

## ROUND TABLE: HOW TO COORDINATE EFFORTS FOR MATHEMATICS IN DEVELOPING COUNTRIES?

Friday 25 April 2014

Chairs: Marie-Françoise Roy and Paul Vaderlind

### 1) MENAO Symposium.

ICM does have 1000 grants for participants of developing countries. MENAO symposium to be held in the ICM in Seoul.

<http://www.mathunion.org/cdc/menao/program/>

Martin Groetschel, IMU secretary, presents the symposium and its preliminary program.

The MENAO symposium will feature personal stories of mathematicians as well as country specific development stories, both from the perspective of mathematicians in those countries and from the perspective of their international partners. International leading economists will explore the relationship between mathematical development and economic development. The goals of the MENAO event are:

- To listen to the voices of mathematicians and aspiring advanced students of mathematics from the developing world,
- To share success stories of development via partnerships between the local mathematical communities, their governments, and international agencies and foundations,
- To review the current status of those efforts and future needs, and
- To bring together promising individuals and institutions in the developing world with inter-national partners interested in supporting their efforts.

The International Mathematical Union wishes to make MENAO a premier event, of compelling interest to all organizations, governmental agencies, and individuals that have contributed to international mathematical development or are potentially interested in doing so. The symposium will bring promising individuals, initiatives and institutions in mathematics in the developing world together with potential partners with the resources, both human and economic, to help them realize that promise.

During the discussion, the participants named some organisations that could be invited to participate. Martin suggested to write these suggestions to Herb Clemens who is in charge of the organization of MENAO.

### 2) Case studies

Paul presents several situations with parallel activities in the same country without enough mutual information. For instance, in Cambodia, Swedish cooperation and CIMPA were working without enough coordination between each other. Michel explains that CIMPA works in Cambodia since 10 years ago, but there is a lack of money

for the program. Sweden gave money but had specific rules and constraints that were not initially understood. The situation is now improving after a meeting in Paris last January.

Another instance is the Swedish involvement in Rwanda (among many other projects the Master programme in mathematics at University of Rwanda - the only university in the country). They heard that there is a preliminary request (from the side of Rwanda government) addressed to ICTP to start such programme (in the frame of a specific ICTP model). Apparently the authorities were not well aware of the Swedish programme which has been run for the last 8 years (with growing success). We visited then ICTP in February this year and came together to an understanding on a close future cooperation on the Master education at UR.

Paul concludes that cooperation between co-operators is needed, but how? Joint projects? Sharing information and communication?

Marie-Françoise's presentation is focused on master programmes in Africa (especially francophone countries). There are several masters in different countries. But most of them are developed around a professor in the country in his special topic (and too much specialised). Also there are the AIMS initiatives: South Africa, Senegal, Ghana, Cameroon, and soon in Tanzania. AIMS success: really panafrikan, good living and studying conditions, active learning, commitments of international community, gender balance for students, ideal environment for other activities (as CIMPA schools)... AIMS drawbacks: little focus on mathematics, good for students with good background, international research level not reached, lack of real evaluation (more based on attitudes than personal skills, so difficult to distinguish between the students)... Continuing doctoral studies is then complicated.

An initiative is the ICTP diploma which is not based in Africa, it is transcontinental, with good scientific level and good basis for PhD.

There has been several experiences of international masters which shows that it is a good way to develop specific underrepresented topics and improve level. Usually, they are based on North-South and South-South cooperation, and there is a funding problem for mobility of students .

Sometimes there is a lack of cooperation between the universities of the same country. Giulia explains how in some country there is a programme in a university and another one in other and the local people don't say nothing to donors and organisers.

### 3) How to improve it?

Summarising some ideas:

- To avoid brain-drain, activities should be focused in the country or region (similarly to ERCE initiative)
- different situation of different countries in same region. Martin Groetschel informs that a report of situation of mathematics in regions and countries is being developed by IMU
- lack of funds is an important problem, so MENAO symposium is including donors. Any suggestion of donors should be passed to IMU CDC.
- When selecting students for a grant (such as ICTP diploma,...) how to do it? Which criteria? Difficult distinguish, difficult that they finish their PhDs, difficult that they go back again to their countries... how to manage? Different experiences are reported here...
- To understand some situations it is important to take into account that usually universities in those countries are not going to collaborate spontaneously between them, they prefer to have a programme for each one. One exception and important initiative is the PhD programme on Mathematics and Physics in Central-America (Panama, El Salvador, Guatemala, Honduras, Nicaragua, Dominican Republic). Joint PhD programme share supervisors. They ask for help to co-supervise thesis and support students going to the European and Northamerican universities for a while.
- Very important to keep in contact between the organisations and people doing cooperation in order to not duplicate efforts. Prof. Groetschel encourages especially the CDC of EMS to increase the contacts with CDC of IMU.