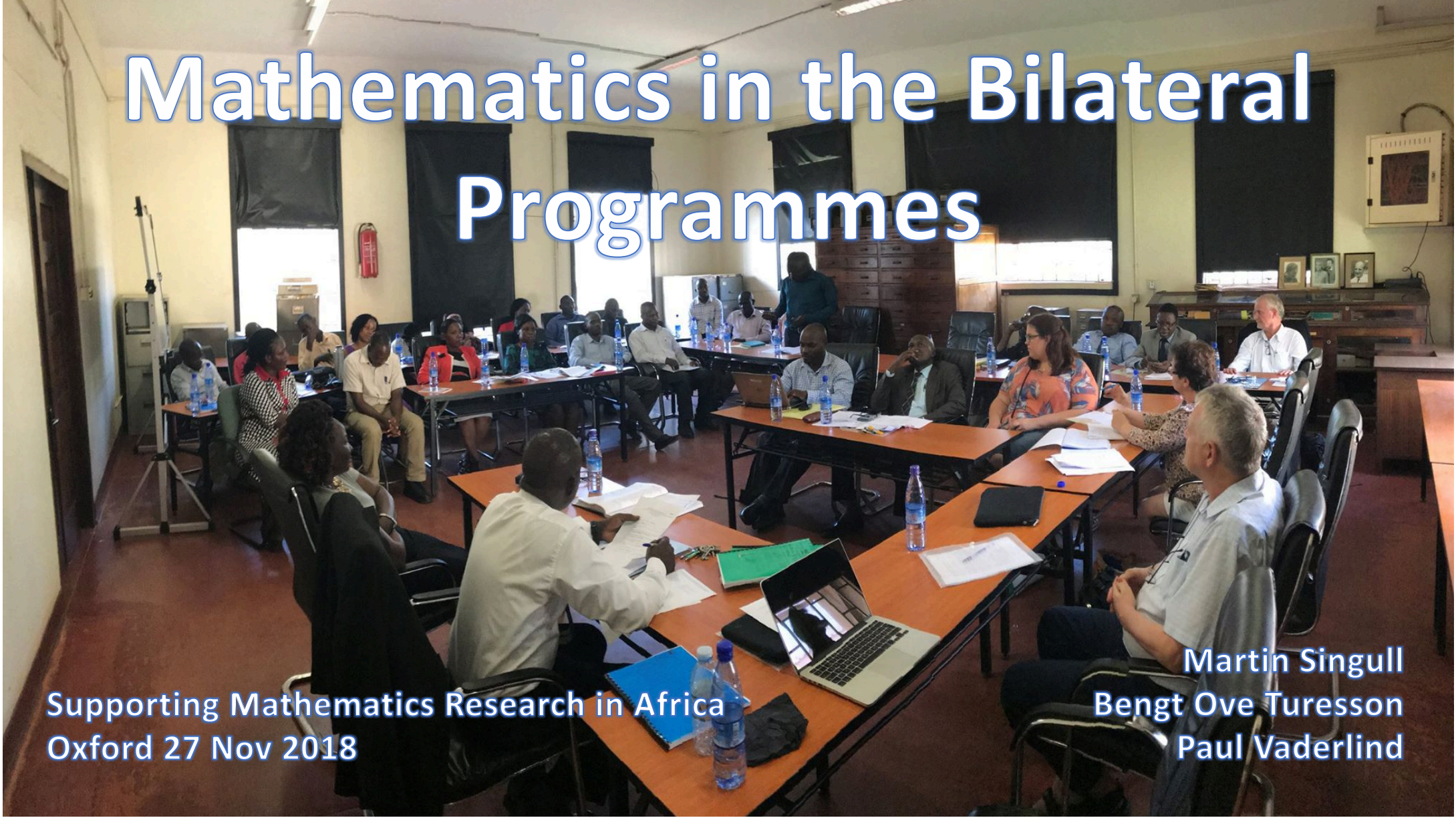


Mathematics in the Bilateral Programmes

A group of people, mostly men, are seated around long wooden tables in a meeting room. They are engaged in a discussion or presentation. There are laptops, papers, and water bottles on the tables. The room has large windows with black frames and a fire extinguisher on the wall.

Supporting Mathematics Research in Africa
Oxford 27 Nov 2018

Martin Singull
Bengt Ove Turesson
Paul Vaderlind

Background and Introduction

Sida Headquarters, Stockholm



Background and Introduction

About Sida

- Sida = The Swedish International Development Cooperation Agency
- Channels a large part of Swedish aid (about 4 billion Euro out of 4,7 billion Euro in 2018)
- **Overall Objective:** Reduce poverty all over the world

Background and Introduction

Bilateral research programmes

- Bolivia, Cambodia, Ethiopia, Mozambique, Rwanda, Tanzania, Uganda
- Support on individual, organisational, institutional level
- Typically very long-term support
- Emphasis on capacity building, ownership, partnership, sustainability
- Many disciplines in every bilateral programme
- **PhD training in the sandwich mode:** For staff members, joint recruitment, full PhD in Sweden, normally 5 years studies, at least 6 months in Sweden per year



University of Rwanda



Makerere University

The Partners



University of Dar es Salaam



Royal University of Phnom Penh



Universidade Eduardo Mondlane

The Partners

	Rwanda	Tanzania	Uganda	Mozambique	Cambodia
Current period	2013-2019	2015-2020	2015-2020	2017-2022	2019-2022
Budget	31 MSEK	10 MSEK	39 MSEK	21 MSEK	9 MSEK
Swedish partners	LiU, SU	KTH, LiU, MdH, SU, UU	KTH, LiU, MdH, SU, UU	LiU, LTU, MdH, OrU, SU, UU	LiU, SU

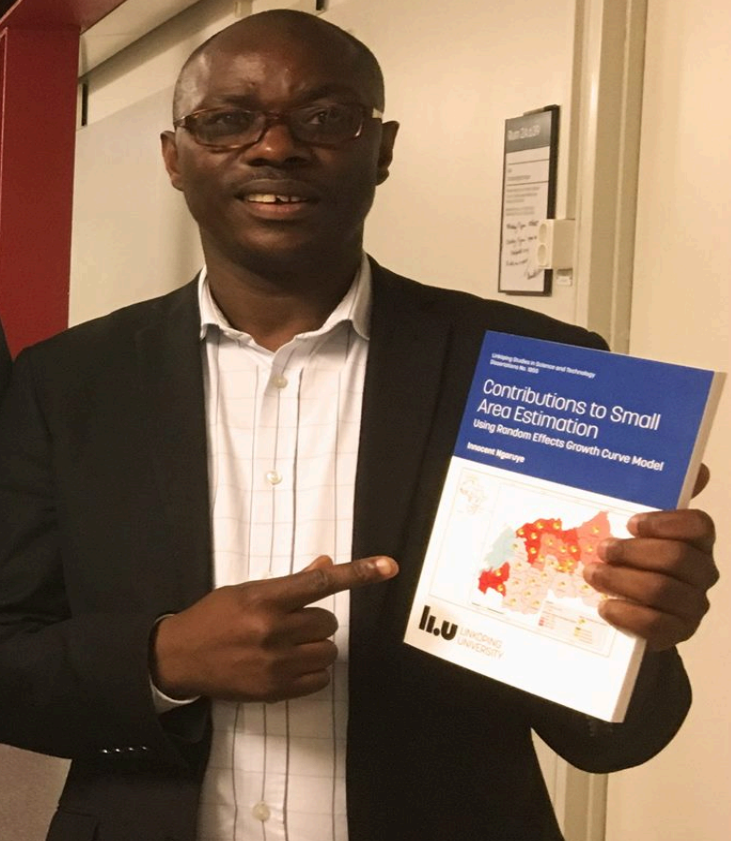
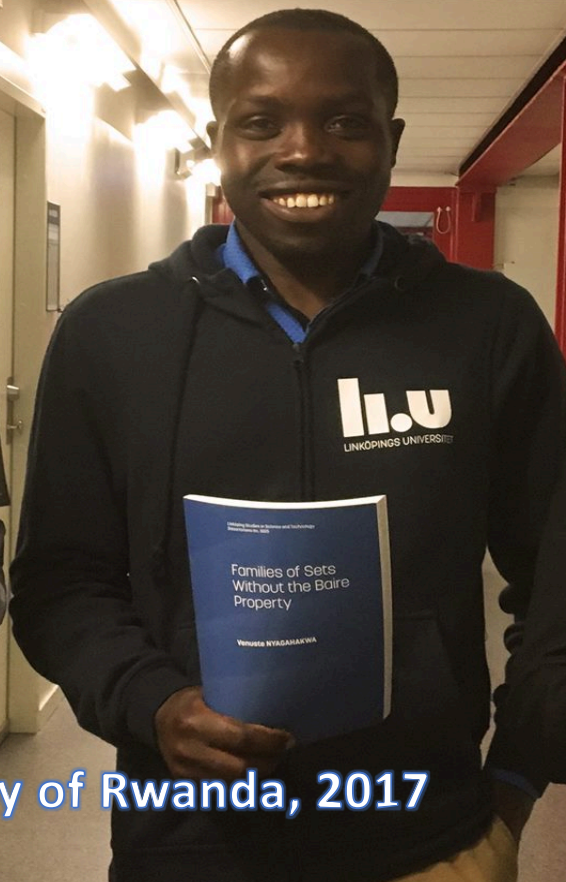
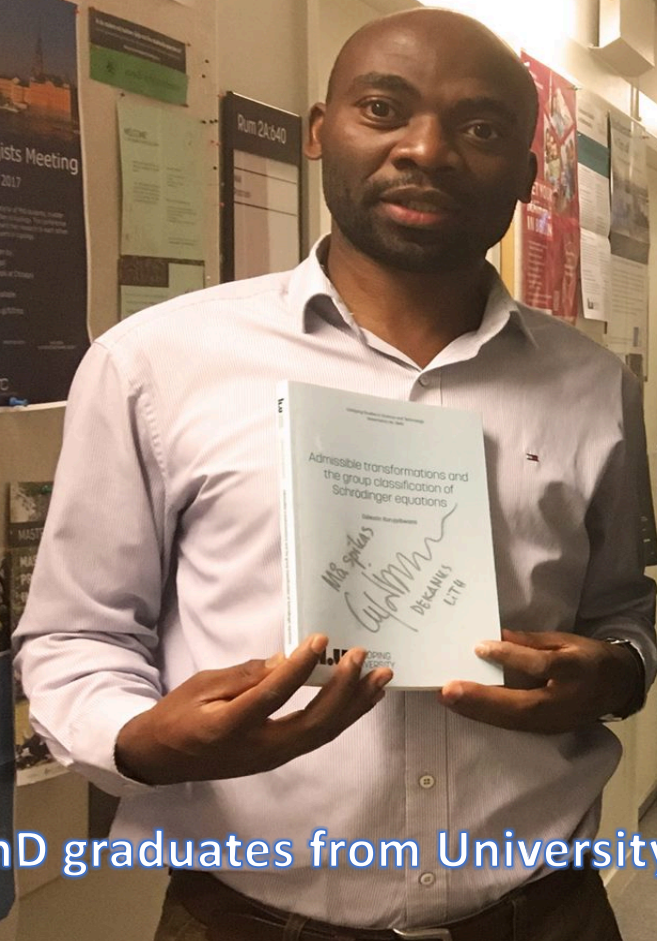
Notes:

1. Collaboration with Rwanda started in 2007, while support to Mozambique started in 2006. For other countries, the current period is the first
2. The programme in Mozambique is “trilateral”, involving also South Africa
3. Cambodia application is not yet approved

PhD Training

Studievägledning

Matematik, MAI →



PhD graduates from University of Rwanda, 2017

PhD Training

	Rwanda	Tanzania	Uganda	Mozambique	Cambodia
Sandwich students	11 since 2008	3 since 2016	5 since 2016	9 from 2011	1 from 2019
Graduations	6	0	0	3	0
In-house programme development	Joint 2016			2020	Next phase
In-house students	Next phase	4 from 2016	16 from 2017	Next phase	Next phase
Teaching, supervision by Sweden, region	N/A	Yes	Yes	N/A	N/A
Supervision training	2016, 2017	2017, 2018	No	2018	2019
Network meeting	Annual from 2017				

MSc Training

$$I = ABCD$$

$$D = ABC$$

$$D = -1$$

$$D = 1$$

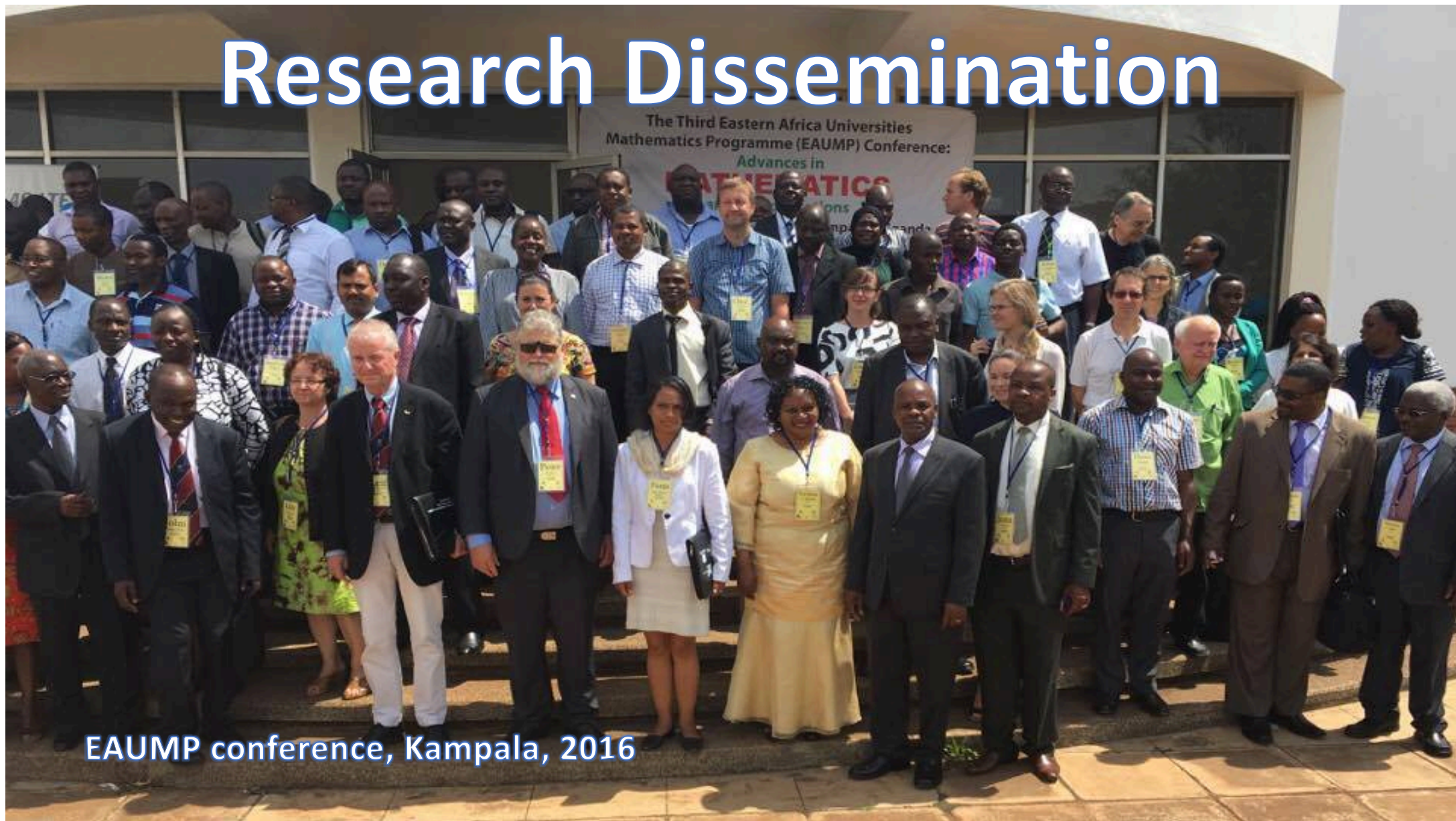
	A	B	C	D=AB
(1)	-1	-1	-1	-1
a	1	-1	-1	1
b	-1	1	-1	1
ab	-1	-1	1	-1
c	-1	1	1	1
ac	-1	-1	1	-1

Teaching in MSc programme, University of Rwanda, 2016

MSc Training

	Rwanda	Tanzania	Uganda	Mozambique	Cambodia
Development	2007	N/A	N/A	2018	2018
Review & harmonisation	Joint 2016			2021	2021
Teaching, supervision by Sweden, region	Since 2008	Since 2016	N/A	From 2019	From 2019
Schools	IMW	No	No	No	From 2019
Training academic writing	2015, 2017	No	No	2020, 2022	2020
Training supervision	2015	No	No	No	No
Training online teaching	2017	No	No	No	No

Research Dissemination



EAUMP conference, Kampala, 2016

Research Dissemination

Conferences

- Support to EAUMP conference 2016
- Conference on mathematical statistics in Rwanda 2017
- Support to conference on inverse problems in Uganda 2017
- Support to SAMSA conference in Tanzania 2017, 2018
- Annual conference/workshop in Mozambique 2018-2022

Active conference attendance

- Important component in all countries

Regional Research Groups

3rd Network meeting for Sida-and ISP-funded PhD students and postdocs in mathematics, Entebbe, 2018

Regional Research Groups

Research groups created at Entebbe workshop August 2018

- **Eastern Africa Research Group on Partial Differential Equations and Applications** (Burkina Faso, Ethiopia, Mozambique, Rwanda, Uganda, Zambia)
- **Eastern and Southern African Research Network in Multivariate Statistics** (Rwanda, Sweden, Tanzania, Uganda)
- **Eastern Africa Working Group on Mathematical Modelling – Inverse Problems/PDEs** (Finland, Mozambique, Rwanda, Sweden, Tanzania, Uganda)
- **Mathematical Modelling – Financial Mathematics** (Kenya, Mozambique, Uganda)
- **Partnership for Research in Complex Analysis** (Ethiopia, Rwanda, Sweden, Tanzania, Uganda)
- **Combinatorial Research Studio (CoRS)** (Ethiopia, Madagascar, Rwanda, Sweden, Uganda)
- **Eastern Africa Algebra Research Group** (Ethiopia, Kenya, Mozambique, Rwanda, Sudan, Uganda, Zambia)
- **Bayesian Hierarchical Models. Mixture Distributions and Survival Analysis in Health and Environment (BaMSE)**
- **Operator Theory and Functions Spaces**
- **Operations Research – Optimization and Mathematical Modelling**
- **Biomathematics**

Research Environment

A large, modern computer lab with a high ceiling and blue accents. Numerous participants are seated at long wooden tables, each equipped with a computer monitor and keyboard. They are focused on their screens. In the background, a presenter stands near a large projection screen displaying a presentation. The room is well-lit with recessed ceiling lights.

Workshop on e-resources, Dar es Salaam, 2017

Research Environment

	Rwanda	Tanzania	Uganda	Mozambique	Cambodia
Seminars	Yes	Yes	Yes	Yes	Yes
Annual workshops	No	No	No	Yes	Yes
Postdocs	Next phase	3	2 per year	2	2 per year
Training e-resources, publication strategies	2015	2017	2016	2018	2019

Outreach Activities

A wide-angle photograph of a large hall filled with students sitting at long wooden tables, focused on writing. The room has a high ceiling with white draped fabric and bamboo-style vertical dividers. The students are wearing white shirts, and the atmosphere is one of a formal competition.

First Mathematics Competition in Rwanda 14
March (π day) 2018

Outreach Activities

Activities conducted or planned

- π -day in Rwanda since 2018 with AIMS-Rwanda & ICTP-Rwanda
- Mathematics competition in Rwanda since 2018
- UR research & innovation days in Rwanda
- Career days in Rwanda

The Future

Meeting at Inter-University Council for East Africa Kampala,
2016



The Future

The East African Centre for Mathematical Research (EA-CMaR)

- To be established in 2019 under the **Inter-University Council for East Africa**
- **Nodes from the start:** Makerere University, University of Dar es Salaam, University of Rwanda
- **Mission:** To promote and coordinate research and postgraduate training in Pure and Applied Mathematics in the East African region in order to meet the needs of the society.

The Future

Specific objectives of EA-CMaR:

1. To **promote excellence** in mathematical research.
2. To **facilitate training** of high-quality graduates in Pure and Applied Mathematics in the MSc and PhD programmes in East Africa.
3. To actively **seek for funds** for postgraduate training and research in Pure and Applied Mathematics in the East African region.
4. To contribute to an **increase the use** of Pure and Applied Mathematics in multidisciplinary research projects at universities and in the private and public sectors in the East African region.
5. To **improve gender balance** among students and staff members in the collaborating universities.
6. To **create and promote a regional alumni network** for PhD graduates and postdocs in Pure and Applied Mathematics.
7. To support activities aimed at **popularising Mathematics** and encouraging young students to study and specialise in this subject.



1st Network meeting for Sida-and ISP-funded PhD students and postdocs in mathematics, Stockholm, 2017