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## MEMORANDUM OF UNDERSTANDING

between

STOCKHOLM UNIVERSITY  
and  
THE UNIVERSITY OF DAR-ES-SALAAM

for the establishment of a

PAN AFRICAN CENTER FOR MATHEMATICS

The University of Dar-es-Salaam located in Dar-es-Salaam, Tanzania, hereafter referred to as *USDM* and Stockholm University, hereafter referred to as *SU* aim at establishing a Pan African Center for Mathematics at USDM. They agree to the following.

### BACKGROUND

The state of mathematical research in Africa is conspicuously weak. Most countries have inadequate numbers of M.Sc's and Ph.D's. in mathematics, and research in mathematics outside a handful of countries is at a very low level. Under such conditions, it becomes very difficult to improve the mathematics programs.

In order for Africa to be able to successfully attend to its serious difficulties and to meet the challenges of the future, it must urgently develop strategies that significantly enhance the quality of its human capital and strengthen its Science and Technology base. A prerequisite for this is to strengthen the numeracy and develop advanced competence in mathematics.

The standard approach adopted by African countries for developing mathematics is to send students for postgraduate studies in mathematics to western countries. This approach is both expensive and risky, as many students never return to Africa. It is therefore proposed that a world class Pan African Center for mathematics is established in Africa.

### THE PAN AFRICAN CENTER FOR MATHEMATICS

The major goal of the Center is to create and strengthen academic leadership in mathematical research in the continent. The establishment of the Center is conceived as a process. Initially, a *Master's degree program in mathematics* is established and run for two years. Students, about 25-30 in number, are selected on the basis of academic merits in a continent-wide competition and offered grants that cover tuition fees, travel and subsistence. The best 15-20 graduates are then selected to proceed to study for a *PhD in mathematics* at the Center. The program is expanded progressively.

The Center shall strive to achieve regional and international recognition by insisting on recruiting dedicated and first-rate academics who are committed to its mission, by carefully designed programs of study, by adopting a rigorous selection procedure of students from all over the continent, and by undertaking research, networking individuals and institutions in Africa engaged in research in mathematics, and by providing a forum for the exchange of ideas and experiences between researchers, practitioners and policy makers. Graduates of the Center, whose expertise should be keenly sought by universities and research institutes, are expected to initiate and lead efforts towards the enhancement of mathematical research, and the improvement of the image of mathematics in the continent. Thus, through its own activities as well as those of its graduates, the proposed project should have a considerable influence on the articulation of the agenda for the advancement of mathematics in the continent. Also, by being a pioneering Pan-African project in higher education, the Center is highly likely to have a significant institutional impact.

#### **Administration**

- *Director:* Highly recognized mathematician, meeting the requirements as full Professor both at SU and UDSM.
- *Center Board:* Chairman, and three representatives from each of SU and UDSM. The chairman, who should not be from SU or UDSM, is appointed by the Vice Chancellor of UDSM after consultation with the Vice Chancellor of SU. The Board can decide to have observers from e.g. funding agencies present in the Board as non-voting members.
- *Academic council:* Chaired by the Center Director with faculty at the Center as members.
- *Advisory Board:* Internationally highly recognized mathematicians.

#### **Finances**

- *Funding:* Funds will be externally applied for from a number of agencies and organizations. When the Center is established and internationally recognized, the goal is to attract endowment.
- *Budget:* The Center board will annually decide the budget. The budget should include salaries for the Director, instructors (long term and short term), and administrative staff but also student tuition and scholarships (accommodation, travel, living costs etc).

#### **Academic staff:**

- *Instructors:* Vacant positions will be announced internationally and appointments will be merit-based and approved by the Center Board. Scientific as well as teaching proficiency will be merits in the evaluation of applicants. The persons employed should also participate in research during the period of employment at the Center.

#### **Educational Programs:**

- *First Phase.* Masters program is offered with strong emphasis on Pure Mathematics, including at least one semester thesis work.
- *Second Phase.* PhD Program is established as the center develops.
- *Curriculum:* The curriculum will be decided by the Center Board after approval by SU.

#### **Students**

- *Selection:* Students will be selected from all over the continent (excluding North African countries, Nigeria, and South Africa) solely based on *merit*.

- *Financing:* Students will be offered full scholarship covering living costs and no tuition will be charged.

#### **Scientific environment to be realized:**

- World class mathematics library including access to journals.
- Presence and influx of international mathematicians.
- Regular research seminars.
- International conferences.
- African symposia.

#### **ROLE OF SU**

The role of SU through the Department of Mathematics will during an initial phase be to:

- Assist in the recruitment of the director of the center.
- Award degrees, which means that students would be registered at SU, and the courses/programs approved by the Faculty of Science, SU.
- Assist in recruiting teachers, both for short and long term teaching and research at the Center.
- Assist in the application for funding.
- Be responsible for the evaluation of the Center.

#### **ROLE OF UDSM**

The role of UDSM through the Department of Mathematics will be to:

- Create an environment promoting a sound development of the Center, for its academic and financial autonomy and for students' welfare.
- Provide adequate space for the Centre.
- Maintain, develop and strengthen the research in mathematics at UDSM.
- Create continuous interaction between mathematicians at the Center and the Department so as to build up a stimulating scientific environment.
- Provide suitable accommodation for Center Staff and students.
- Provide access to Internet.
- Ensure long-term commitment of the Government to the Project.

#### **EVALUATION OF THE CENTER**

SU will be responsible for an evaluation of the Center after 5 years. This should be done by a group of international, highly recognized mathematicians with the aim to identify the strengths and weaknesses of the Center. The outcome of the evaluation will be instrumental in deciding if the scientific level is sufficiently high for the Center to be independent, with UDSM registering students and awarding degrees. The transfer of responsibility for the curriculum and the scientific quality from SU to UDSM is a goal that should be reached within 10 years from the establishment of the Center.

#### **THE ESTABLISHMENT OF THE CENTER**

The work to establish the Center should be organized and led by a committee of two members from each of SU and UDSM and a chairman. The primary activities include:

- Apply for funding,
- Search for and propose a director,
- Decide on a 5-year budget,
- Settle the practical issues with UDSM, i.e. physical localization of the Center, IT-support, housing for director, instructors etc.

This work should be finished no later than January 1, 2011, when the Board and the Director should take over the responsibility for the Center. At this time a formal agreement between SU and UDSM should have been signed.

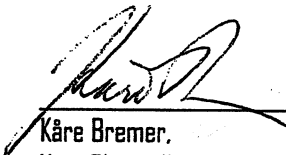
### INSTITUTIONAL APPROVAL SIGNATURES

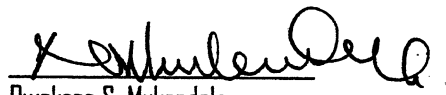
This Memorandum of Understanding will remain in force from the date of last signature to the date when an agreement about the collaboration on the running and development of the Center has been signed by SU and UDSM. Any extensions of time of this Memorandum of Understanding shall be in writing and signed by the authorized representatives of each institution.

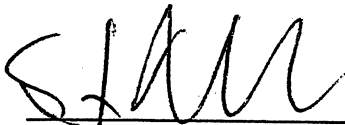
This Memorandum of Understanding has been executed in two original copies of which the Parties have taken one each.

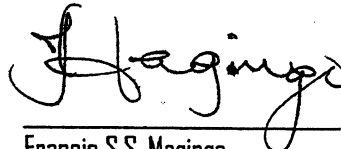
For Stockholm University


For the University of Dar-es-Salaam

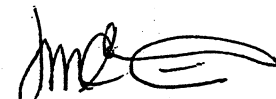
  
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