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Secretariat
Markgrafenstr. 32
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http://www.mathunion.org

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IMU Executive Committee (EC) 2015 – 2018

Shigefumi Mori	IMU President	Japan
Helge Holden	IMU Secretary	Norway
Alicia Dickenstein	IMU Vice President	Argentina
Vaughan Jones	IMU Vice President	New Zealand/USA
Benedict H. Gross	IMU EC Member-at-Large	USA
Hyungju Park	IMU EC Member-at-Large	Korea
Christiane Rousseau	IMU EC Member-at-Large	Canada
Vasudevan Srinivas	IMU EC Member-at-Large	India
John Francis Toland	IMU EC Member-at-Large	UK
Wendelin Werner	IMU EC Member-at-Large	Switzerland
Ingrid Daubechies	IMU EC Ex-officio Member (Past President)	USA

Commission for Developing Countries (CDC) 2015 – 2018

Wandera Ogana	CDC President	Kenya
C. Herbert Clemens	CDC Secretary Policy	USA
Srinivasan Kesavan	CDC Secretary Grants	India
Mama Foupouagnigni	CDC, African Member	Cameroon
Polly Sy	CDC, Asian Member	Philippines
Alf Onshuus	CDC, Latin American Member	Colombia
Budi Nurani Ruchjana	CDC Member appointed by IMU EC	Indonesia
Angel Pineda	CDC Member appointed by IMU EC	USA/Honduras
Angel Ruiz	CDC Member appointed by ICMI EC	Costa Rica
Shigefumi Mori	CDC Ex-officio Member (IMU President)	Japan

International Commission on the History of Mathematics (ICHM) 2015 – 2018

Ciro Ciliberto	ICHM	Italy
Shrikrishna G. Dani	ICHM	India

International Commission on Mathematical Instruction (ICMI) 2013 – 2016

Ferdinando Arzarello	ICMI President	Italy
Abraham Arcavi	ICMI Secretary-General	Israel

Cheryl E Praeger	ICMI Vice President	Australia
Angel Ruiz	ICMI Vice President	Costa Rica
Catherine P. Vistro-Yu, Ed.D.	ICMI EC Member-at-Large	Philippines
Jean-Luc Dorier	ICMI EC Member-at-Large	Switzerland
Roger Howe	ICMI EC Member-at-Large	USA
Yuriko Yamamoto Baldin	ICMI EC Member-at-Large	Brazil
Zahra Gooya	ICMI EC Member-at-Large	Iran
William (Bill) Barton	ICMI EC Ex-officio Member (Past President)	New Zealand
Shigefumi Mori	ICMI EC Ex-officio Member (IMU President)	Japan
Helge Holden	ICMI EC Ex-officio Member (IMU Secretary)	Norway

Committee on Electronic Information and Communication (CEIC) 2015 – 2018*

James Davenport	CEIC Chair	Jan 1, 2015 – Dec 31, 2018	UK
	CEIC Member	Jul 1, 2008 – Dec 31, 2014	
Thierry Bouche	CEIC Member	Jan 1, 2011 – Dec 31, 2018	France
Olga Caprotti	CEIC Member	Jul 1, 2008 – Dec 31, 2016	Finland
Tim Cole	CEIC Member	Jan 1, 2013 – Dec 31, 2016	USA
Carol Hutchins	CEIC Member	Jul 1, 2008 – Dec 31, 2016	USA
Patrick Ion	CEIC Member	Jan 1, 2015 – Dec 31, 2018	USA
Victoria Stodden	CEIC Member	Jan 1, 2015 – Dec 31, 2018	USA
Masakazu Suzuki	CEIC Member	Jan 1, 2015 – Dec 31, 2018	Japan
Ravi Vakil	CEIC Member	Jan 1, 2011 – Dec 31, 2018	USA

* CEIC terms of membership are staggered.

IMU Executive Committee (EC) 2011 – 2014

Ingrid Daubechies	*IMU President*	*USA*
Martin Grötschel	*IMU Secretary*	*Germany*
Christiane Rousseau	*IMU Vice President*	*Canada*
Marcelo Viana	*IMU Vice President*	*Brazil*
Manuel de León	*IMU EC Member-at-Large*	*Spain*
Yiming Long	*IMU EC Member-at-Large*	*China*
Cheryl E. Praeger	*IMU EC Member-at-Large*	*Australia*
Vasudevan Srinivas	*IMU EC Member-at-Large*	*India*
John Francis Toland	*IMU EC Member-at-Large*	*UK*
Wendelin Werner	*IMU EC Member-at-Large*	*France*
László Lovász	*IMU EC Ex-officio Member (Past President)*	*Hungary*

2. Report of the 17th General Assembly

Report of the 17th General Assembly
of the International Mathematical Union (IMU)

Gyeongju, Korea
August 10-11, 2014

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1. Opening of the 16th General Assembly

1.1. Welcome

The IMU President I. Daubechies opened the 17th General Assembly (GA) of the IMU and cordially welcomed the participants of the meeting. The chair of the IMU GA organizing

committee Jeong Han Kim welcomed the attendants of the GA meeting on behalf of the GA committee, he announced several organizational matters and explained the images of the big GA poster on the wall, See Appendix 1-1.

1.2. Approval of agenda and guide through the GA documents

The GA agenda was approved without any changes or modifications.

IMU Secretary M. Grötschel gave a short survey on how the GA documents were composed and how to use them.

1.3. Countries in arrears: Decision on voting rights

The IMU Secretary reported about the situation with respect to countries in arrears.

On July 20, 2014, 18 countries were in arrears with their contributions, of which
- 9 countries for more than two years:
Bosnia&Herzegovina(4), Bulgaria(4), Cameroon(5), Cuba(5), Montenegro(4.3), Peru(5.5), Saudi Arabia(3), Spain(3), Venezuela(3).

- 6 countries for four or more years:
Bosnia&Herzegovina(4), Bulgaria(4), Cameroon(5), Cuba(5), Montenegro(4.3), Peru(5.5).

The applicable article of the Statutes reads as follows:

"32. Any Adhering Organization which is in arrears with its contributions for two years shall be warned and shall be deprived of its voting rights.

Any Adhering Organization which is in arrears for four years shall cease to be an adherent of the Union.

In any case, before taking action, the Executive Committee shall submit the question to the Members of the Union by postal ballot or at a meeting of the General Assembly who under special circumstances may waive these provisions by a two-thirds majority of the total number of votes assigned to the Members."

After discussion of the issue, two suggestions were put to vote:

Suggestion 1: Loss of voting rights of a country if it is more than two years in arrears.

The General Assembly decided that countries in arrears more than two years who are represented at this GA meeting are not allowed to vote (Saudi Arabia, Spain, Venezuela).

VOTE (by show of hands): IN FAVOR = majority

Suggestion 2: Automatic loss of membership by the end of 2015, if a member is presently four or more years in arrears and if the arrears remain more than two years by December 31, 2015.

The General Assembly decided to postpone the decision and refer suggestion 2 to the Resolutions Committee.

VOTE (by show of hands): IN FAVOR = majority

2. Appointment of the following Subcommittees

2.1. Credentials Committee

C. Praeger explained the duties of the Credentials Committee and presented the proposed committee to the General Assembly.
Duties of the Credentials Committee:

- *Review the list of delegates that have registered at the General Assembly and verify each delegation is correctly constituted and present the list to the President of IMU*
- *Ensure that voting procedures are understood*

There were no comments or suggestions, the General Assembly approved the following committee.

Chair: Colva Roney-Dougal (UK)
Alicia Dickenstein (Argentina)
Fidel Nemenzo (Philippines)

2.2. Finance and Dues Committee

M. de León presented the proposed committee and explained its duties to the General Assembly.
Duties of the Finance and Dues Committee:

- *Review the proposed 2015-2018 budget*
- *Make recommendations to the General Assembly concerning dues unit increase*
- *Make recommendation to the General Assembly concerning action to be taken regarding dues in arrears*

There were no comments or suggestions, the General Assembly approved the following committee.

Chair: Nalini Joshi (Australia)
Piermarco Cannarsa (Italy)
Jungkai Chen (China, Math. Soc. located in Taipei)
Victor H. Cortes (Chile)
Abubakir Dzhuraev(Kyrgyzstan)
Simone Gutt (Belgium)
Ex officio: Alexander Mielke, Martin Grötschel, Sylwia Markwardt
Guest: Helge Holden (Norway)

2.3. Election Committee

R. Piene explained the duties of the Election Committee and presented the proposed members.

Item 5. of the Procedures for Election:

a. *On the first day of the GA meeting, an **Election Committee** is formed which consists of all member of the Nominating Committee and all Past IMU Presidents present at the GA and, if necessary, further GA delegates elected to reach a membership of at least five. The election shall be from names either proposed by the President or proposed and seconded from the floor by show of hands, unless the meeting decides otherwise. The Election Committee is chaired by the Chair of the Nominating Committee, or if unavailable, by the IMU President. The Election Committee is responsible for handling the election process and decicing on all issues related to it that may arise.*
b. *The Chair of the Election Committee presents the EC, CDC, and ICHM slates to the General Assembly*

***(Just for information)** IMU Nominating Committee 2014**:** R. Piene, Norway (chair); I. Daubechies, USA; M. Jambu, France; M. Kashiwara, Japan; G. Martin, New Zealand; M S Raghunathan, India; J. Solà-Morales Rubió, Spain.*

Duties of the Election Committee:

- *Settle all issues coming up during the election process in particular*
- *Oversee the form of the ballot papers*
- *Clarify all matters coming up when suggestions from the floor are made*

There were no comments or suggestions, the General Assembly approved the following committee.

Chair: Ragni Piene (Norway)
John Ball (United Kingdom)
Ingrid Daubechies (USA)
Masaki Kashiwara (Japan)
László Lovász (Hungary)
M S Raghunathan (India)

2.4. Resolutions Committee

C. Rousseau presented the proposed committee and explained its duties to the General Assembly.

- *Accept resolutions put forth by delegations prior to the close of the first day's sessions of the General Assembly (August 10)*
- *Review and edit resolutions received from the delegations*
- *Formulate resolutions*
- *Present the resolutions to the General Assembly with recommendations*

There were no comments or suggestions, the General Assembly approved the following committee.

Chair: Günter Ziegler (Germany)
Alejandro Adem (Canada)
Georgia Benkart (USA)

Rajenda Bhatia (India)
Etienne Desquith (Ivory Coast)
Liqun Zhang (China)

2.5. Tellers Committee

Y. Long presented the proposed committee and explained its duties to the General Assembly.

- *Distribute ballots*
- *Collect ballots*
- *Verify ballots and discard invalid ballots*
- *Count the votes*
- *Report the outcome to the President of IMU*

There were no comments or suggestions, the General Assembly approved the following committee.

Chair: Paolo Piccione (Brazil)
Camilla Hollanti (Finland)
Jong Hae Keum (Korea)
Winston Sweatman (New Zealand)
Nasser Sweilam (Egypt)
Betül Tanbay (Turkey)

3. Review of the activities of the Union

3.1. Overview on Union activities (report of the IMU EC)

IMU President I. Daubechies gave a brief overview of the Union activities. She said the most important activities during the years 2011-14 featured already on the agenda, in particular

- the Commission for Developing Countries (CDC) and the Mathematics in Emerging Nations: Achievements and Opportunities (MENAO) Symposium
- the International Commission on Mathematical Instruction (ICMI) and the Capacity & Networking Project (CANP)
- the Committee on Electronic Information and Communication (CEIC) and the World Digital Mathematics Library (WMDL) and plans towards proceeding to a global mathematics library
- the IMU awards
- the report "Evaluation of individual researchers in mathematical sciences"

Items not on the agenda

- I. Daubechies officially launched the Web site "Women in Mathematics: www.mathunion.org/wim" which is a new section for the IMU Web site and meant to list organizations, resources, references concerning women mathematicians, women and mathematics, worldwide.
- I. Daubechies announced the EC's recent decision to create an IMU committee on women in mathematics. Responsibilities of the new committee include maintaining the WiM Web page, assisting the ICWM organization, advising the ICM Emmy Noether

Lecture Committee, fostering links between national/regional women and math organizations, working with CDC, ICMI on issues related to women.
The EC decided that a small, appropriately balanced group, chaired by Ingrid Daubechies, will work with the EC to define Terms-of-Reference and organizational structure of this committee, to be submitted to the EC at the spring 2015 meeting for discussion and possible approval.

IMU Secretary M. Grötschel reported on the resolutions requiring action by the IMU EC that were passed at the last GA in 2010 in Bangalore and the corresponding action taken by the EC.

Resolution 6

The IMU Executive Committee is requested to study the feasibility of convening a Donors´ Conference as a satellite to ICM 2014 in order to seek funding for IMU activities in support of developing countries. If found feasible, preliminary conference planning should begin in good time and should involve potential beneficiaries.

- Tremendous efforts were made to implement the request. This is described in detail in the CDC report under item 3.3. Special mention is to be made of the MENAO event scheduled for August 12, 2014.

Resolution 7

The General Assembly of the IMU expresses its appreciation for all initiatives that have been taken to encourage the participation of women and of contributors from developing countries at the ICM 2010 and urges the EC to continue with efforts in this direction.

- Examples giving evidences of the EC's and CDC's efforts were the WiM Web page and the decision to create a committee on women in mathematics that were announced by the IMU President. For more information, reference is made to the CDC report.

Resolution 8

The General Assembly of the IMU recommends continuing the tradition of holding an Emmy Noether lecture at each ICM, with selection of the speaker to be made by a committee appointed by the IMU Executive Committee.

- A permanent ICM Emmy Noether Lecture was installed.
  http://www.mathunion.org/activities/icm/emmy-noether-lecture/

Resolution 9

The General Assembly of the IMU proposes that at least one member of the Nominating Committee should be knowledgeable about CDC activities.

- Done. The Chair of the Nominating Committee was a CDC member.

Resolution 10

The General Assembly of the IMU endorses the establishment of a Stable Office for the International Mathematical Union. The arrangement will be reviewed by the General Assembly of the IMU in 2018.

- Done. Details are provided in the report under item 9.

Resolution 11

The General Assembly of the IMU accepts following changes in the Statutes of the Union:

28. The Secretary of the Union shall act also as its Treasurer, unless the Executive Committee appoints another person for this position.

29. The legal domicile of the Union shall be located at the office of the Union.

- Done. The IMU EC appointed a treasurer, the legal domicile is Berlin where the IMU office is located.

Resolution 14

The General Assembly of the IMU agrees that the IMU will operate in 2011 under the proposed budget. Subject to the constraints of resolution 13, a new budget for 2012-2014 should be submitted to a vote of the Adhering Organizations by the end of 2011.

- Done. A new budget structure was voted on by the Adhering Organizations 2011.

Resolution 15

The General Assembly of the IMU invites the EC to revise the Statutes concerning the distinction between general expenses (Schedule A) and special expenses (Schedule B).

- Done. The wording of the new budget structure is, in fact, such that a revision of the Statutes is not necessary.

Resolution 16

The General Assembly of the IMU requests the Secretary to explore the possibility of electronic voting by the IMU Adhering Organizations. When the necessary hardware and software are available and the Executive Committee is convinced of their functionality, the EC should empower the Secretary to make use of electronic voting where appropriate.

- The electronic voting project was given up because of too much difficulties encountered. The structure and size of the Union are such that voting processes can be efficiently handled manually.

Resolution 17

The General Assembly of the IMU endorses the document “Best Current Practices for Journals” of its Committee on Electronic Information and Communication (CEIC). The General Assembly of the IMU requests the CEIC to review the document according to the discussion during the GA and to continue their work on all aspects of this crucial issue so that the document reflects up-to-date best practices.

- Details to be provided in the CEIC report under item 7.1.

Resolution 18

The General Assembly of the IMU asks the EC to create, in cooperation with ICIAM, a Working Group that is charged with considering whether or not a joint ICIAM/IMU method of ranking mathematical journals should be instituted, and what other possible options there

may be for protecting against the inappropriate use of impact factors and similar manipulable indices for evaluating research.

  - IMU/ICIAM blog on mathematical journals
  - http://blog.wias-berlin.de/imu-journals/
  - IMU/ICIAM Working Group Report on Journal Ranking (2011) http://www.mathunion.org/fileadmin/IMU/Report/WG_JRP_Report_01.pdf
  - The Cost of Knowledge: http://thecostofknowledge.com/
  - D. Arnold and K. Fowler, Nefarious Numbers, Notices American Math. Society (2011)

- A ranking of mathematical journals method was not established. Details to be provided in the CEIC report unter item 7.1.

3.2. IMU Circle

C. Rousseau presented the IMU Circle to the GA.

Creation of the IMU Circle

The members of the IMU Circle are mathematicians who have done sustained and distinguished contributions to IMU.

Their nomination on the IMU Circle is a recognition of their past commitment to IMU and institutional memory of IMU, and an appreciation of IMU of their valuable experience, support and advises.

Role of the IMU Circle

The members of the IMU Circle have the following responsibilities:

- To present a "public face" on how IMU is serving the world mathematical community;
- To improve connections between IMU EC and the national mathematical communities, through the Adhering Organizations (AO) in the different countries;
- To advise IMU on public matters when requested.

3.3. CDC presentation, including introduction of MENAO

Presentation by Srinivasan Kesavan, CDC Secretary for Grant Selection

Commission for Developing Countries of the IMU

History

Starting in 1978 the IMU has supported mathematics and mathematicians in developing countries through its Commission on Development and Exchanges that oversees a program of research travel grants and of grants for conferences in the developing world.

ICM Travel Grants Program:

In 2010 the following travel grants were awarded to mathematicians from developing countries to attend ICM 2010:

- Over 770 Applications (410 Senior Mathematicians, 360 Young Mathematicians)
- 106 Awards (57 Senior Mathematicians, 63 Young Mathematicians)

IMU GA 2010: The Commission on Development and Exchanges (CDE) and the Developing Countries Strategy Group (DCSG) were merged into the Commission for Developing Countries (CDC), with a mandate to continue the expanding and successful work previously carried out by CDE and DSCG.

Since January 2011 the CDC brings together all of IMU's historical and current initiatives and projects in support of mathematics and mathematicians in the developing world.

Total Budget 2010 – 2013 $809,388.79 USD.

CDC's Mandate:

- Manage, strengthen, and promote the programs of the IMU in developing and economically disadvantaged countries.
- Establish institutional partnerships with scientific organizations with common goals.
- Search for funding to support the corresponding activities.
- In 2010 the 16th General Assembly of the International Mathematical Union held in Bangalore, India, passed resolution 6 to examine the feasibility of holding a "donors conference" at the next ICM.

Members (2011-2014)

José-Antonio de la Peña (Mexico) - CDC President
C. Herbert Clemens (USA) - CDC Secretary for Policy
Srinivasan Kesavan (India) - CDC Secretary for Grant Selection
Carlos Cabrelli (Argentina) - Latin American Member
Wandera Ogana (Kenya) - African Member
Hoang Xuan Phu (Vietnam) - Asian Member
Ragni Piene (Norway) - CDC members appointed by the IMU Executive Committee
Polly W. Sy (Philippines) - CDC members appointed by the IMU Executive Committee
Angel Ruiz (Costa Rica) - CDC member appointed by the ICMI Executive Committee
Ingrid Daubechies (USA), IMU President and Ex-officio CDC Member

Meetings:

In the period 2010-2013 two meetings of the CDC took place:

- On January 31, 2011 the members of the CDC and other selected members met to discuss the Donors Conference Workshop (later called MENAO). All costs were covered from the IMU Secretariat funds.
- The second CDC Meeting was held March 9th-11th, 2013 also at the IMU Secretariat, in Berlin, Germany. 98% of the costs were covered by the IMU Secretariat (WIAS Berlin).

Highlights of activities during 2010 – 2013

- Grants for Conferences:
  Partial support to conferences organized in developing and economically disadvantaged countries.
  Supporting selected major international conferences occurring in developed countries to enable them to invite mathematicians from developing counties.
- Grants for Individual Research Travel (IRT) Support:
  Funds for academic use only (travel or living expenses of invited speakers or participants coming from developing countries).
  The Individual Research Support Program supports travel costs for research visits (minimum stay is four weeks) by mathematicians based in developing and economically disadvantaged countries.

Grants for Conferences and Individual Research Travel (IRT) Support 2010-2013

2010 - 2013	Awards Made	Conferences in Developing Countries*	Dev. Country participation in conferences in Developed Countries	Individual Research Travel Support
Total	133	79	22	32
Total value	215,704 USD	140,593 USD	42,685 USD	32,426 USD

Highlights 2010 – 2013 - Volunteer Lecturer Program

Through this program the CDC was able to offer universities in the developing world lecturers for intensive 3-4 week courses in mathematics at the advanced undergraduate or master's level.

Volunteer Lecturer Program 2010 - 2013

Volunteers to RUPP, Cambodia:
1) January 23 - February 10, 2012:
France – Cambodia: BriGiratte Lucquin (Université Pierre et Marie Curie Paris 6, France)
2) March 20 - April 11, 2012:
Philippines- Cambodia: Fidel Nemenzo (Institute of Mathematics, University of the Philippines).
3) January 21 - February 15, 2013:
France – Cambodia: Brigitte Lucquin (Université Pierre et Marie Curie Paris 6, France)
4) July 1 – August 3, 2013:
Spain- Cambodia: Gonzalo Aranda Pino (Universidad de Málaga, Spain)
5) May 27– June 22, 2013:
USA- Cambodia: Raymond Greenwell (Hofstra University, USA) All costs were covered by USNCM.
6) April 29 –May 24, 2013:
USA- Cambodia: Mark Gockenbach (Michigan Technological University, USA) All costs were covered by USNCM.

VLP volunteers to Africa 2010 - 2013
1) May 5– May 25, 2010:
France-Nigeria: Dr. Vladimir Vershinin at Obafemi Awolowo University, Ile –Ife, Nigeria.
2) October 2010:
USA- Nigeria: Dr. Michael Nakamaye at Obafemi Awolowo University, Ile-Ife, Nigeria,
3) November 7 – 25, 2011:
France – Benin: Dr. Brigitte Lucin (Université Pierre et Marie Curie Paris 6, France) at the l'Institut de Mathematiqes et de Sciences Physiques (IMSP) de l'Université d'Abomey Calavi, Benin.
4) August 10 – September 5, 2011:
USA – Tanzania: Dr. Padmanabhan Seshaiyer (George Mason University, USA) at Nelson Mandela African Institute of Science and Technology in Tanzania. All the costs were covered by USNCM.
5) January 28 – February 27, 2012:
Spain – Tanzania: Gonzalo Aranda Pino (Universidad de Málaga, Spain) at University of Dar Es Salaam in Dar es Salaam, Tanzania.
6) August 9, - September 6, 2012:
USA – Tanzania: Padmanabhan Seshaiyer (George Mason University, USA at NM AIST-Arusha, Tanzania. All costs were covered by USNCM.
7) March 30 - April 14, 2013:
Belgium- Democratic Republic of Congo: Christophe Petit (Université catholique de Louvain, Louvain-la-Neuve, Belgium) at the Université de Kinshasa (UNIKIN), Kinshasa, Républic démocratique du Congo.
8) January 8 – 24, 2014:
USA- Benin: Kasso Okoudjou, (University of Maryland, College Park MD, USA) at IMSP, Dangbo and Porto-Novo Benin.

Volunteers to Honduras
1) September 23 - October 22, 2012:
Brazil- Honduras: Victor Gonzalo Neumann (Universidad Federal de Uberlandia, Brazil) at the Universidad Pedagógica Nacional Francisco Morazán in Tegucigalpa.
2) October 14 - November 12, 2012
Brazil- Honduras: Ana María Bertone (Universidad Federal de Uberlandia, Brazil) at the Universidad Pedagógica Nacional Francisco Morazán in Tegucigalpa.
3) October 13 - November 4, 2013
Brazil- Honduras: Dr. Guillermo Antonio Lobos Villagra (Universidad Federal de San Carlos (UFSCar), Brazil) at the Universidad Pedagógica Nacional Francisco Morazán in Tegucigalpa, Honduras.

Volunteers to Iraq:
1) Spring 2012
India – Iraq: Chandan Singh Dalawat (India) in Erbil, Iraq.

Volunteers to Uzbekistan:
1) August 6-24, 2012:
USA- Uzbekistan: Dr.Zair Ibragimov from California State University, Fullerton, at the Urgench State University, Urgench City, Uzbekistan. All costs were covered by USNCM.
2) Dec. 2 - Dec. 21, 2013:
Germany- Uzbekistan Dr. Rüdiger Müller, (WIAS Berlin, Germany) at Urgench State University, Urganch City, Uzbekistan.

Project support 2010 – 2013
Under this category the CDC supported capacity-building projects and programs in mathematics and mathematics education, be they local, national, or international initiatives, in developing countries.

Library Assistance Scheme
The IMU - CDC Library Assistance Scheme matches donors of mathematical materials with libraries in universities and research institutions in developing countries where there is a need for mathematical research literature. The CDC offers limited financial support for shipment costs to individual scientists or institutions wishing to donate books in the mathematical sciences to libraries in developing countries.

The following institutions received book donations (CDC supported the shipment cost)
- University of Tibet in Lhasa (2011)
- National University of Laos (2011)
- The Pan African Centre of Mathematics, in Dar es Salaam, Tanzania (2011)
- KCA University in Nairobi; Kenya (2013)

Support for Cambodian students
Kimsy Tor, a student from Cambodia who is now studying at Manhattan College in the USA received a partial grant of USD 400 to travel to Lyon, France from August 20th-30th, 2012 to participate in the International Summer School of Mathematics for Young Students, 2012 (www.issmys.eu).
Five outstanding students from the Master Program at the Royal University of Phnom Penh (RUPP) (four Cambodians and one Laotian student) received a scholarship to continue their graduate studies in the Philippines at the Institute of Mathematics, University of the Philippines. They started their program in October, 2012. The total support was USD 8,000.

Grants to Support the following activities focused on Women Mathematicians:
Workshop for Women and Mathematics in Africa**,** which took place from October 26th-27th, 2012 at the University of Ouagadougou in Burkina Faso.
African Women in Mathematics workshop*,* South Africa (AIMS).
The CDC supported the second "African Women in Mathematics workshop" which took place at the African Institute for Mathematical Sciences (AIMS), South Africa, from July 17th-19th, 2013. The workshop was part of an initiative by the African Mathematical Union (AMU) through its Women in Mathematics Committee (AMUCWMA) and the International Center for Pure and Applied Mathematics (CIMPA/ICPAM).
The European Women in Mathematics (EMW) Network Meeting, Germany
The EMW organized its 16th general meeting at in Bonn, Germany from the 2nd to the 6th of September, 2013. EWM is a network with hundreds of members and over 30 coordinators in Europe. The EWM general assembly was also held during the meeting.

Mathematics Education Support: ICMIs Capacity and Network Project
CANP is a developing program of the International Commission on Mathematical Instruction, supported by the IMU and IMU–CDC.
The workshops are mathematics-intensive and conducted annually. DCSG and CDC supported the first Capacity and Network Project (CANP) held in 2011 in Mali as well as CANP 2 Central America and the Caribbean held in Costa Rica in 2013 and CANP 3 South East Asia, in Cambodia.

Conferences and Capacity Building Support: GIRAGA XIII

In 2010 DCSG supported GIRAGA XIII, the biennial research conference for Francophone Africa held in Cameroon. This conference has been convened every other year in West Africa for a quarter of a century and is the premier conference at which mathematicians from Francophone Africa have the opportunity to present their research. In the following years GIRAGA has received support from the CDC Grant Selection Committee (GSC).

Conferences and Capacity Building Support:

International Conference on Revitalizing Research in Kurdistan (Iraq)

DCSG supported in 2010 Dr. Zainy to participate in the Erbil (Iraq) workshop "International Conference on Revitalizing Research in Kurdistan". One of the important aspects of his participation was to interact with other mathematicians in the region and get help in fostering the mathematical community in Iraq.

Inter University Ibero-American Mathematics Competition (Ecuador)

The Ecuadoran Mathematical Society received in 2011 the amount of USD 2,000 to support the 3rd Inter University Ibero-American Mathematics Competition (IMMC) held from October 3rd-8th, 2011 in Quito, Ecuador. IIMC is a regional competition for undergraduate math students.

Workshop "Finding Online Information in Mathematics" (Cambodia)

In 2011 the education and capacity workshop "Finding Online Information in Mathematics", by Anders Wändahl, a member of the European Mathematical Society - Committee for Developing Countries was supported. After two successful workshops held in Addis Ababa, Ethiopia and in Bamako, Mali in 2010, the 2011 workshop took place at the Ministry of Education, Youth and Sport and the Royal University of Phnom Penh, Cambodia, from Aug 8th-12th, 2011.

<u>Urgent funding need 2010-present</u>

AMMSI 2010-2013 Scholarships

AMMSI is a network of mathematics centers in Africa that organizes conferences and workshops, visiting lectureships and an extensive scholarship program for mathematics graduate students doing PhD work in the African continent.

The AMMSI Postgraduate Scholarship Programme was started in 2005 as part of the Mellon Foundation support to AMMSI activities. It was designed to provide partial support to students of mathematics and its applications. During the period of 2005 – 2009, just under 200 scholarships were awarded to students from Sub-Saharan Africa.

Since the 2009/2010 academic year, the project has been supported through an annual grant of USD 20,000 from the CDC/IMU, from which a total of 45 PhD students have benefited.

The CDC has supported AMMSI during 2010-2013 with the total amount of USD 84,000. In 2010-2013 the supported students came from Kenya, Senegal, Ghana, Cameroon, Malawi, Benin, Ethiopia, Nigeria and Namibia.

The AMMSI scholarship program currently needs continuous international funding to maintain its vital work of providing the continent with its next generation of mathematical leadership.

MARM

The Mentoring African Research in Mathematics (MARM) program was founded in 2006 with support from the Nuffield Foundation and the Leverhulme Trust.

MARM supports mathematics and its teaching in Sub-Saharan Africa. The program is designed to counter the mathematics "brain-drain" from Sub-Saharan Africa by mentoring qualified mathematics professionals in-situ. The scheme concentrates on the creation of joint research partnerships between UK mathematicians, their colleagues in Sub-Saharan Africa and the doctoral students of those colleagues.

The CDC support for MARM 2011-2014:

- 2011: USD 3,409.25 to support John Elgin to coordinate the MARM program.
- 2012: USD 4,600 to the London Mathematical Society to carry out a study about the MARM program and its effectiveness. The report can be found on the CDC website.
- 2013-14: A LMS-CDC partnership to support the continuation of the MARM project was proposed. An annual funding of USD 15,000 was earmarked in 2013-14 by CDC for this purpose and it will be matched by a grant from the London Mathematical Society.

The CDC's principal source of income is an **annual grant from the International Mathematical Union (IMU**) which receives financial support from IMU member countries and a generous **annual grant from the Niels Henrik Abel Board** (Norway).

Other financial supporters include:
- German Ministry of Education and Research and the City of Berlin
- Japanese Mathematical Society
- Simons Foundation
- Swiss Mathematical Society

More information about the CDC can be found on the website: www.mathunion.org/CDC

New CDC administered programs

Abel Visiting Scholar Program

In 2013 the Niels Henrik Abel Board (Norway) and the CDC launched the Abel Visiting Scholar Program. The Niels Henrik Abel Board gives an annual grant of USD 15,000 to support junior postdoctoral mathematicians professionally based in developing countries to visit an international research collaborator for a period of one month. The period is extendable for up to three months in the case of matching support from the host institution. Three awards of USD 5,000 each are made each calendar year.

The program is designed to offer the opportunity for a 'research sabbatical,' a necessary complement to teaching and other academic duties for mathematicians desiring to sustain a viable research program.

In 2013, three young researchers, one each from China, India and South Africa, were supported. Of these, one was a woman mathematician.

IMU-Simons Travel Fellowship Program

The CDC has successfully applied for support from the Simons Foundation in New York, USA and will receive annually the amount of USD 25,000 for 2014-2016 for the "IMU-Simons Travel Fellowship Program". It has been decided to replace the Individual Research Travel Grant Program from 2014-2016 with the IMU-Simons Travel Fellowship Program. The CDC Grant Selection Committee (GSC) is responsible for this program.

CDC Budget 2010-2013

Total Income 2010-2013	$809,388.79	% (of spent funds)
Total Spending		
A) Project Support	$170,832.72	31%
B) Volunteer Lecturer Program	$55,628.69	10%
C) Library Assistant Scheme	$8,572.16	2%
D) Grants for Conferences and Individual Research Travel Support	$235,347.32	43%
E) Research	$38,094.00	7%
Administrative Costs	$40,301.96	7%
Total Spent/ Committed in 2010-13	$548,776.85	100%
Unspent/ Uncommitted Budget 2010-2012	$41,667.15	
Savings as of 31.12.2013	$218,944.79	

In 2013 CDC received from IMU a special grant of EURO 100,000.00 (included in the Savings of 31.12.2013) that has to be distributed by 31.12.2014. It is planned to meet the deadline and distribute those funds by 31.12.2014. The CDC members will take final decisions after the MENAO symposium in August 2014 in Seoul Korea.

MENAO

At the joint meeting of the CDC and the IMU EC in March 2013, the IMU and CDC decided to hold the "Mathematics in Emerging Nations: Achievements and Opportunities" (MENAO) symposium on August 12th, 2014 in Seoul, Korea, prior to the opening of ICM 2014.

The MENAO symposium will feature personal stories from a variety of mathematicians, country-specific development stories – both from the perspective of mathematicians in developing countries and from the perspective of their international partners – as well as an insight into the state of mathematics in Korea and its influence on economic development.

MENAO: Reports on state of mathematics

Reports on mathematics research and graduate education in emerging nations 2010-2013:
CDC members have been working on reports on the current state of mathematics in Africa, Southeast Asia and Latin America and on opportunities for new initiatives to support mathematical development in these regions. The reports are published on the CDC website and will be made available at the MENAO symposium.

CDC recommendations to the new CDC for the next four years:

- continue Volunteer Lecturer Program
- continue library assistance
- continue research travel grants and conference grants
- continue regional studies and projects
- continue stop-gap funding for essential programs in financial crisis (AMMSI, MARM)
- continue support of mathematics education (CANP)
- give attention to newly active regions of the world and their mathematical communities

And of particular importance:

- follow-up with government agencies, foundations and individuals on opportunities created or suggested as a result of the MENAO symposium

(one-time funding for this has been authorized by IMU/EC)

Sources:
Herbert Clemens (CDC Secretary for Policy)
Kesavan (CDC Secretary for Grants)
Lena Koch (CDC Administrator at the IMU Secretariat)

4. IMU Awards

4.1. Review of Fields Medals rules
4.2. Making IMU Prize winners public

Presentation by L. Lovász

First proposed resolution

"The names of all those who are to receive IMU medals and prizes at an upcoming ICM should be announced at a press conference at a place to be agreed upon by the IMU Executive Committee and the ICM Organizing committee approximately 12 weeks before the ICM ceremony at which they will be presented." (Potential announcement date: May 14, the birthday of J.C. Fields).

Second proposed resolution

"The 2015-18 EC should establish, in 2015, an ad-hoc committee that will consider possible adjustments of the rules governing the IMU prizes and medals. This committee, nominated by the EC and consisting of past chairs of IMU award committees (Fields, Gauss, Nevanlinna, etc.), could in particular formulate recommendations about the possibility of single awards being shared by several collaborators, and about changing or relaxing the currently specified age limits. The committee should report on its work, including recommendations it wishes to make, to the EC prior to the 2016 EC meeting. Recommendations approved by the EC will be sent to the AOs in 2016, for their consideration, in preparation for voting by the AOs."

Opinions of IMU Circle members on earlier announcement of winners:

FOR	AGAINST
• Easier to schedule talks at ICM.	• Greater drama when announced, attracts press attention to ICM.
• Reduces the possibility of leak of information.	• Enhances the profile of Fields medals, compensating for the modest financial reward.
• Enables the winners to invite their colleagues and friends.	• Part of the charm is the buildup to the opening ceremony, when all the rumors will be confirmed.
• Most major prizes are announced in advance of the prize ceremony.	• Don't change a long tradition unless absolutely necessary.

Modified second proposed resolution

"The 2015-18 EC should establish, in 2015, an ad-hoc committee that will consider possible adjustments of the rules governing the IMU prizes and medals. This committee, nominated by the EC and consisting of past chairs of IMU award committees (Fields, Gauss, Nevanlinna, etc.), could in particular formulate recommendations about announcing the prize winners before the opening ceremony of the ICM, about the possibility of single awards being shared by several collaborators, and about changing or relaxing the currently specified age limits. The committee should report on its work, including recommendations it wishes to make, to the EC prior to the 2016 EC meeting. Recommendations approved by the EC will be sent to the AOs in 2016, for their consideration, in preparation for voting by the AOs."

After discussion of the proposed resolutions the General Assembly approved to refer the modified second proposed resolution to the Resolutions Committee.

4.3. Leelavati and Ramanujan Prizes

Presentation by V. Srinivas

Ramanujan Prize
For young mathematicians from developing countries

The Prize is awarded to a researcher from a developing country, who must be less than 45 years of age on 31 December of the year of the award, and who has conducted outstanding research in a developing country.

The Ramanujan Prize has been awarded annually since 2005. The Prize was originally instituted by the Abdus Salam International Centre for Theoretical Physics (ICTP), the Niels Henrik Abel Memorial Fund, and the International Mathematical Union (IMU). The participation of the Abel Fund ended in 2012; the 2013 Prize was jointly funded and administered by the ICTP and the IMU. The Department of Science and Technology of the Government of India has agreed to fund the Prize for a 5 year period, starting with the 2014 Prize.

Year, Sponsors	Statistics	Committee	Winner
2011 ICTP, IMU, Abel Fund	Call: 21/7/2011 Closed: 30/10/2011 Nominations: 27 Announced on: 16/01/2012	L. Gottsche (Chair), H. Holden, M. J. Pacifico, V. Srinivas, G. Tian	Philibert Nang (Gabon) Field: Algebraic D-modules

2012 ICTP, IMU, Abel Fund	Call: 20/1/2012 Closed: 1/4/2012 Nominations: 29 Announced on: 25/6/2012	L. Gottsche (Chair), H. Holden, Ngo Bao Chau, M. J. Pacifico, V. Srinivas	Fernando Coda-Marques (Brazil) Field: Differential Geometry
2013 ICTP, IMU	Call: 09/11/2012 Closed: 01/02/2013 Nominations: 36 Announced on: 11/06/2014	L. Gottsche (Chair) A. Banyaga Ngo Bao Chau Zhi-Ming Ma	Ye Tian (People's Republic of China) Field: Number theory
2014 ICTP, IMU, DST (India)	Call: 18/11/2013 Closed: 01/02/2014 Nominations: 31 Announced on: 24/06/2014	Fernando R. Villegas (Chair) A. Banyaga Zhi-Ming Ma Duong H. Phong M.S. Raghunathan	Miguel Walsh (Argentina) Field: Ergodic Theory

Earlier Awards
2005 Marcelo Viana (Brazil), Dynamical Systems
2006 Ramadorai Sujatha (India), (Number Theory)
2007 Jorge Lauret (Argentina), (Differential Geometry)
2008 Enrique R. Pujals (Brazil/Argentina), (Dynamical Systems)
2009 Ernesto Lupercio (Mexico), (Topology and Mathematical Physics)
2010 Yugnang Shi (People's Republic of China), (Differential Geometry)

Leelavati prize: 2014

The Leelavati Prize, sponsored by Infosys, is intended to accord high recognition and great appreciation of the International Mathematical Union (on behalf of the international mathematical community) and Infosys of outstanding contributions for increasing public awareness of mathematics as an intellectual discipline and the crucial role it plays in diverse human endeavors.

Sponsor	Call	Nominations	Languages	Committee	Winner
Infosys	July 2012 (IMU-Net 54)	~12	English Spanish Italian French German	David Mumford (Chair) Oh Nam Kwon Guillermo Martinez M.S. Raghunathan S.R.S. Varadhan	To be announced!

4.4. Overview of award selection procedures

Presentation by M. Grötschel

IMU awards
At this moment in time IMU awards the following prizes:
- **Fields Medal** (since 1936)
- **Rolf Nevanlinna Prize** (since 1982)
- **Carl Friedrich Gauss Prize** (since 2006)
- **Chern Medal Award** (since 2010)
- **Leelavati Prize** (since 2010)

There is a special selection procedure for the
- **ICM Emmy Noether Lecture** (since 1994)

IMU plays an institutional role for the
- The Abel Prize (since 2003)
- The Ramanujan Prize (since 2005)

For every award, there is

- a description of the achievements for which the prize is given
- a rule defining the composition of the prize selection committee
- a guideline for nominations to be made (with deadlines), self-nomination is strongly discouraged
- a deadline for decisions to be taken
- a list of additional constraints (such as age limit)
- a guideline for handling conflicts of interest
- All prize selection committees are appointed by the IMU Executive Committee. They act in complete autonomy.
- The prize selection committees make the decisions, the IMU EC has no influence on the decisions.
- The prize selection committees are not bound to consider only persons nominated by others.

For every award, there is a description of the achievements for which the prize is given.
Example **Carl Friedrich Gauss Prize:**
The prize is to honor scientists whose mathematical research has had an impact outside mathematics – either in technology, in business, or simply in people's everyday lives.

Prize selection committee sizes (numbers can vary +/- 2):

- Fields Medal 10
- Rolf Nevanlinna Prize 5
- Carl Friedrich Gauss Prize 5
- Chern Medal Award 5
- Leelavati Prize 5

All committee members are appointed by the IMU EC.

Exceptions:
Chern Medal Award: One member is appointed by the Chern Medal Foundation
Leelavati Prize: Two members are appointed by INFOSYS.

Proposal:

Invite the Association of Computing Machinery (ACM), which awards the Turing Award, to nominate one member of the Nevanlinna Prize selection committee.

The General Assembly approved to invite the Association of Computing Machinery (ACM), which awards the Turing Award, to nominate one member of the Nevanlinna Prize selection committee of the IMU.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

ICMI awards
International Commission on Mathematical Instruction (ICMI) created two prizes recognizing outstanding achievement in mathematics education research:

- The **Felix Klein Award**, named after the first president of ICMI (1908-1920), honours a lifetime achievement.
- The **Hans Freudenthal Award**, named after the eighth president of ICMI (1967-1970), recognizes a major cumulative program of research.

Both awards are handled by an Awards Committee of six persons appointed by the President of ICMI, after consultation with the Executive Committee and with other scholars in the field. The Awards Committee is completely autonomous once appointed.
NEW 2014

- ICMI **Emma Castelnuovo Award,** for Excellence in the Practice of Mathematics Education

5. Diversity in excellence in IMU activity (UK proposal)

Presentation by T. Lyons

Issues

- Invitations to speak that the ICM have a profound impact on individuals' careers and also in university hiring decisions.
- They shape the mathematical direction of institutions.
- Ultimately they change the direction of mathematics.
- They give nurture (or not) to mathematical specialisms.
- They can impede contemporary developments.
- The choice of speakers has an impact well beyond the ICM itself.

Concerns

- To acknowledge the importance of the ICM, and the influence the speaker selection process for the ICM has on the way that mathematics as a whole evolves.
- The purpose is not to be critical of individuals who are involved. The intention of the agenda point and proposal is to better and more urgently use the diversity in excellence to strengthen and invigorate the ICM and mathematics worldwide.
- There are successes but there are also serious issues: with gender, geography and discipline.
- I am told that between 1990 and 2010, for membership of IMU prize committees, over the 100 members of 16 committees there were only 4 women.
- There are challenges with momentum rewarding the established areas and missing new developments until the citations are already in the thousands…

Speaker Selection

- ICM can have a sense of conservatism at the expense of new developments and linkages across areas.
- We would like to see the executive committee conduct a review of the process of speaker selection aimed at a process more fit for the current environment and rapid developments.
- A process that captures a more diverse range of excellence and captures it much earlier.
- A process that gives a much higher priority to making connections within and outside mathematics as an integral part of the selection process in every section.
- We think the IMU should develop some explicit targets for diversity in subject, geography and gender and report on these routinely.

Proposed resolution and action

1) The IMU GA notes the efforts made by the IMU Executive Committee in this area and is mindful of the high quality of individuals involved in IMU activities.
2) The IMU GA encourages the Executive Committee to ensure that future ICM sectional themes accurately reflect the balance and breadth of current mathematical research excellence worldwide, and that the resulting programmes are appropriately diverse in terms of geographical spread and gender balance.
3) The IMU GA asks that the Executive Committee provides a full report to the 2018 IMU General Assembly on progress in achieving diversity in excellence represented in IMU activity, and provides annual updates on progress in a specific section of the IMU Annual Report.

After discussion the General Assembly decided that the UK (T. Lyons) works with the Resolutions Committee to present to the GA a revised version of the resolution.

6. Recommendation "Evaluation of individual researchers in the mathematical sciences"

Presentation by W. Werner

Recommendation
on the evaluation of individual researchers in the mathematical sciences
Bulletin 64, Appendix I, pages 8-13

The document was prepared by a committee set up by the Executive Committee of the International Mathematical Union, composed of the following mathematicians:

- Mariolina Bartolini Bussi (nominated by the International Commission on Mathematical Instruction (ICMI))
- Carlos Cabrelli (nominated by the Commission for Developing Countries (CDC))
- Andreas Schuppert (nominated by the International Council for Industrial and Applied Mathematics (ICIAM))

and chaired by

- Wendelin Werner (IMU Executive Committee).

The General Assembly endorsed the *Recommendation on the evaluation of individual researchers in the mathematical sciences*.

VOTE (by show of hands): IN FAVOR = 114, AGAINST = 8, ABSTENTIONS = 5

7. Review of the activities of the Union (cont'd)

7.1. CEIC presentation, WDML, CEIC Terms of Reference 2015-2018

Presentation by P. Olver

Committee on Electronic Information and Communication (CEIC)

- The CEIC is a standing committee of the Executive Committee (EC) of the International Mathematical Union, reviewed every four years by the EC at its meeting preceding that of the IMU General Assembly.
- Members are appointed in even-numbered years for staggered four year terms, normally commencing on January 1 of the following year, using criteria similar to those for IMU Commissions.
- The mandate of the CEIC is to advise the EC on matters concerning information and communication.

CEIC Terms of Reference

- Reporting regularly to the EC, advising it on aspects of IMU operations related to information and communication, including financial implications, and keeping it informed of new developments.
- Reviewing the development of electronic information, communication, publication, and archiving so as to keep the EC abreast of current and emerging issues. Publicising relevant developments to the wider community via "IMU on the Web" ("CEIC Notes and Comments") and other methods.
- Advising the EC about potential opportunities to endorse standards ('best practice recommendations') on issues related to publication and communication, including such matters as the use of software and data repositories.
- Advising the EC about potential opportunities to foster the growth of electronic infrastructure, and selectively creating tools for this purpose.

Current Membership

- Thierry Bouche, Université de Grenoble I, France (2011-2014)
- Olga Caprotti, University of Gothenburg, Sweden (2008-2016)
- Tim Cole, University of Illinois, USA (2013-2016)
- James Davenport, University of Bath, UK (2008-2016)
- Carol Hutchins, Courant Institute, USA (2008-2016)
- László Lovász, Eötvös Loránd University, Hungary (2011-2014)
- Peter Olver, University of Minnesota, USA (Chair) (2008-2014)
- Ravi Vakil, Stanford University, USA (2011-2014)

Recent Meetings

- Berlin, July 12-13, 2014
- Bath, June 15-16, 2013
- Berlin, July 19-20, 2012
- New York, May 7-8, 2011
- Minneapolis, February 13-14, 2010

Principal Activities of CEIC 2010-14

- Panel Discussions at ICM2014
- Publishing: Best practices, journal blog, open access, copyright
- World Digital Mathematics Library (WDML)
- Online education and MOOCs
- Archiving and Secure Communication
- World Data System
- Web pages and IMU-Net

ICM Panel Discussion #1

"Mathematical Massive Open Online Courses" (M-MOOCs)

Monday, August 18, 4:30-6:00pm, Room 402

A discussion of MOOCs and new developments in online education, and their impact on mathematical research, teaching, and education throughout the world. This session will be held in conjunction with the "How Can We Teach Better" panel/round table to be organized by ICMI.

Moderator: James Davenport, *University of Bath, UK*
Panelists: Bill Barton, *The University of Auckland, New Zealand*
Robert Ghrist, *University of Pennsylvania, USA*
Matti Pauna, *University of Helsinki, Finland*
Angel Ruiz, *Universidad de Costa Rica, Costa Rica*

ICM Panel Discussion #2

"The Future of Mathematical Publishing"

Tuesday, August 19, 6:00-7:30pm, Room 402

The panel will discuss current issues in mathematical publishing, including such topics as journal rankings and metrics, open access, publishing costs and ethics, the Cost of Knowledge boycott, new models of publishing, epijournals, and related developments.

Moderator: Jean-Pierre Bourguignon, *European Research Council, Belgium*
Panelists: Rajendra Bhatia, *Indian National Science Academy, India*
Jean-Pierre Demailly, *Institut Fourier, France*
Chris Greenwell, *Elsevier, The Netherlands*
Thomas Hintermann, *European Mathematical Society Publishing House, Switzerland*
Nalini Joshi, *University of Sydney, Australia*
Ravi Vakil, *Stanford University, USA*

ICM Panel Discussion #3

"The World Digital Mathematics Library" (WDML)

Wednesday, August 20, 6:00-7:30pm, Room 402

A presentation and discussion of the World Digital Mathematics Library, covering recent initiatives funded by the Sloan Foundation, including a workshop at the National Academy of Sciences in 2012, a Report issued by the National Research Council in March, 2014, and future prospects.

Moderator: Peter Olver, *University of Minnesota, USA*
Panelists: Ingrid Daubechies, *Duke University, USA*
Thierry Bouche, *Institut Fourier, France*
Gert-Martin Greuel, *University of Kaiserslautern, Germany*
Rajeeva L. Karandikar, *Chennai Mathematical Institute, India*
June Zhang, *Peking University, China*

Publishing

- ICM2014 Panel discussion: The Future of Mathematical Publishing
- Journal blog (2011-12) IMU-ICIAM
  - Moderators: Doug Arnold (ICIAM), Carol Hutchins (IMU), Nalini Joshi (ICIAM), Peter Olver (IMU, Chair), Fabrice Planchon (IMU), Tao Tang (ICIAM), Ming-Chih Lai (ICIAM)
- Best Current Practices for Journals (EC, 2010)
  - Notices of American Math Society
- ICM2010 Round Table: The Use of Metrics in Evaluating Research

World Digital Mathematics Library

- US National Academy of Sciences Symposium (2012)
  - The Future World Heritage Digital Mathematics Library: Plans and Prospects
  - Organized by CEIC
  - Funded by a $73K grant from the Sloan Foundation
- US National Research Council Report (2014)
  - Developing a 21st Century Global Library for Mathematics Research
  - Authors include Ingrid Daubechies, Tim Cole, Peter Olver
  - Available on arXiv 1404.1905
- ICM2014 Panel Discussion
- Seoul DML Planning Meeting (2014)

Online education and MOOCs

- Barton, Arzarello, Toland ICMI Report on MOOCs (2013)
  - CEIC executive summary
- ICM2014 Panel Discussion on Mathematical Massive Open Online Courses (M-MOOCS)

Archiving and Secure Communication

- IMU Archiving Guidelines endorsed EC (2013)
- IMU web pages are now being archived on a weekly basis
- Challenges:
  - Archiving email and correspondence
  - Confidentiality (70 year embargo on Fields Medal Ctte)
  - Cataloguing of physical archives
  - Missing and damaged materials
- Secure communication system for sensitive email (Mathjobs)

International Council for Science (ICSU)

- IMU is a member of the International Council for Science (ICSU)

ICSU's mission is to strengthen international science for the benefit of society. To do this, ICSU mobilizes the knowledge and resources of the international science community to:

- Identify and address major issues of importance to science and society.
- Facilitate interaction amongst scientists across all disciplines and from all countries.
- Promote the participation of all scientists—regardless of race, citizenship, language, political stance, or gender—in the international scientific endeavour.
- Provide independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society, and the private sector.

World Data System & ICSU

- CEIC joined ICSU's World Data System (WDS) as an Associate Member (2012)
  - Enable universal and equitable access to quality-assured scientific data, data services, products and information
  - Ensure long term data stewardship
  - Foster compliance to agreed-upon data standards and conventions
  - Provide mechanisms to facilitate and improve access to data and data products

Web pages and News

- IMU-Net Newsletter
  - edited by Mireille Chaleyat-Maurel, Université Paris VI, France
  - six regular issues published on the IMU web site each year
  - special issues as necessary
  - Subscribe or access on IMU web site
- CEIC web pages
  - Redesigned, updated, and archived on IMU web site (2013)

7.2. ICMI overview

Presentation by F. Arzarello

Mathematics Education in the International World of Mathematics

Special invited "section" at ICM's

- Teaching and history of mathematics (1900)
- Mathematics Education and Popularization of Mathematics (≥ 2002)

Founding of ICMI at ICM-Roma, 1908

- Felix Klein, 1st President;
- International (6-year) study of secondary education in 18 countries.

IMU re-formed in 1952, with ICMI as a sub-commission

ICMEs,

- From ICME-1, Lyon, 1969 to ICME-13, Hamburg, Germany, 2016.

Organization & Governance of ICMI

- Executive Committee: President, two Vice Presidents, Secretary-General, five members-at-large, IMU representatives.
- The EC meets in person once a year.
- ICMI Members (92): The 70 member countries of IMU, 10 associate member countries, and 12 non-IMU affiliated countries.
- Each member country has an official representative to ICMI.

Finances: Sources of Income

- IMU supports ICMI with an annual grant (approx. EURO 50,000) plus special project grants (e.g. for CANP workshops)
- Project grants from ICSU, UNESCO and other institutions for specific projects and activities (for CANP's, ICMI Studies etc.)
- Individuals and institutions contribute (≥50%) pro bono effort and financial support to ICMI activities

ICMI Budget 2010-2013

in EURO	2010	2011	2012	2013
Budget available	103 077	195 458	311 265	261 356
Spending	27 761	44 248	162 796	73 521
		(CANP1)	(ICME + CANP2)	(CANP 3)

Relations with IMU

- Representation:
  - one IMU EC member serves as IMU liaison member in the ICMI EC (currently C. Praeger), plus ex officio members (IMU President and IMU Secretary);
  - ICMI leadership is invited to IMU GA; and selected meetings of the IMU Leadership (e.g. EC meetings);
  - Consultation with ICMI regarding the Mathematics Education and Popularization Section of the ICMs;
  - ICMI is also collaborating with the CDC: ICMI appoints one member to the CDC (currently Angel Ruiz).
- Elections: The 2013-2016 ICMI EC is the second Executive elected by the ICMI General Assembly. The IMU President was a member of the ICMI EC nominating committee. The election process went very well.
- Collaboration: Administration (IMU Secretariat, Berlin), joint development activities, special projects (CANP, Klein Project, Pipeline Project).

ICMI GA 2012 in Seoul

- Elections: The 2013-2016 ICMI EC is the second Executive elected by the ICMI General Assembly. The IMU President was a member of the ICMI EC nominating committee.

Affiliated Study Groups

In chronological order of affiliation:

HPM	History and Pedagogy of Mathematics (1976)
PME	Psychology of Mathematics Education (1976)
IOWME	International Organization of Women and Mathematics Education (1987)
WFNMC	World Federation of National Mathematics Competitions (1994)
MCG	The International Group for Mathematical Creativity and Giftedness (2011)
ICTMA	Internationall Study Group for Mathematical Modeling and Applications (2003)
CIAEM	Inter-American Committee on Mathematics Education (2009)
ERME	European Society for Research in Mathematics Education (2010)
CIEAEM	International Commission for the Study and Improvement of Mathematics Teaching (2010)
MERGA	Mathematics Education Research Group of Australasia (2011)

Core Activities of ICMI

1. ICME Conferences
2. ICMI Regional Conferences
3. ICMI Studies
4. Development Activities
5. CANP initiatives
6. ICMI Awards
7. Klein Project

1. International Congresses on Mathematical Education (ICMEs)

- ICME-12: Seoul, Korea, 8-15 July, 2012
  - 3600 Participants from 84 countries
  - Proceedings to be published in early 2015
- ICME-13: Hamburg, Germany 24-31 July, 2016
- ICME-14: Bidding in process
  - final decision will be made by August 2015

2. ICMI Regional Conferences

EARCOME: China, 2005; Malaysia, 2007; Japan 2010; Thailand 2013; (Philippines 2015)
CIAEM: Brazil, 2003; Mexico, 2007; Brazil 2011; (Mexico 2015)
EMF: Tunisia, 2003; Canada, 2006; Marocco, 2009; Switzerland 2012; (Algeria 2015)
AFRICME**:** S. Africa, 2005; Kenya, 2007; Botswana, 2010; Lesotho, 2013
EMeLP: (just constituted): Portugal, 2015

3. ICMI Studies

#17 Mathematics Education and Technology- Rethinking the Terrain (published in 2010)
#18 Statistics Education in School Mathematics (published 2011)
#19 Proof and Proving in Mathematics Education (published 2012)
#20 Educational Interfaces between Mathematics and Industry (EIMI) (an ICMI-ICIAM-Study) (published 2013)
#21 Mathematics Education & Language Diversity (to be published in 2015)
#22 Task Design (to be published in 2015)
#23 Primary Mathematics Study on Whole Numbers (IPC Meeting 2014 in Berlin, Study Conference in 2015 in Macao)
#24 (Mathematics Curriculum)

4. Development Activities
Solidarity Fund
- 10% of registration at ICMEs

CDC Collaboration
- A member of ICMI EC in CDC

Joint UNESCO Activities:
- "Experiencing Mathematics"
- Exhibition "Mathematics of Planet Earth"
- Capacity and Networking Project (CANP)

5. Capacity and Network Project
The purpose of the CANP project is to enhance mathematics education at all levels in developing countries and has been strongly supported by the IMU. Past and present projects include:
- CANP 1 (2011/ 2012): Sub-Saharan Africa (with participants from 5 countries in the region)
- CANP 2 (2012/ 2013): Latin America and the Caribbean 6 countries)
- CANP 3 (2013/ 2014): Southeast Asia (6 countries)
- CANP 4 (2014/2015): Eastern Africa (4 countries)
- CANP 5 (2016/2017): Andean Region (4 countries)

6. ICMI Awards
Launched in 2003: awarded every two years and presented at ICMEs
Awardees 2011 and 2013:
Felix Klein Award: For lifetime achievement
- Alan H. Schoenfeld, USA, 2011
- Michèle Artigue, France, 2013

Hans Freudenthal Award: For a major program of research in mathematics education during the past decade
- Luis Radford, Canada, 2011
- Frederick Leung, China, 2013

In 2014 the ICMI EC launched a new award:
The ***ICMI Emma Castelnuovo Award:*** for Excellence in the Practice of Mathematics Education

7. Klein Project http://kleinproject.org
- Design Group has met six times.
- Klein meetings have been held in Portugal, Spain, UK, Brazil, USA, Germany, Sweden.
- Book design decided, authoring under way.
- Website with 23 vignettes, all in different languages: contributions sought.
- Considerable interest and excellent discussion between mathematicians, mathematics educators, and teachers.

Other projects
- DATABASE PROJECT
  - launched in 2011 has as its ultimate goal to build up a free access database of the mathematics curricula; http://www.mathunion.org/icmi/activities/database-project/introduction/
- COMMUNICATION, OUTREACH AND ARCHIVE

- ICMI Website: www.mathunion.org/icmi
- Newsletter (ICMI News) three times a year
- ICMI Facebook (2600 'friends' and 780 'likes')
- ICMI Archive (curator: B. Hodgson)

ICMI would like to thank IMU for its generous support and looks forward to continued cooperation and mutual progress.
Ferdinando Arzarello (Italia) President of ICMI
Abraham Arcavi (Israel) Secretary-General of ICMI

7.3. ICHM aspects and Joint Committee Guidelines

Presentation by C. Praeger

International Commission on the History of Mathematics (in charge of Cheryl E. Praeger)

ICHM is a joint commission of two Scientific Unions (IMU):
- International Mathematical Union (IMU) and
- Division of the History of Science (DHS) of the International Union for the History and Philosophy of Science (IUHPS).

History
- 1971 ICHM established by the DHS
- 1985 vote to approach IMU regarding "joint commission"
- 1987 Joint International Commission on the History of Mathematics (ICHM) established -- began in 1988

Mission
- encourage the study of the history of mathematics
- promote a high level of historically and mathematically sophisticated scholarship in the field, in particular through its official journal *Historia Mathematica.*

ICHM - only joint commission of IMU
- Because of its history, ICHM has no Guidelines/Terms of Reference
- Whereas ICMI, CDC, CEIC all have Terms of Reference
- 2012 DHS developing Guidelines for its (many) Commissions

IMU Executive Committee actions
- Developed Guidelines for Joint Commissions of IMU
- Ask IMU GA to endorse them [Resolution to be presented]
- Already approved by IMU EC and ICHM Executive Committee
- Already endorsed by DHS and the parent union IUHPS
- In progress: developing Terms of Reference for ICHM
- Need to be approved by both IMU and DHS

Draft Guidelines Document is in your papers [Item 7.3]:

GUIDELINES FOR JOINT COMMISSIONS OF THE International Mathematical Union (IMU)

endorsed by the IMU General Assembly on August 11, 2014

These are guidelines for the conduct of joint commissions of the IMU to facilitate their work. In the following a "Parent Union" refers to (each) Union associated with a Joint Commission.

Governance of a Joint Commission of the IMU. The structure of the *Board/Committee* of a Joint Commission of the IMU and its *Terms of Reference* will be determined by mutual agreement of all Parent Unions.

Terms of office of Board/Committee members of Joint Commissions of the IMU. An elected representative may hold an office for a maximum of two terms (8 years). In particular at the beginning of the term of a new Board/Committee of a Joint Commission, its membership must be communicated to the contact person (briefly Secretary from now on) of each Parent Union. The four year term of the Board/Committee begins on a date agreed by the Parent Unions, possibly at a meeting of the General Assembly of one of the Parent Unions. With the permission of the Parent Unions less stringent term limits can be determined for an elected representative who acts as the Joint Commission's treasurer or who is responsible for the website of the Joint Commission and its hosting.

Activity reports of a Joint Commission of the IMU. A Joint Commission of the IMU will submit a (common) annual activity report to the Secretary of each of its Parent Unions. A Joint Commission should also submit to the Secretary of IMU, in time for a

meeting of the IMU General Assembly, a cumulative report covering the full period since the previous IMU General Assembly. (Other parent unions may also require such a cumulative report.) Submission of activity reports is necessary even if the Joint Commission has not requested/received a grant from the Parent Union. The Board/Committee members elected by and representing the IMU should report, in writing to the IMU Secretary, their agreement or otherwise with each activity report submitted to the IMU.

Annual financial report of a Joint Commission of the IMU. A Joint Commission of the IMU will submit an annual financial report to the Secretary of each of its Parent Unions. Submission of the financial report is necessary even if the Joint Commission has not requested/received a grant from the Parent Union. It will document clearly all expenditures and all grants received. All paperwork (bills, invoices, receipts, etc.) related to the financial management of the Joint Commission must be available in case of a possible financial review.

Website of a Joint Commission of the IMU. A Joint Commission should have a website reporting its most important activities (symposia, workshops, congresses, etc.) and a bibliography of publications emanating directly from the Joint Commission (edited works, special publications, proceedings, etc.). The website should be regularly updated (at least twice a year), and there should be a link to the IMU web site (and vice versa).

Participation of a Joint Commission of the IMU in the International Congress of Mathematicians (ICM). A Joint Commission is expected to participate in the congresses of each of its Parent Unions. In particular, an IMU representative on the Board/Committee of a Joint Commission should be involved in the relevant panel of the ICM Program Committee to organise and promote an ICM activity relevant to the Joint Commission.

If these guidelines are not adhered to without a satisfactory reason then the IMU may withdraw from the joint commission agreement.

The IMU General Assembly explicitly permits the IMU Executive Committee (EC) to adjust and update this document if it appears necessary for clarification of particular items and advancement of the work done within the Joint Commission and in cooperation with other Unions. The EC is expected to report all changes made to the IMU General Assembly.

Proposed first Resolution:

The General Assembly endorses the **Guidelines for Joint Commissions of the International Mathematical Union.** [Attachment for Item 7.3]

The General Assembly approved the first Resolution announcing that the General Assembly endorses the "Guidelines for Joint Commissions of the International Mathematical Union".

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Proposed second Resolution:

The General Assembly permits the IMU Executive Committee to develop **Terms of Reference** for the International Commission on the History of Mathematics.

The General Assembly approved the second Resolution announcing that the General Assembly permits the IMU Executive Committee to develop "Terms of Reference" for the International Commission on the History of Mathematics.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

7.4. Presentation of the GA, ICM Bidding, Handling Conflicts of Interest, Archiving, and IMU Membership Guidelines

Presentation by M. Grötschel

- **GA Guidelines**

Guidelines for Meetings of the General Assembly
of the International Mathematical Union (IMU)
endorsed by the IMU Executive Committee on September 15, 2012

Request: Add a sentence (under Final statements) to the guidelines stating that the EC is entitled to update the GA Guidelines when necessary.

- **ICM Bidding Guidelines**

Preparing a Bid to Host an International Congress of Mathematicians (ICM)
version of February 8, 2013

Request: Add a sentence to the guidelines stating that the EC is entitled to update the ICM Bidding Guidelines when necessary.

- **Guidelines for Handling Conflicts of Interest**

International Mathematical Union (IMU)
Guidelines for handling conflicts of interest in prize selection committees
July 9, 2014

Request of an addition: When the IMU president has a conflict of interest the EC shall designate a conflict moderator with extensive IMU experience.

- **Archiving Guidelines**

IMU Archiving Guidelines
Endorsed by the IMU Executive Committee on March 8, 2014

Request: Add a sentence to the guidelines stating that the EC is entitled to update the Archiving Guidelines when necessary.

- **IMU Membership Guidelines**

International Mathematical Union (IMU):
Information about IMU's Activities and the Application Process for
IMU Membership and IMU Associate Membership
July 2014

Request: Add a sentence to the guidelines stating that the EC is entitled to update the IMU Membership Guidelines when necessary.

Suggestion from the floor concerning the wording of the **"Requests"**:
Substitute the word "update" by the word "amend".

The General Assembly endorsed, in one round of voting, the GA Guidelines, the ICM Bidding Guidelines, the Guidelines for Handling Conflicts of Interest, the Archiving Guidelines, and the IMU Membership Guidelines. This endorsement includes the requested additions on the understanding that the wording is revised as suggested.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

7.5. IMU finances/dues

7.5.1. Presentation of the proposal on reserves

Presentation by A.Mielke, IMU Treasurer

IMU finances / dues

Change from CHF to EUR for IMU's reference currency

- New Unit Contribution constant for 2015 to 2018
- Conversion rule
  Unit contribution of 2014 (= 1737 CHF) is converted into €
  based on average exchange rate of CHF to €
  for the period May 1, 2010 to May 1, 2014:

1 CHF = 0.8033 EUR corresponds to **1737 CHF = 1395 EUR**

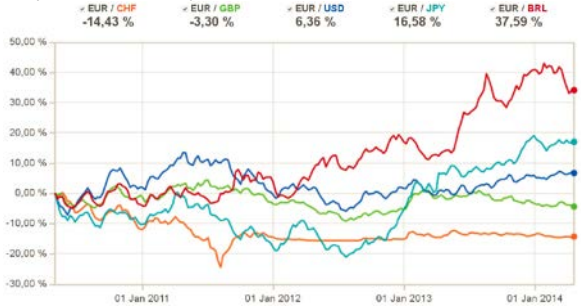
Development of unit contributions

Year	2011	2012	2013	2014	2015–2018
CHF	1637	1670	1703	1737	—
EUR*	1284	1390	1389	1424	**1395 €**

* based on exchange rate of May 1 of each year

Development of currencies relative to CHF from May 1, 2010 to May 1, 2014

Development of currencies relative to EUR from May 1, 2010 to May 1, 2014



(http://www.oanda.com/currency/historical-rates/)

IMU Budget Plan for 2015 to 2018
Constant annual dues for 2015 to 2018 (all figures are in € = Euro)
Membership according to groups (as of June 30, 2014)

Group	I	II	III	IV	V	Assoc.	sum
# of members	35	9	8	9	10	10	81
# of unit contr.	1	2	4	8	12	–	
annual dues	1 395	2 790	5 580	11 160	16 740	–	
# of unit contr.	35	18	32	72	120	0	277

The expected **General Income per year** is 277 x 1395 = **386 415** €

Additional **Special Income** may arise from

- grants
- donations
- interest rates

but is less reliable, since it is dependent on external decisions

Planned Expenditures for 2015 – 2018

according to Budget Structure as decided in December 2011, with suggested changes

All figures are in 1000 €

		percentage 2012-14	percentage 2015-18	general income	special income*
1.	Comm'issions / ittees	43%	45%	173 887	44 000
2.	ICM	22%	22%	85 011	10 000
3.	Union Administr.	20%	20%	77 283	
4.	Outreach	5%	6%	23 185	5 600
5.	Overhead	10%	7%	27 049	5 000
	sum	100%	100%	386 415	64 600

* figures for special income are estimated and depend on external decisions

Some more detail

		percentage 2012-14	percentage 2015-18	general income	special income*
1.	*Comm'issions / ittees*	43%	45%	173 887	44 000
1.1	CDC	20%	20%	77 283	44 000
1.2	CEIC	5%	5%	19 321	
1.3	ICMI	15%	15%	57 962	
1.4	Ad hoc	3%	5%	19 321	
2.	*ICM*	22%	22%	85 011	10 000
2.1	Site Comm.	1%	1%	3 864	
2.2	Programm Comm.	2%	2%	7 728	
2.3	Prize Comm.	2%	2%	7 728	
2.4	ICM Support	5%	5%	19 321	
2.5	Travel Grants	7%	7%	27 049	10 000
2.6	ICM adm.&outreach	5%	5%	19 321	
3.	*Union Administr.*	20%	20%	77 283	
3.1	General Assembly	1%	1%	3 864	
3.2	President&Secretary	12%	12%	46 370	
3.3	Exec.Comm.	6%	6%	23 185	
3.4	Other	1%	1%	3 864	
4.	*Outreach*	5%	6%	23 185	5 600
4.1	ICSU	2%	2%	7 728	
4.2	Awards	0%	1%	3 864	
4.3	Web, Media	2%	2%	7 728	
4.4	Other	1%	1%	3 864	5 600
5.	*Overhead*	10%	7%	27 049	5 000
5.1	Office	1%	1%	3 824	1 600
5.2	Bank Charges	1%	1%	3 824	1 000
5.3	Leg.adv.&Audits	4%	2%	7 727	1 600
5.4	Other	4%	3%	11 592	800
	sum	100%	100%	386 415	64 600

Comparison to previous years		2010 Act.	2011 actual	2012 actual	2013 actual	2015 suggested	%
1.	*Comm.*	32+87	33+137	63+172	77+152	44+174	45
1.1	CDC	32+47	33+91	33+75	47+55	44+77	20
1.2	CEIC	6	1	2	7	19	5
1.3	ICMI	35	45	30+95	70	58	15
1.4	Ad hoc	0	0	0	30+18	19	5
2.	*ICM*	36+86	8	5	34	13+85	22
2.1	Site C.	0	0	0	6	4	1
2.2	Progr.C.	0	7	65	11	8	2
2.3	Prize C:	11	1	0	17	8	2
2.4	ICM sup.	20	0	0	0	19	5
2.5	Trav.Gr.	36+37	0	0	0	13+27	7
2.6	Adm.Outr	18	0	0	0	19	5
3.	*IMU adm*	9+35	18	3	17	77	20
3.1	GA	9	0	0	0	4	1
3.2	Pres&Secr	9+8	3	3	14	46	12
3.3	EC	16	11	0	2	23	6
3.4	Other	2	3	9	1	4	1
4.	*Outreach*	18+15	12+9	12+10	16	6+23	6
4.1	ICSU	7	7	10	10	8	2

4.2	Awards	11+0	12+0	12+0	6	4	1
4.3	Web, Media	6+8	0	0	0	8	2
4.4	Other	1+0	2	0	0	6+4	1
5.	*Overhead*	10+0	9+6	9+2	5+20	5+27	7
	sum	329	249	286	322	451	100

Development of IMU finances up to 2013

year	2009	2010	2011	2012	2013	2015
Balance start of year	538	542	749	987	1.155	
Total income	339	455	477	461	495	451
Special+general	71+268	164+291	126+350	93+367	117+378	65+386
Expenditure	-326	-329	-249	-286	-322	
Gains/losses	17	128	246	183	173	
Balance end of year	555	670	995	1.170	1.328	
Dues in arrears	42	25	80	119	122	
Total balance	597	695	1.075	1.263	1.450	
This balance includes the following **reserves**						
bound (CDC, ICMI, MENAO)		73	169	207	468	
free	193	288	519	656	553	

Proposed Resolution

To take into account the distribution of IMU activities over its four-year cycle, the General Assembly agrees that the annual surplus reported in an income and expenditure statement be allocated to the reserves and be accumulated up to a total amount of four times the annual membership fees.

German version:
Aufgrund des vierjährigen Zyklus der IMU-Aktivitäten befürwortet die General Assembly der IMU, dass die jährlichen Überschüsse, die sich aus den Jahresbilanzen ergeben, als Rücklagen verbucht und bis zum Vierfachen der jährlichen Mitgliedsbeiträge akkumuliert werden.

The General Assembly approved the Proposed Resolution including its German version on IMU reserves.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Countries in arrears								
Country	**2008**	**2010**	**2011**	**2012**	**2013**	**2014**	**CHF**	**EUR**
Algeria				1.531		1.737	3.268	2.687,30
Argentina						5.501	5.501	4.493,59
Armenia						1.737	1.737	1.416,84
Australia						4.053	4.053	3.319,03
Belgium						6.948	6.948	5.667,35
Bosnia & Herzegovina			1.637	1.670	1.703	1.737	6.747	5.510,40
Bulgaria			1.637	1.670	1.703	1.737	6.747	5.510,40
Cameroon		1.605	1.637	1.670	1.703	1.737	8.352	6.591,22
China, CMS Beijing						12.506	12.506	10.201,20
China, Math Soc. Taipei						8.338	8.338	6.800,82
Cuba		1.605	1.637	1.670	1.703	1.737	8.352	6.591,22
Ecuador						1.013	1.013	829,55
Egypt				3.340		3.474	6.814	5.577,38
France						20.844	20.844	17.002,00
Greece				1.670	1.703		3.373	2.782,27
India						13.896	13.896	11.334,70

Iran					6.812	9.843	16.655	13.688,62
Kazakhstan				1.670		1.737	3.407	2.788,69
Latvia				1.670	1.703		3.373	2.782,27
Mexico						2.027	2.027	1.659,92
Montenegro		535	1.637	1.670	1.703	1.737	7.282	5.924,44
Peru	717	1.605	1.637	1.670	1.703	1.737	9.069	7.068,65
Philippines						1.737	1.737	1.416,84
Portugal						3.474	3.474	2.833,67
Russia						20.844	20.844	17.002,00
Saudi Arabia				1.670	1.703	1.737	5.110	4.199,11
Serbia						1.737	1.737	1.416,84
Slovakia					3.406		3.406	2.820,84
Spain				13.360	13.624	13.896	40.880	33.592,90
Ukraine						3.474	3.474	2.833,67
Venezuela				1.670	1.703	1.737	5.110	4.199,11
Total							**246.074**	**200.542,82**

Grant of Discharge for EC and Treasurer

legal "discharge": CZ+P absolutorium; D Entlastung, F+N decharge;
ES aprobacion; IT discarico, S ansvarsfrihet

- If the governing body of a German association (here: GA of IMU) asks a committee to perform some activities, it should regularly approve the committee's actions of the previous year(s).
  European Parliament: This is technically called **granting a discharge**.
- to grant a discharge means to "formally approve the previous actions" and, thus, to "relieve the actors from their responsibilities"
- granting discharge doesn't apply in case of deception or concealment

Suggestion for a Resolution on all Future GAs for the year N:

The General Assembly grants a discharge to the Executive Committee and the Treasurer for the years N–4 to N–1.

8. Nominating Committee

8.1. Introduction of the Nominating Committee, explanation of the nominating process

Presentation by R. Piene, Chair of the Nominating Committee

R.Piene presented the members of the IMU Nominating Committee (NC).

- Ragni Piene (chair)
- Ingrid Daubechies
- Michel Jambu
- Masaki Kashiwara
- Gaven Martin
- M.S. Raghunathan
- Joan Solà-Morales Rubió

R. Piene explained the process of the NC nomination and the work of the NC to put forward the slates.

8.2. Presentation of slates proposed by the Nominating Committee,
8.2.1. IMU President
8.2.2. IMU Secretary
8.2.3. IMU Vice Presidents and IMU EC Members-at-Large

IMU Executive Committee (EC) slate

Persons nominated and selected by the Nominating Committee (NC)

Person nominated	**Position**	**Country of residence**	**Nominator(s)**
Shigefumi MORI	IMU President	Japan	NC
Helge HOLDEN	IMU Secretary	Norway	AO, Norway
Alicia DICKENSTEIN	IMU Vice President	Argentina	NC
Vaughan JONES	IMU Vice President	New Zealand/US	NC
Benedict H. GROSS	EC Member-at-Large	US	NC
Stefan NEMIROVSKI	EC Member-at-Large	Russia	NC
Hyungju PARK	EC Member-at-Large	Korea	AO, Germany
Shige PENG	EC Member-at-Large	China	AO, China
Christiane ROUSSEAU	EC Member-at-Large	Canada	AO, Canada
Vasudevan SRINIVAS	EC Member-at-Large	India	Incumbent, AO India
John TOLAND	EC Member-at-Large	UK	Incumbent, AO UK
Wendelin WERNER	EC Member-at-Large	Switzerland	Incumbent, AO UK
	6 Members-at-Large to be elected		

8.2.4. President, Secretaries and Members-at-Large of CDC

Commission for Developing Countries (CDC) slate

Persons nominated and selected by the Nominating Committee (NC)

Person nominated	**Position**	**Country of residence**	**Nominator(s)**
Wandera OGANA	CDC President	Kenya	NC
C. Herbert CLEMENS	CDC Secr. Policy	US	Incumbent, NC
Kesavan SRINIVASAN	CDC Secr. Grants	India	Incumbent, AO India
Jacek BANASIAK	CDC, African Member	South Africa	NC
Mama FOUPOUAGNIGNI	CDC, African Member	Cameroon	NC
Hoang Xuan PHU	CDC, Asian Member	Vietnam	Incumbent, NC
Polly SY	CDC, Asian Member	Philippines	NC
Alf ONSHUUS	CDC, Latin Am. Member	Colombia	NC
Rubi RODRIGUEZ	CDC, Latin Am. Member	Chile	AO, Chile

1 Asian, 1 African and 1 Latin American Member to be elected

8.2.5. IMU Representatives to ICHM

International Commission for the History of Mathematics (ICHM) slate

Persons nominated and selected by the Nominating Committee (NC)

Person nominated	Position	Country of residence	Nominator(s)
David BELLHOUSE	ICHM	Canada	AO, Canada
Ciro CILIBERTO	ICHM	Italy	NC
Shrikrishna G. DANI	ICHM	India	NC
Norbert SCHAPPACHER	ICHM	France	NC

2 ICHM Representatives to be elected

Persons nominated but not selected

Jean-Pierre BOURGUIGNON	IMU Secretary	France	AO, UK; withdrawn
Mina TEICHER	IMU VP & EC Member-at-Large	Israel	AO, Israel
Pekka KOSKELA	EC Member-at-Large	Finland	AO, Finland, Denmark, Sweden
Motoko KOTANI	EC Member-at-Large	Japan	AO, Japan
Armen SERGEEV	EC Member-at-Large	Russia	AO, UK
Srinivas VARADHAN	EC Member-at-Large	US	AO, US
Günter ZIEGLER	EC Member-at-Large	Germany	AO, Germany
Carlos CABRELLI	CDC, Latin Am. Member	Argentina	AO, Argentina
Olga Gil MEDRANO	CDC Member	Spain	AO, Spain
David MAKINDE	CDC, African Member	Nigeria/South Africa	AMU

8.3. Very brief presentations of the nominated persons present at the GA

IMU Executive Committee:

Shigefumi MORI
Helge HOLDEN
Alicia DICKENSTEIN
Hyungju PARK
Shige PENG
Christiane ROUSSEAU
Vasudevan SRINIVAS
John TOLAND
Wendelin WERNER

CDC:

Srinivasan KESAVAN
Alf ONSHUUS

ICHM:
Ciro CILIBERTO

8.4. Nominations from the floor

R. Piene explained to the GA the process of nomination from the floor.

8.5. Changes of the timeline of the nomination process (item 4. of the Procedures for the Election …)

Presentation by I. Daubechies

Earlier Nomination: President and Secretary

At present:

Nominating Committee established in ICM year -1
All slates determined in Spring of ICM year

- In order to ensure continuity, it would be good for President-nominee and Secretary-nominee to attend the EC meeting in Spring ICM year.
- For this to be possible, it would be necessary for the Nominating Committee to reach an earlier decision on who to nominate for President and Secretary.

Proposal (change of the Procedures for Election...):

- Establish Nominating Committee in ICM year – 2
- Have Nominating Committee propose names for President and Secretary by Spring of ICM year -1
- Communicate to AOs and give opportunity for comments, objections
- If no objections, invite President-nominee and Secretary-nominee to EC meeting in Spring of ICM year, as observers
- Other activities of Nominating Committee would be as before.

The General Assembly approved the Proposal to change the Procedures for Election with respect to the timeline of the nomination process.

VOTE (by show of hands): IN FAVOR = 125, AGAINST = 0, ABSTENTIONS = 2

9. Office Committee report and discussion

Presentation by J. Toland

At the IMU GA in Bangalore 2012

Weierstraß-Institut für Angewandte Analysis und Stochastik (WIAS)
which is a **Leibniz Institut im Forschungsverbund Berlin e.V.** (FVB)
with support from **Federal Republic of Germany and the Land Berlin**
successfully bid to host the stable secretariat of IMU.

The Project is driven by the shared goal of WIAS and IMU to improve mathematical research internationally and for IMU a stable secretariat strengthens the efficiency of its administration.
The agreement was that WIAS, financed by the Land Berlin and the German Federal Republic, would support IMU to maintain a stable secretariat in Berlin

After the 2010 IMU GA in Bangalore

A **Memorandum of Understanding** between IMU and the WIAS was signed.
Once the office had been running for about 18 months an **IMU Office Committee** visited Berlin in 2012 to monitor how it was functioning in support of IMU activities and to report to the IMU EC and GA.

Then a detailed **Cooperation Agreement (Kooperationsvertrag)** specifying the relationship between IMU and the WIAS was drawn up.

This is a report on those developments.

Memorandum of Understanding

"The Secretariat will facilitate the activities of the IMU and support its committees and officers by providing it with a stable legal, administrative and financial structure. …"

- Promote international cooperation in mathematics
- ICM And other international scientific events
- Contribute to the development of mathematical science in any of its aspects, pure, applied, or educational

All activities coordinated by the Head of the IMU Secretariat and the IMU Secretary.

IMU Office Committee 2012
Bernard Hodgson (Canada), General Secretary (2003-9) of International Commission on Mathematical Instruction (ICMI)
Ragni Piene (Norway), Commission for Developing Countries (CDC), IMU EC 2003-2010, Permanent Office Selection Committee
John Toland (UK), IMU EC Member, Director: Isaac Newton Institute in Cambridge UK
Wendelin Werner (Switzerland), Fields Medal 2008; IMU EC Member

IMU Secretariat under German law
The Berlin Office of IMU began work in February 2011 in elegant offices
Markgrafenstr. 32, 10117 Berlin.
Legally the IMU Secretariat is part of the WIAS administration operating under its accounting system and participating in executive meetings of WIAS.

Two distinct organizations and managements

- IMU with its own policies priorities and budgets
- IMU Secretariat and its budget as part of WIAS.

IMU Secretariat Supports
- IMU Executive Committee and Officers
- IMU General Assembly
- Communication with Adhering Organisations and membership countries
- International Congress of Mathematicians (ICM)
- IMU website, bulletins, newsletter
- IMU finance, managing financial and legal aspects
- International Commission on Mathematical Instruction (ICMI)
- Commission on Developing Countries (CDC)
- Committee on Electronic Information and Communication (CEIC)
- International Commission for the History of Mathematics

IMU Berlin Personnel in 2012
- A. Mielke, Head of Secretariat
- S. Markwardt, IMU Administrator
- L. Koch, CDC & ICMI
- A.Orlowsky, Finance
- B.Seeliger, IMU Archives
- G. Telschow, IT and Web

Head of IMU Secretariat (Alexander Mielke)

- Always a mathematician at WIAS who will be the interface between IMU and WIAS
- Scientific Contact person in Berlin for IMU
- Regular reports to Office Committee, Executive Committee, GA
  - Organizes IMU Secretariat according to IMU needs
  - Currently IMU Treasurer (which is quite convenient)
- Heading IMU Secretariat as sub-unit of WIAS
- Official supervisor of members of IMU Secretariat
- Responsible for WIAS-IMU budget

IMU Administrator (Sylwia Markwardt)

- Support of IMU Executive Committee
  - Personal Assistant to IMU Secretary and IMU President, preparation of materials and of travel documents
  - Administrative support of Executive Committee, preparation of annual meetings of the Executive Committee
  - Preparation of General Assembly of IMU (members, delegates, agenda, ballots, etc)
  - Support for the organization of the ICM and other IMU conferences
  - Production of IMU Bulletins and annual reports
  - Examination of annual reports and budgets of IMU commissions and committees
  - Monitoring of compliance with IMU deadline in 4-year cycle, maintaining the membership data and mailing lists
  - Preparation of IMU texts such as guide lines, statutes, etc
  - Managing and monitoring the IMU website
- Management and coordination of IMU Secretariat
  - Supervision of work for the archive and IT
  - Supervision for IMU-WIAS finances and preparation of budget
  - Representation of IMU Secretariat's interest in WIAS management
  - Usage, furnishing, maintenance, and interior design of the rooms
  - Reporting to WIAS on IMU Secretariat (in the Annual Research Report of WIAS)
  - Preparation of travels of the members of the IMU Secretariat

IMU Finance and Accounting

- Budget monitoring and financial management of IMU funds (contributions from member countries)
  - Banking and cash management for IMU, CDC, and ICMI
  - Issuing invoices/reimbursements
  - Liaising with auditor
- Accounting for all official travel of IMU Secretariat, employees and guest
- Implementation of budget monitoring and financial management of the IMU-WIAS budget funds (joint Grant of Federal Government of Germany and State of Berlin)
  - Financial accounting
  - Budget and medium-term financial planning
  - Implementation of monthly and year-end reporting
- Implementation of controlling
  - Editing master data of cost and management
- Purchase of furniture, IT, office supplies and services for the IMU Secretariat

Commission for Developing Countries (CDC)

- Administration, liaising, and support of all activities
  - Communication, meetings and follow up with the Commission
  - CDC Grant Programs
  - Volunteer Lecturer Program (VLP)
  - CDC Library Assistant Scheme
- CDC budget and finance

- Networking: Liaising with cooperation partners and affiliated members (e.g., CIMPA, AMS)
- Communication and PR
  - Editing of the CDC website and CDC circulars
  - New CDC printed materials
- Projects
  - Development of a new CDC website and online database
- The MENAO 2014 in Gyeongju is currently a big undertaking

International Commission on Mathematical Instruction (ICMI)
- Administration and support of all activities of the ICMI
  - Executive Committee
  - ICMI meetings (EC, ICMI GA, Regional Conferences)
- Budgets and Finances - Administration and management
- Communication and PR
  - ICMI Facebook page and the ICMI website
  - Press releases (e.g., ICMI Studies, ICME -12, CANP, etc.)
  - Development of ICMI publications and printed material
- ICMI Representatives: Regular communication and distribution of information
- Fundraising and Development: Successful application for ICSU Grant for CANP (EURO 30,000)
- Project Support, CANP/ICMI Studies launches / Pipeline and Database Project / Klein Project
- Networking: Liaising with cooperating partners and affiliated members

IMU Archive
Reflect the history of the IMU in all its facets: organization, business, activities, and appearance
- Transfer of the IMU Archive from Helsinki to Berlin
- Archive hardware and software equipment
- IMU Archive opening – a workshop
- ECM Krakow – IMU booth
- Archiving materials, accession, and recording
- Drafting archive guidelines
- Digitization of paper archive documents
- Hybrid picture archive
- Discussion on e-mail archiving and database solution
- Digital long-term storage
- Legal aspects of digital photo archiving

IMU IT Services
- Basic services (e.g., nameservices, fileservices)
- Internet, mail, blog, analytics, www (typo3)
- Security (fire-walling, virus-scanner, spam-filter, back-up)
- Client support (about 200 clients, Linux, Windows, MacOS, ThinClients)
- Computer services (cluster, sms, GPU server)
- Databases (db)
- Video Conference System
- Archiving electronic documents of IMU and its commissions
- Websites‘ development

IMU Media
- New IMU, ICMI, and CDC Materials
- New CDC website and Database
- Social Media: ICMI and IMU on Facebook

The Berlin Office
- Sufficient space: 370 sqm
- Fully equipped, in use

- Up-to-date IT facilities
- Full back-up for all positions by permanent WIAS staff
- Financed by special grant of German government (appr. 0.5 Mio € per year)

Office Committee Conclusions

- The workload is high but efficiently and conscientiously done
- IMU staff are very highly motivated, professional and well led, working is a positive atmosphere with strong team-spirit
- The distinction between IMU and WIAS is clear and works well
- IMU secretariat and WIAS administration are independent units that in constant touch and mutually supportive
- The relation of IMU secretariat staff to WIAS has many positive aspects including
  - Salary scheme is clear and payroll is done by WIAS
  - Large IT structure is available if needed for advice or in emergencies
  - Access to training facilities, such as English lessons

Benefits to IMU of a Stable Office

- The benefits of these modern efficient office facilities and highly motivated professional staff at no cost to IMU cannot be exaggerated
- They have already transformed the work of the IMU Executive Committee Commissions and Committees

IMU Secretariat: the Future

- The workload in Berlin is already very high because of ICM 2014 and the Commissions' activities, such as MENAO.
- In normal times the IMU EC must manage expectations of committees and commissions to ensure that workloads are managed for the sake of the staff and of the relationship with WIAS whose budget supports the IMU Secretariat.
- There will soon be an IMU Secretary not based in Berlin and a new President.
- Everyone will have to adjust to working in different time zones and adapting new practices to accommodate the new Officers.
- The IMU Office Committee was confident that this would be managed successfully by the highly professional secretariat.

10. Presentation of the Election Committee's proposals and Elections

The Chair of the Election Committee R. Piene reported that there was one nomination from the floor: Günter Ziegler for EC Member-at-Large. The nomination was according to the rules, Ziegler's name was included in the slate.

R. Piene commented on the selection of candidates for the EC slate (nominees from Russia, Germany).

10.1. Executive Committee (EC) of IMU

IMU Executive Committee (EC) slate

IMU President	Shigefumi MORI	Japan
IMU Secretary	Helge HOLDEN	Norway
IMU Vice President	Alicia DICKENSTEIN	Argentina

IMU Vice President	Vaughan JONES	New Zealand/US
EC Member-at-Large	Benedict H. GROSS	US
EC Member-at-Large	Stefan NEMIROVSKI	Russia
EC Member-at-Large	Hyungju PARK	Korea
EC Member-at-Large	Shige PENG	China
EC Member-at-Large	Christiane ROUSSEAU	Canada
EC Member-at-Large	Vasudevan SRINIVAS	India
EC Member-at-Large	John TOLAND	UK
EC Member-at-Large	Wendelin WERNER	Switzerland
EC Member-at-Large	Günter Ziegler	Germany

6 Members-at-Large to be elected

10.2. Commission for Developing Countries (CDC)

Commission for Developing Countries (CDC) slate

CDC President	Wandera OGANA	Kenya
CDC Secr. Policy	C. Herbert CLEMENS	US
CDC Secr. Grants	Kesavan SRINIVASAN	India
CDC, African Member	Jacek BANASIAK	South Africa
CDC, African Member	Mama FOUPOUAGNIGNI	Cameroon
CDC, Asian Member	Hoang Xuan PHU	Vietnam
CDC, Asian Member	Polly SY	Philippines
CDC, Latin Am. Member	Alf ONSHUUS	Colombia
CDC, Latin Am. Member	Rubi RODRIGUEZ	Chile

1 Asian, 1 African and 1 Latin American Member to be elected

10.3. International Commission on the History of Mathematics (ICHM)

International Commission for the History of Mathematics (ICHM) slate

ICHM	David BELLHOUSE	Canada
ICHM	Ciro CILIBERTO	Italy
ICHM	Shrikrishna G. DANI	India
ICHM	Norbert SCHAPPACHER	France

2 ICHM Representatives to be elected

10.4. Election of the 2015-2018 EC, CDC, and ICHM officers

The Chair of the Election Committee explained to the GA the voting process and the voting slip.

Günter Ziegler, nomination from the floor, gives a brief presentation of himself.

Motion proposal:
Numerical results of the balloting for the different IMU committees will be provided (but not published on the Web) at THIS GA meeting when the election results are announced.

The General Assembly decided that the numerical results of the balloting for the different IMU committees will provided THIS time at the GA meeting when the election results are announced, but they will not be published on the Web.

VOTE (by show of hands): IN FAVOR = majority

11. Finance and Dues Committee

Presentation by N. Joshi

IMU General Assembly
Finance and Dues Committee
Nalini Joshi (Australia), Piermarco Cannarsa (Italy), Jungkai Chen (Taiwan), Victor H. Cortes (Chile), Abubakir Dzhuraev (Kyrgyzstan), Simone Gutt (Belgium)

Duties
- Review the proposed 2015-2018 budget
- Make recommendations to the General Asse concerning dues unit increase
- Make recommendation to the General Assembly concerning action to be taken regarding dues in arrears

Statutes
- Par 32 "Any Adhering Organisation which is in arrears for four years shall cease to be an adherent of the Union. In any case, before taking action, the Executive Committee shall submit the question to the Members of the Union by postal ballot or at a meeting of the General Assembly who under special circumstances may waive these provisions by a two-thirds majority of the total number of votes assigned to the Members."
- Par 10 "A country that has previously been a Member of the Union is not eligible to apply for Associate Membership."
- Par 6 "When an application is made for membership in the Union, the Executive Committee shall examine the application and shall make a recommendation thereon to the Members of the Union."

Members in Arrears
- Alternatives explored: (i) downgrading membership (ii) suspending membership status and waiting for 2 more years (iii) treatment for special cases.
- (i) Imposing a downgrade of membership requires a change of statutes and is not effective for uncommunicative members. (ii) After 2 years, the country loses voting rights but is still required to pay full fees. This is a severe requirement. (iii) Special cases cause problems with equitable treatment for all members.
- After a loss of membership, a country can reapply for full membership. This gives the opportunity to negotiate the debt and provides a "fresh start".

Recommendations
1. We recommend the 2015-2018 budget proposed by the Treasurer to the General Assembly.

2. The unit base membership fee remains the same: it is converted from CHF to Euro based on the average exchange rate over 4 years. We endorse the proposed unit membership fee.
3. We recommend that the General Assembly follow the statute and terminate the membership of countries which are in arrears for more than 4 years.

The recommendations of the Finance and Dues Committee were discussed by the General Assembly, it was decided that Recommendations 1. and 2. had to be voted on by paper ballot. It was agreed that Recommendation 3. that was just affirming the Statutes did not need a vote.

12. Balloting on 10. and 11. (written)

The GA delegates proceeded to voting according to item 10 (IMU EC, CDC, ICHM) and item 11 (Finance and Dues Committee recommendations).

13. ICM 2014

13.1. Report of the ICM 2014 Program Committee

Presentation by C.Kenig

Introduction
I am Carlos Kenig, from the University of Chicago, in the USA. I had the privilege of chairing the Program Committee for ICM 2014, at the request of the IMU president, Ingrid Daubechies. The Program Committee (PC) is responsible for the preparation of the scientific program of the ICM.

Our PC had 12 members, from 10 countries. The members of the PC were appointed by the Executive Committee of the IMU.

Main Tasks of the PC
The first main task of the PC was to determine the structure of the sections for ICM2014 and the selection of chairs and core members for the Sectional Panels.

There are 19 sections in ICM2014. The task of the Sectional Panels was to make nominations for sectional speakers and suggestions for plenary speakers to the PC.

The second main task for the PC was the selection of the speakers for ICM2014. In the case of the Sectional Speakers, the PC followed closely the Sectional Panels' nominations, while the selection of plenary speakers was entirely done by the PC, taking into account the suggestions from the Sectional Panels and the many nominations and suggestions received from individuals, mathematical societies and other groups.

Gender and Geographic Balance
An important factor in the selection of speakers was the desire to strive for gender and geographical balance, without compromising mathematical quality.

In connection with this, the PC decided that we should strive for gender and geographical balance among speakers as a whole, but not necessarily per each individual section.

Nominations for Speakers
Since the beginning of the work of the PC, being the only publicly known member of the PC, I received a large number of nominations for sectional and plenary speakers, from many different sources. I forwarded all such suggestions to the chairs of the relevant panels, for their consideration.

I also consulted electronically and by telephone a large number of experts in different fields of mathematics and on mathematics in developing countries, to develop further input into the final selection of speakers.

Intersectional Speakers
One of the innovations implemented by the PC, stemming from its desire to increase the amount of interactions between sections, was the following scheme: each section was given a guaranteed minimum number of lecture slots (slots) and a maximum number of slots. Priority for increasing the number of slots was given by the PC to sections that had "intersectional "speakers. In counting slots, we only counted, for a given section, "intersectional" speakers as fractions.

For instance, if a speaker was invited to speak jointly in, say, Section 2, Algebra and Section 6, Topology, each section was charged ½ a slot for this speaker. We even had cases of 3 sections having joint speakers, in which case each section was charged 1/3 of a slot. We believe that this system worked out very well. An interesting trend that we observed is the significant number of joint invited lectures, ie lectures shared by two or more speakers.

Adding Speakers
Another noteworthy development was that, after sending the PC's list of sectional and plenary speakers to the Organizing Committee, there were a couple of remarkable mathematical developments, before August 2013, to which the PC reacted by asking the OC to make additional invitations of speakers. This also seems to have worked well. The final list of invitees was posted by the OC on the website of ICM2014 on September 1, 2013.

Section 17
In Section 17, Mathematics in Science and Technology, in order to deal with the great heterogeneity of the section, and following the example set in ICM2006 and ICM2010, the PC chose ahead of time two complementary topics of focus. They are Imaging Science and Material Science.

Sections 18 and 19
In Section 18, Mathematics Education and Popularization of Mathematics, there will be three panels: "How should we teach better?", "Mathematics is everywhere" and "The risks of assessment in mathematical education". For selecting panel members for Section 18, the PC relied on the help of the Secretary General of ICMI (International Commission on Mathematical Instruction). For selecting panel members for Section 19, History of Mathematics, the PC relied on the help of the executive committee of ICHM (International Commission on the History of Mathematics).

Final Selections
The process that I have just summarized resulted in the selection of 21 plenary speakers and 181 sectional speakers from 28 countries, as well as 3 panel discussions.

Thanks to the EC, IMU and OC
The PC was entrusted with a great responsibility in preparing the scientific program for ICM2014. In this long and difficult task we were very fortunate to count with the strong support of the EC and the president of the IMU, Ingrid Daubechies, as well as of the Organizing Committee and its chair, Hyungju Park.

Thanks to the Mathematical Community
We were also very fortunate to have the unconditional support of the whole mathematical community. Hundreds of mathematicians from all over the world generously gave of their time to help us in this effort. Whenever I requested a colleague's help, it was given without reservation or delay. This I believe is a reflection of the high value that the international mathematical community places on the ICM and of the great generosity of our community.

13.2. Report of the ICM-EOC

Presentation by H. Park

See Appendix 13-2

14. Affiliate IMU Members and IMU related Organizations

14.1. ICSU

Presentation by J. Ball

The International Council for Science in brief

- Founded in 1931
- **120** National Members, **31** International Scientific Unions (including IMU)
- Secretariat (20 staff) in Paris
- Regional offices for Africa (Pretoria), Asia and Pacific (Kuala Lumpur), Latin America and the Caribbean (Mexico City)

A confusing acronym: ICSU

International **C**ouncil of **S**cientific **U**nions: 1998 → International Council for Science

What does the International Council for Science do?

- Represents and speaks for science internationally (e.g. at Rio +20)
- Catalyzes major international science programmes
  - International Geophysical year 1957-1958
  - International Polar Year 2007-2008
  - International Research on Disaster Risk 2009 –
  - Future Earth 2013 –
  - Health and Wellbeing in the Changing Urban Environment 2013 –
- Acts as an international forum for the discussion of topics of global scientific importance, e.g. Open access and evaluation by metrics
- Freedom and responsibility in science

Statute 5

The Principle of Universality (freedom and responsibility) of Science: the free and responsible practice of science is fundamental to scientific advancement and human and environmental wellbeing. Such practice, in all its aspects, requires freedom of movement, association, expression and communication for scientists, as well as equitable access to data, information, and other resources for research. It requires responsibility at all levels to carry out and communicate scientific work with integrity, respect, fairness, trustworthiness, and transparency, recognising its benefits and possible harms.

In advocating the free and responsible practice of science, ICSU promotes equitable opportunities for access to science and its benefits, and opposes discrimination based on such factors as ethnic origin, religion, citizenship, language, political or other opinion, sex, gender identity, sexual orientation, disability, or age.

Structure

- Executive Board (14 officers and members, current President Yuan Tseh Lee, incoming President Gordon McBean)
- Committee on Scientific Planning and Review (CSPR)
- Committee on Finance (CF)
- Committee on Freedom and Responsibility in the Conduct of Science (CFRS)
- 17 interdisciplinary bodies (COSPAR, CODATA, WDS, INASP …)

Future Earth: research for global sustainability

10 year programme to provide the knowledge required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to global sustainability.

Report on Open Access and Evaluation by Metrics
Issues discussed from the perspective of all subject areas and countries. Gold v. Green.

New scientific environment: not just scientific articles, but datasets, software, code, blogs, wikis, forums ...

Concerns about inappropriate use of metrics in evaluation (e.g. of individuals), what metrics do and don't recognize, and the influence of journal impact factors on maintaining high journal prices.

Open access and evaluation by metrics
Goals for open access.
The scientific record should be:
- free of financial barriers for any researcher to contribute to
- free of financial barriers for any user to access immediately on publication
- made available without restriction on reuse for any purpose, subject to proper attribution
- quality-assured and published in a timely manner
- archived and made available in perpetuity.

Recommends endorsement of the San Francisco Declaration on Research Assessment (DORA) and the OECD Principles and Guidelines for Access to Research Data from Public Funding.

ICSU General Assembly September 2014, Auckland, New Zealand
Will discuss all these issues, plus the recommendations of the 2013-2014 external review.

The review wants ICSU to be the international voice for science, and draws attention to various related problems, e.g. relations with the Inter Academy Partnership (IAP), Inter Academy Council (IAC) and World Academy of Sciences (TWAS), lack of visibility and media presence, lack of funds …

What can IMU do?
- Get mathematicians elected to posts on the important committees (Daya Reddy, Manuel de Leon up for election in Auckland)
- Get mathematicians involved with the major programmes
- Network with the other scientific unions

14.2. ICSU-IMU relations (e.g., ROLAC, ROAP, ROA)

Presentation by M. de León

IMU and ICSU
- The first steps towards the formation of the IMU were taken in 1919 in Brussels at the Constitutive Assembly of the International Research Council (IRC)
- The IRC was disbanded in 1931 and replaced by the International Council of Scientific Unions (ICSU), today called International Council for Science.
- The Constitutive Convention in 1950 in New York created IMU de facto. By the Statutes adopted there, IMU came into being in 1951 de jure, and in 1952 the General Assembly inaugurated the activities of the new Union, elected its first President and Executive Committee and was readmitted to ICSU.
- IMU is currently an active member of ICSU.

ICSU General Assembly Rome 2011
1. **IMU delegation:** C. Rousseau, M. Grötschel, M. de León, S. Markwardt
2. **Nominations to the ICSU Executive.**

· Mary Wheeler was joint IMU-IUTAM nomination for Officer of the ICSU Executive Board, Vice-President for Scientific Planing and Review. She was not elected

- André D. Bandrauk was joint IMU-IUPAP nomination for ordinary member of the ICSU EB. He was not elected.
- IMU has supported the UK nomination of John Ball for the ICSU EB Committee. John Ball was elected.

SUGGESTION FROM IMU TO THE EXTERNAL REVIEW OF ICSU

Science Education

We propose the following additional Guideline for the ICSU External Review:

- To consider the role of ICSU in improving the global situation of Science Education with special emphasis on developing countries. The advance of research and innovation in science is dependent in a fundamental way on a strong educational base, not only to provide the next generation of scientists, but also to ensure that the population at large are aware of the importance of scientific activity, interested in the discoveries and creations of scientific research, and actively support its development at all levels. Therefore ICSU has a responsibility to engage in education at all levels, and to work with educators, government agencies, and its own community, especially in those areas where high quality education is yet to emerge.

We acknowledge the role of the existing Grant Programme in this role, and suggest that the Review consider effective extensions. One example we offer for consideration is the IMU-ICMI Capacity And Networking Project (CANP). The objectives of the CANP Project are as follows. CANP aims to strengthen mathematical education through fostering regional development and capacity building in mathematics education, forming self-sustainable networks of mathematicians, mathematics educators, teachers and curriculum developers, assuring better quality education and enhancing the mathematical and pedagogical potential of the region.
The CANP Project has received an important support from ICSU and UNESCO, as well as from the ICSU Regional Offices.

- **Capacity Building in Interdisciplinary Science**

ICSU should continue to encourage capacity building in interdisciplinary science, especially in the domains of climate change and sustainability. The Grant Program is a good tool to serve this purpose.

- **Free Access to scientific literature**

The access to scientific literature becomes more and more important in order to improve the scientific level of developing countries. ICSU could facilitate an exchange of ideas between different sciences, perhaps even with the humanities, which clearly have very different ideals and practices.

- **Outreach activities**

A crucial issue is to educate people to be aware the importance of science for a sustainable world, so it is necessary to foster outreach activities, particularly addressed to children and young people.

- **A proposal from IMU on the "Universality of science"**

"Universality of science" has been used by ICSU as a short powerful slogan for outreach purposes. It is nice to have a striking slogan, but the present description of "Universality of Science" does not match with the definition of "Universality" as we find it in a dictionary. IMU proposes to include more substance in the definition of "Universality of Science", so that it serves two purposes:

I. to include some components of universality:
    - 1. The universal right for a scientific education in schools, (for instance being taught the theory of evolution instead creationism),
    - 2. The right for people in society to an access to scientific expertise in order to be appropriately informed on societal and planetary issues.
    - 3. The fact that scientific truth is something that can be verified and is independent of cultural differences, etc.

II. to include the former content which would be renamed "Principle of freedom and responsibility (or accountability) in science".

- **Draft of a statement on "Universality of science" to be finished**

1. There is a universally shared definition of scientific truth. Scientific truth can be verified, independently of cultural differences, etc.

2. The universality in science includes the universal right to a science education in schools, (for instance being taught the theory of evolution instead creationism).
3. The universality in science includes the right for people in society to an access to scientific knowledge and expertise in order to be appropriately informed on societal and planetary issues.
4. The universality of science includes the principle of freedom of science which can be stated as follows: The practice of science requires freedom of movement, association, expression and communication for scientists, as well as equitable access to data, information, and other resources for research.
5. The universality of science includes the principle of responsibility (or accountability) in science which can be stated: The practice of Science requires responsibility at all levels to carry out and communicate scientific work with integrity, respect, fairness, trustworthiness, and transparency, recognising its benefits and possible harms.
6. In advocating the free and responsible practice of science, ICSU promotes equitable opportunities for access to science and its benefits, and opposes discrimination based on such factors as ethnic origin, religion, citizenship, language, political or other opinion, sex, gender identity, sexual orientation, disability, or age.

Nominations 2011-2012

- Steering Committee for Earth System Research for Sustainable Development
  - J. Behrens from Hamburg, Germany
  - P. Silva Dias from Petropolis, Brazil
- Committee on Freedom and Responsibility
  - M. Waldschmidt (France)
- Programme on Urban Health and Wellbeing
  - C. A. Donnelly, professor of statistical epidemiology at Imperial College, UK
- Nominations to the ICSU Executive
  - M. Wheeler was joint IMU-IUTAM nomination for Officer of the ICSU Executive Board, Vice-President for Scientific Planing and Review. She was not elected
  - A. D. Bandrauk was joint IMU-IUPAP nomination for ordinary member of the ICSU EB. He was not elected.
  - IMU has supported the UK nomination of J. Ball for the ICSU EB Committee. J. Ball was elected.

Nominations 2013-2014

- Scientific Committee of Future Earth
  - J. Guckenheimer. Co-nomination with ICIAM.
- Nominations of external reviews of ICSU Regional Offices for Africa, Asia and the Pacific, and Latin America and the Caribbean:
  - ROAP: F. Nemenzo, Institute of Mathematics, University of the Philippines, Philippines
  - ROLAC: M. Viana, IMPA, Rio de Janeiro, Brazil
  - ROA: O. D. Makinde, Director, IARMMC, South Africa.
- World Climate Research Programme Joint Scientific Committee (WCRP-JSC)
  - E. Shuckburgh, British Antarctic Survey, High Cross, Madingley Rd, Cambridge, CB3 0ET, United Kingdom.

ICSU Grants applications by IMU

- Capacity and Network Project (CANP) Central America and the Caribbean
  - Requested amount: (€) 30,000 (Awarded: 30,000)
  - Lead Applicant: International Mathematical Union
  - Supporting Applicants: International Commission on Mathematical Instruction (ICMI)
- Mathematics of Climate Change, Related Natural Hazards and Risks
  - Requested amount: € 30,000 (Awarded: 30,000).
  - Lead Applicant: International Mathematical Union (IMU)

- Supporting Applicants: International Union of Geodesy and Geophysics (IUGG), International Union of Theoretical and Applied Mechanics (IUTAM), International Council for Industrial and Applied Mathematics (ICIAM), U.S. National Academy of Sciences (NAS), Academia Mexicana de Ciencias (AMC), World Climate Research Programme (WCRP), Integrated Research on Disaster Risk (IRDR), ICSU Regional Office for Latin America & The Caribbean (ROLAC), Centro de Investigacion en Matematicas (CIMAT)

- East African Capacity and Network Project
  - Requested amount: € 30,000 (Awarded: 30,000)
  - Lead Applicant: International Mathematical Union (IMU)
  - Supporting Applicants: ICSU Regional Office for Africa (ICSU ROA), Tanzania Commission for Science and Technology (COSTECH), UNESCO, International Commission on Mathematical Instruction (ICMI), Aga Khan University Institute for Educational Development East Africa, Dar es Salaam, Tanzania (AKU), African Academy of Sciences (AAS), International Council for Industrial and Applied Mathematics (ICIAM)
- Cultures of Mathematical Research Training
  - Requested amount: € 29,800 (Awarded: 29,000)
  - Lead Applicant: International Union for the History and Philosophy of Science (IUHPS)
  - Supporting Applicants: International Mathematical Union and the International Commission on Mathematical Instruction should participate in the project as supporting applicants.

Relations with the ICSU regional offices, ROLAC

- Liaison person: Marcelo Viana, from Brazil
- *ICMI CANP proposal: Capacity and Network Project (CANP) Central America and the Caribbean*.
  - CANP Costa Rica. San José, Costa Rica, 6-17 August 2012.
  - Attended by Manuel de León
  - The Mathematics Education Network of Central America and the Caribbean has been created.
- *Workshop on "Climate Change, Related Hazards and Risks", Guanajuato (Mexico), July 29 -- August 2, 2013.*
  - IUTAM and IUGG
- *Workshop on Future Earth ICSU ROLAC & International Scientific Unions in Latin America and the Caribbean, January 9th and 10th, 2014. Varadero, Cuba.*
  - Attended by Manuel de León (IMU)
  - Overall Objectives: To discuss opportunities for enhance interdisciplinary collaboration between the International Scientific Unions, and between Unions and ICSU ROLAC, particularly focused on developing the main topics of interest for our organizations. This meeting will provide a better joint effort and an important synergism between unions and ICSU ROLAC work programs. The main topics for discussions will be Future Earth, Regional Research Collaboration and any other topic of common interest proposed by the Unions. The discussions will be focused on developing concrete ideas, and implementing activities and actions to enhance interdisciplinary cooperation in these programs in our Region. The challenge of incorporating interdisciplinary activities, in different disciplines and scientific areas of the International Scientific Unions, needs more dynamic steps within the context of specific regional initiatives. Thus, ICSU ROLAC can more actively promote and support the activities of the International Scientific Unions in the LAC region

Relations with the ICSU regional offices, ROAP

- Liaison person: Yiming Long
- The announcements of ICM-2014 and IMU GA in August in Korea were announced in the website of ROAP.
- The successful nomination of Prof. Enhui YANG (fellow of the Royal Society of Canada, Canada Research Chair in Information Theory and Multimedia Compression) of University of Waterloo in Canada to the CODATA (Committee on Data for Science and Technology) of ICSU, who was a member of the Review Panel for ICSU during 2012-2013.

- The successful nomination of Ms. June ZHANG of CALIS (China Academic Library and Information System) and Peking University to IMU-CEIC-WDML (World Digital Mathematical Library) panel, who is now a member of the panel.
- A report on the situation of women mathematicians in China was given by the vice-president of Chinese Mathematical Society, Prof. Xing LI by invitation of Yiming Long, based on which an Editorial of the IMU-Net newsletter was published.

Relations with the ICSU regional offices, ROA

- Liaison person: Fanja Rakotondrajao from Madagascar
- *CANP4 East Africa, Dar es Salaam, Tanzania: September 1-12, 2014*
  - The fourth Capacity and Network Project (CANP4 East Africa is planned to be held in September 1-12, 2014 in Dar es Salaam, Tanzania at the Aga Khan University Institute for Educational Development East Africa.

Relations with other unions

- *Meeting of the International Scientific Unions of ICSU, 29-30 April 2013* - Institut d'astrophysique de Paris - IAP 98 bis, boulevard Arago, 75014 Paris

- Attended by Manuel de León

- These meetings are held half-way between two ICSU General Assemblies, so since one such meeting is held during an assembly, they are held approximately every eighteen months.

- *A previous meeting of the cluster unions*

- A meeting of the cluster unions was held beforehand at the Marriott Hotel Rive Gauche Paris on April 28th. The meeting began at 16.00 and ended at 19.30.
- Those present: S. Palmer (Secretary General of IUPAP), J. Baglin (IUMRS-ICSU Liaison), M. de León (IMU-ICSU Liaison), R. Deplanque (Secretary General of IUPAC), S. Larsen (past president IUCr), B.V.R. Chowdari (IUMRS and ROAP), I. F. Corbett (past Secretary General of IAU, IAU), B. McKellar (Chair of the ICSU Regional Committee for Asia and the Pacific, next IUPAP President)

News about activities of other unions published in IMU-Net

- IMU-Net 64: March 2014: Editorial on the International Year of Cristallography 2014 (IYCr2014, IUCr) (M. de León)
- IMU-Net 57: January 2013: Editorial on the role of the ICSU Regional Offices (M. de León)
- IMU-Net 49: September 2011: Editorial on the ICSU GA 2011 (C. Rousseau)
- IMU-Net 47: May 2011: Editorial on ICSU and MPE (C. Rousseau)
- IMU-Net 45: January 2011: 2011: An important year for ICSU (M. de León)

ICSU General Assembly Auckland 2014

1. **IMU delegation:** C. Rousseau, C. Prager, M. de León
2. **Nominations to the ICSU Executive.**

- M. de León is a joint IMU-IUTAM nomination for Officer of the ICSU Executive Board.
- IMU has supported the Indian UK nomination of . Gadagkar for the ICSU EB Committee

3. **Previous meeting of the cluster unions**
4. **Meeting of the unions**

Call for proposals for an application to ICSU grant program

Grants are up to 30,000 Euros. It is recommended that projects meet some of the following criteria:

1. The project fits within one of ICSU's priorities:
   a) Science and Technology for Sustainable Development
   b) Capacity Building and Science Education
   c) Dissemination of Data and/or Information from Science and Technology
   d) Emerging Science -- Creation of New Knowledge.
2. The project involves at least one other scientific union inside ICSU.
3. The project has some capacity building objective in one of the ICSU regional offices: ROLAC (Latin America and the Caribbean), ROA (Africa), ROAP (Asia Pacific).

A one page letter of intent should be sent by August 31 to C.Rousseau: rousseac@dms.umontreal.ca

14.3. ICIAM

Presentation by R. Jeltsch, in the name of B. Keyfitz and M. Esteban

ICIAM International Council for Industrial and Applied Mathematics
Basic Facts

World Organisation
Society of Societies
Full members are applied
Associate members are general

ICIAM Members

Continent	Full	Associate	Total
Europe	10	10	20
North America	2	4	6
Latin America	3	2	5
Asia	6	4	10
Australia & Oceania	1	0	1
World	1	0	1
Total: 2014	23	20	43
Changes from 2010	+3	+6	+9

History

· *Started as CICIAM*, Committee for International Conferences on Industrial and Applied, by GAMM, IMA, SIAM and SMAI, 1st ICIAM meeting in Paris 1987
· *By laws 1994*, membership organizations
· *ICIAM 1999*, new name and incorporated in the USA in 2001

Activities

· ICIAM Congresses, every 4 years, 1987… Paris, Washington, Hamburg, Edinburg, Sydney, Zurich, Vancouver,
2015 Beijing, 10 – 14 August www.iciam2015.cn
2019 Valencia
· 5 ICIAM Prizes, since 1999
· Olga Taussky-Todd Lecture, since 2007
· Support for Developing Countries, 3 – 4
Conf. each year (e.g. Algeria, India, Colombia, Brazil, Vietnam, …)
· Projects:
  - Quantitative assessment with IMU, IMS
  - EIMI with ICMI
  - WG: ranking journals: with IMU, report & blog
  - Collaborations on MPE 2013
· Newsletter: "ICIAM Dianoia", 2013, 4 issues per year
· Scientific partner of CIMPA
· Associate society of ICSU, Thank You. We shall work together with IMU!

Mission

· Support the discipline of applied and industrial mathematics in all parts of the world.
· Support the interaction between member societies.
· Focus mathematical and computational talent on international policy issues.

Governance

· President Barbara Keyfitz
· Pres.-elect or past-pres. Maria J. Esteban
· Secretary, Treasurer, 2 Officers-at-large

- Board: 1 or 2 reps from each member; 1 to 4 votes meets annually
- Funded by member dues and license fee

14.4. AMU

Presentation D. Makinde

AFRICAN MATHEMATICAL UNION

Introduction

- The African Mathematical Union was founded in 1976 at the first Pan-African Congress of Mathematicians held in Rabat, Morocco in Africa
- Since then, we have been having Pan African Congress of Mathematician in every four years just like IMU
- Our mission is to coordinate and promote the quality teaching, learning, research and outreach activities in all areas of mathematical sciences all over Africa.
- Our members include all mathematical scientists residing within Africa continent and we also welcome interested members and organisations outside Africa.
- The AMU Website is http://betterdaycoop.com/AMU/

AMU EXECUTIVE COMMITTEE MEMBERS (2013-2017)

- President: Prof. A.R.T. Solarin (Nigeria)
- Secretary General: Prof. O.D. Makinde (South Africa)
- Treasurer: Prof. S.A. Ilori (Nigeria)
- Vice Presidents

East Africa: Prof. OGANA Wandera (Kenya)
North Africa: Prof. Nouzha EL YACOUBI (Morocco)
West Africa: Dr. Adama COULIBALY (Côte d'Ivoire)
Central Africa: Prof. GUY Nkiet (Gabon)
Southern Africa: Prof. Winter SINKALA (Zambia)

- Other Members

Prof. Léonard TODJHOUNDE (Benin)
Prof. Mohamed EL TOM (Sudan)
Prof. Raouf THABET (Tunisia)
Prof. Joel MOITSHEKI (South Africa)

AMU Activities & Commissions

- Commission for Mathematics Education in Africa: **(AMUCME)**
  Chairperson: Prof. Bechir Kachoukh (Tunisia)
  Secretary: Prof. Mamokgethi Setati (South Africa)
- Commission on Women & Mathematics in Africa: **(AMUCWMA)**
  Chairperson: Dr. Marie-Françoise Ouedraogo (Burkina Faso)
  Secretary : Prof. Sibusiso Moyo (South Africa)
- Commission for Research & Innovation in Mathematical Sciences: **(Afrika Matematika)**
  Chairperson: Professor Mamadou Sangharé (Sénégal)
  Journal Editor: Prof. J. Banasiak
  Deputy Editor: Prof. O. D. Makinde
- Commission for History of Mathematics in Africa: **(AMUCHMA)**
  Chairperson: Prof. Kalifa Traoré (Burkina Faso)
  Secretary : Prof. Ezzaim Laabid (Morocco)
- Commission for Pan African Mathematics Olympiad: **(AMUCMO)**
  Chairperson : Mr. Soma Traore (Côte d'Ivoire)
  Secretary : Dr. Egbert Mujuni (Tanzania)

Afrika Matematika - Journal of the African Mathematical Union

- The aim of the Journal is to promote quality research in all areas of mathematical sciences
- The first issue was published in 1978.
- Since then, the Journal has continued to publish research articles from all over the world. You are invited to support our journal by submitting your work for consideration in it.
- The online submission is done process and administration is coordinated by Springer.
- https://www.editorialmanager.com/afma/

AMUCWMA: Founded in 1986

The objective of the AMU through AMUCWMA are:

- Promote women involvement in mathematical sciences.
- Organize scientific activities for African women mathematicians

AMUCWMA Aims and Objectives

- To generate activities and programmes meant to encourage women to study and make careers in the Mathematical Sciences.
- To mobilise young girls all over the continent to show more interest in Mathematics.
- To prepare and update a directory of Women in Mathematics all over the continent.
- To commission studies on various topics on Women in Mathematics in Africa.
- To cooperate with other Organisations with similar objectives.

Concluding Remarks

- AMU is Affiliated Member of IMU.
- AMU does forward regular news brief on various activities that may be of interest to our member. Please kindly let us have your e-mail address in case you are interested.
- AMU does organise short schools and research enhancement lectures across the continent in collaboration with CIMPA & other organisations.
- We appeal to all Mathematical Scientists and Organisations willing to assist Africa in Mathematical Sciences to work through AMU structure in order to strengthen our continental organisation and for proper coordination, positive impact on our members and easy reporting system.

14.5. EMS

Presentation by M. Sanz-Solé

The European Mathematical Society

What is the European Mathematical Society?
www.euro-math-soc.eu

The EMS is a learned society representing mathematicians in Europe

Aims

- To foster interaction between mathematicians of different countries
- To promote mathematical research
- To assist and advise on problems of mathematical education
- To develop links between mathematics and society
- To maintain a sense of identity amongst European mathematicians
- To represent the mathematical community in European institutions

Membership

- 60 mathematical societies in Europe
- International societies (ESMTB, GAMM)
- Academic institutional members (40 research centers and departments in Europe)
- About 3000 individual members

Reciprocity Agreements

- AMS, Australian Mathematical Society, Canadian Mathematical Society

Collaboration Agreements

- Bernoulli Society, IAMP, UMALCA, ECMI

Benefits of Membership

- Those derived from reciprocity agreements
- Discount on books and journals published by the EMS Publishing House
- Discount on subscriptions to the Journal of the European Mathematical Society
- EMS Newsletter, quarterly journal
- Free access to: Journal of the European Mathematical Society; Zentralblatt MATH
- Reduced registration fees for EMS Congresses

Executive Committee (2013-2014

- President: Marta Sanz-Solé (Pavel Exner)
- Vice President: Franco Brezzi
- Vice President: Martin Raussen
- Secretary: Stephen Huggett (Sjoerd Verduyn Lunel)
- Treasurer: Jouko Väänänen (Mats Gyllenberg)
- Members
  - Alice Fialowski
  - Gert-Martin Greuel
  - Laurence Halpern
  - Volker Mehrmann
  - Armen Sergeev

Committees of the European Mathematical Society

Committees and Chairs

- Antonio Carrillo)
- Developing Countries (Michel Waldschmidt)
- Education (Günter Törner)
- Ethics (Arne Jensen)
- Electronic Publishing (Jiri Rakosnik)
- Meetings (Nils Dencker)
- European Research Centers of Mathematics (Keith Ball)
- Publications (Bernard Teissier)
- Raising Public Awareness of Mathematics (Ehrhard Behrends)
- European Solidarity (Carles Casacuberta)
- Women in Mathematics (Caroline Series)

Some Activities and Projects

Scientific Activities

- European Congresses of Mathematics (ECMs)
  - 1992 Paris
  - 1996 Budapest
  - 2000 Barcelona
  - 2004 Stockholm
  - 2008 Amsterdam
  - 2012 Kraków
  - 2016 7th ECM, Berlin, July 18-22
- Other scientific activities
  - Summer Schools
  - EMS Lectures
  - Joint EMS Mathematical Weekends
  - Distinguished Speakers

· ….

Publication Activities

European Mathematical Foundation

EMS Publishing House

www.ems-ph.org

· Created in 2002.
· Board of Trustees consisting of EMS officers and elected members.
· Director: Thomas Hintermann.

Publications: Books, e-Books, Journals, EMS Newsletter

Book Series: EMS Monographs in Mathematics, EMS Series of Congress Reports, EMS Series of Lectures in Mathematics, EMS Textbooks in Mathematics, EMS Tracts in Mathematics, ESI Lectures in Mathematics and Physics, Heritage of European Mathematics, IRMA Lectures in Mathematics and Theoretical Physics, Zurich Lectures in Advanced Mathematics

Journals (18): Commentarii Mathematici Helvetici, Elemente der Mathematik, Groups, Geometry and Dynamics, Interfaces and Free Boundaries, Journal of Noncommutative Geometry, Journal of Spectral Theory, Journal of the European Mathematical Society, Portugaliae Mathematica, Publications of the Research Institute for Mathematical Sciences, Quantum Topology, Revista Matemática Iberoamericana, Rendiconti Lincei - Matematica e Applicazioni, …..

Zentralblatt MATH: In partnership with FIZ Karlsruhe, EMS, Heidelberger Akademie der Wissenschaften, Publisher: Springer Verlag, www.zentralblatt-math.org/zbmath

A Sample of Projects

The European Digital Mathematics Library, www.eudml.eu

- The EuDML portal aims to be a single well-organised resource offering a long-standing reliable system with sophisticated tools available for search and exploration. This will be achieved by implementing a single access portal for heterogeneous and multilingual collections, on top of a rich metadata repository endowed with a user-focused interface.
- Funded by the EU Programme CIP (2009 - 2013), with partners in Bulgaria, Czech R., France, Germany, Greece, Poland, Portugal, Spain, UK. Continues as a not-for-profit initiative with 12 founding members.

Mathematics in Europe, www.mathematics-in-europe.eu

- An EMS project funded by Munich Re (Germany)
- Addressed to:
  - Everyone who is interested in mathematics: journalists, school children, students, teachers, professional mathematicians.
  - Everyone looking for suggestions for increasing public awareness of mathematics.
- Entries include:
  - News, Information, Popularization Activities, Math Help, Math(s) as a profession, Competitions.

Presentation by J. Kramer

7th ECM in Berlin 2016

Scientific Program

- Ten Plenary Lectures selected by the Scientific Committee
  Chair: Timothy Gowers, Cambridge
- Ten EMS Prizes will be awarded to young researchers in recognition of excellent contributions in mathematics
  Chair: Björn Engquist, Austin and Stockholm
- The Felix Klein Prize will be awarded for using sophisticated methods to give an outstanding solution to a concrete and difficult industrial problem

Chair: Mario Primicerio, Florence
- The Otto Neugebauer Prize will be awarded for a specific highly influential article or book
  Chair: Jesper Lützen, Copenhagen
- The Hirzebruch Lecture will be selected by the following Committee:
  M. Atiyah, J.-P. Bourguignon, J. Kramer, G. Ziegler
- The organizers plan to invite and organize a limited number of special minisymposia on highly relevant topics

Public Program

Public Lectures
- Helmut Pottmann, Mathematics and Architecture
- Further Public Lectures are planned in cooperation with URANIA, a public education organization in Berlin, and potentially also with the Berlin Museum of Technology

Historical Lectures
- Eberhard Knobloch: Gottfried Wilhelm Leibniz
- Jürgen Sprekels: Karl Weierstrass
- Gerhard Wanner: Joseph-Louis Lagrange
- Günter Ziegler: Leonhard Euler

Math and Film
- Organized by Konrad Polthier

Juniors
- One or two days of Students Conference (Tuesday, Wednesday)

Exhibitions
- IMAGINARY, Shown at Atrium of TU Berlin
- Jewish Mathematicians in German-Speaking Academic Culture: Shown at Jewish Museum Berlin

Local Organizing Committee

Chair: Volker Mehrmann (Technische Universität Berlin)
- Hélène Esnault (Freie Universität Berlin)
- Martin Grötschel (Technische Universität Berlin / Zuse Institut Berlin)
- Wolfgang König (Weierstrass Institut Berlin)
- Jürg Kramer (Humboldt-Universität zu Berlin)
- Dirk Kreimer (Humboldt-Universität zu Berlin)
- Alexander Mielke (Weierstrass Institut Berlin)
- Konrad Polthier (Freie Universität Berlin)
- Christof Schütte (Freie Universität Berlin / Zuse Institut Berlin)
- Martin Skutella (Technische Universität Berlin)
- Caren Tischendorf (Humboldt-Universität zu Berlin)
- Günter Ziegler (Freie Universität Berlin)

Mathematical Community in Berlin
- Three Mathematical Departments at FU, HU, TU
- Weierstrass Institute for Applied Analysis and Stochastics (WIAS)
- Zuse Institute Berlin (ZIB)
- Berlin Mathematical School (BMS)
- Research Center MATHEON
- Office of the International Mathematical Union (IMU)
- Office of the German Mathematical Society (DMV)
- More than 3.000 students of mathematics in Berlin

14.6. SEAMS

Presentation by E. Tri Baskoro

The Southeast Asian Mathematical Society and its Position Toward Better Mathematical Development of Mathematics in the Region

SEAMS' brief history

Founded in 1972, (Inaugural meeting: July 1972 in Singapore), http://seams-math.org
Founding president:
Prof Wong Yung Chow (1913 – 2004) of the University of Hong Kong.
Main objectives:

- To promote the advancement of mathematical science in Southeast Asia
- To facilitate the exchange of information about current research work and teaching methods
- To encourage and foster friendly collaborations

Members. SEAMS has country members:
1. Cambodian Mathematical Society (founded 2005)
2. Hongkong Mathematical Society (founded 1979)
3. Indonesian Mathematical Society (founded 1976)
4. Malaysian Mathematical Sciences Society (Persatuan Sains Matematik Malaysia) (founded 1970)
5. Mathematical Society of The Philippines (founded 1973)
6. Singapore Mathematical Society (founded 1952)
7. Mathematical Association of Thailand (founded 1978)
8. Vietnam Mathematical Society (founded 1966)
9. Mathematical Society of Myanmar (founded 2013)

Affiliate Member: Nepal Mathematical Society

SEAMS Council

- President (two years term)
- Two Vice-Presidents, a Secretary and a treasurer
- President-Elect (during the odd numbered years only)
- Ex-President (during the even numbered years only)
- Ex-officio members, two representatives of the Publications Committee, and one representative from each member country which is not represented amongst the Officers of the Society

Edy Tri Baskoro (Indonesia)	Budi Nurani (Indonesia)
Ling San (Singapore)	Widodo (Indonesia)
Yongwimon Lenbury (Thailand)	Rosihan M. Ali, Dato (Malaysia)
Le Tuan Hoa (IMH, Vietnam)	Maslina Darus (Malaysia)
Intan M. Alamsyah (Indonesia)	K.P. Shum (Hongkong)
Ngunyen van Sanh (Thailand)	Fidel Nemenzo (Philippines)
Zhu Chengbo (Singapore)	Jumela Sarmento (Phillipines)
W.S. Cheung (Hongkong)	Suthep Suantai (Thailand)
Nguyen Huu Du (Vietnam)	Wanida Hemakul (Thailand)
Chan Roath (Cambodia)	Thein Myint (Myanmar)
Ty Poli Reth (Cambodia)	Saw Win Maung (Myanmar)

SEAMS Officers

President	Edy Tri Baskoro (ITB, Indonesia)
Vice-Presidents	Ling San (NTU, Singapore)
	Yongwimon Lenbury (Mahidol, Thailand)
Secretary	Intan Muchtadi Alamsyah (ITB, Indonesia)
Treasurer	Ngunyen van Sanh (Mahidol, Thailand)

SEAMS Presidents

Edy Tri Baskoro (Institut Teknologi Bandung, Indonesia). 2014-2015
Le Tuan Hoa (Vietnam Institute for Advanced Study in Mathematics) 2012-2013
Fidel R Nemenzo (University of the Philippines) 2010-2011
Rosihan M. Ali (Universiti Sains Malaysia) 2008-2009
Wanida Hemakul (Chulalongkorn University, Thailand) 2006-2007
Tan Eng Chye (National University of Singapore) 2004-2005
Kar Ping Shum (Chinese University of Hong Kong) 2002-2003

Do Long Van (Institute of Mathematics, Hanoi) 2000-2001
Polly W Sy (University of the Philippines) 1998-1999
Soeparna Darmawijaya (Gadjah Mada University, Indonesia) 1996-1997
Suwon Tangmanee (Suranaree Univ. of Technology, Thailand) 1994-1995
Modin Mokta (Malaysia) 1992-1993
MariJo Ruiz (Ateneo de Manila University, Philippines) 1990-1991
Kar Ping Shum (Chinese University of Hong Kong) 1988-1989
Lim Chong Keang (University of Malaya) 1985-1987
Virool Boonyasombat (Chulalongkorn University, Thailand) 1983-1984
Lee Peng Yee (Nanyang University) 1981-1982
Tan Wang Seng (Universiti Sains Malaysia) 1979-1980
Bienvenido F Nebres (Ateneo de Manila University) 1977-1978
Teh Hoon Heng (Nanyang University) 1975-1976
Wong Yung Chow (University of Hong Kong) 1973-1974

SEAMS Publications

- The Southeast Asian Bulletin of Mathematics (SEAMS Bulletin) is a bimonthly journal. First issue in 1976.
- Now, co-sponsored by: The South China Normal University, Yunnan University and UNESCO.
- Editor-in-chief : Sum Kar Ping (Former Prof. of University of Hong Kong, currently at Yunnan).

SEAMS Activities

Organize workshops, conferences, schools.

Some well-known series:

- Biennial meetings (1972 – 1988),
- SEACME (Southeast Asian Conference on Mathematics Education) 1978-1999, and later, the EARCOME (East Asia Regional Conference on Mathematics Education),
- Franco - Southeast Asian Mathematical Conference (now continued by CIMPA-UNESCO workshops/conferences).

Many international conferences/workshops organized in member countries.

The Asian Mathematical Conference (AMC) series is a major SEAMS conference, held every 4-5 years and hosted by countries in Asia.

- First AMC: Hong Kong (1990)
- Other AMCs: Thailand (1995), Philippines (2000), Singapore (2005), Malaysia (2009), Busan Korea (2013).
- Next AMC-2016 in Bali Indonesia.

More and more mathematicians from Asia and other parts of World attended this AMC.

Organize SEAMS Schools every year:

- 2011: Applications of Algebra and Analysis (Philippines).
- 2013: Algebraic Curves (Vietnam), Numbers, Matrices and Graphs (ITB Indonesia).
- 2014: Stochastic Processes and Its Applications in Finance and Insurance (IPB Indonesia), Module Theory and Its Applications (ITB Indonesia).
- 2015+: 5-6 SEAMS schools held in countries in Southeast Asia.

Objectives:

- To provide opportunity to have an advanced learning experience in mathematics, and to introduce a research-based learning for undergraduate as well as master students.
- To provide a preparation for students to be able to attend the CIMPA Schools.

Supported by CIMPA.

SEAMS challenges and opportunities

- In recent years, many development of mathematics in the region. However, not evenly spread in all fields of mathematics, not in all countries.
- Each mathematical society in the region has own national, regional as well as international conferences/workshops; publications, potential critical mass.
- More centers, research groups, mutual collaborations established.

However …

- Not all countries in ASEAN have comparable mathematical teaching and research achievements.
  Singapore Vietnam
  Indonesia Philippines Thailand
  Myanmar Cambodia Laos
- Not all fields of mathematics receive the same attention (advancement)

Strength:

· Many enthusiastic mathematicians who are committed to promote mathematics (both research and education) and the collaboration within the region.
· Many good students who love mathematics.
· Short distances, and therefore low travel costs (especially now with cheap flights).

However: No budget, Few strong (good) mathematical institutions

===> Stronger collaboration between IMU and SEAMS in promoting mathematics in the region.

14.7. UMALCA

Presentation by J. Seade

UMALCA - Unión Matemática de América Latina y el Caribe

Founded in 1995

• Main national societies in the Latinoamerican Region
• 11 Members and 2 Associate Members
  - Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela

UMALCA' s main goals are:

- To foster the development of Mathematics in all the countries in the region
- To contribute to the improvement of academic working conditions, and facilitate the interchange of researchers and students across the continent.
- To support programs involving the participation of researchers in the teaching of Mathematics.
- To create a net that supports information about institutions offering graduate programs in Mathematics.

MAIN PROGRAMS

- EMALCA, elementary schools
- ELAM, advanced schools
- CLAM, Latin American Congress of Mathematicians
- Scientific exchanges (travel grants for young researchers)
- International Congress of the Applications of Mathematics 2006
- 1st Mathematical Congress of the Americas 2013

EMALCA, Elementary Schools

- 50 Schools (2001-2014) ~ 2,750 students
- Started in 2001 in Mexico
- Aimed to students in regions with poor development in mathematics.
- Gives students opportunity to be in touch with top mathematicians and widen their vision.
- Aims to inspiring students to pursue graduate studies
- Significant support from CIMPA (France)

ELAM, Advanced Schools of Mathematics

- 15 Schools, for graduate students (1968-2011)
- Aimed to strengthening research schools
- First in Rio de Janeiro, Brazil, 1968 (Analysis)

- México City 1971 (Topology)
- Then: Brazil (1976), Peru (1978), Argentina (1980), Mexico (1982), Venezuela (1984), Brazil (1986), Chile (1988), Argentina (1991), Mexico (1993), Peru (1999), Colombia (2002), Uruguay (2005), Argentina (2011)

Latin American Congress for Mathematicians (CLAM)

- Main objective: to contribute to the development of mathematical research in Latin America and the Caribbean.
- 4 congresses (2000-2012):
- 2000 Rio de Janeiro, Brazil
- 2004 Cancún, México
- 2009 Córdoba, Argentina
- 2012 Santiago, Chile
- 2016 To be decided (possibly Colombia)

Scientific exchanges: Travel grants for Young researchers

- Aimed to create ways for encouraging cooperation between mathematicians working in Latin America and the Caribbean.
- This program helps to increase mobility of mathematicians within the region.
- Priority is given to young mathematicians for research exchanges.
- 19 years of uninterrupted activity
- Over 80 exchanges supported between 2005 y 2013.

About the future

- UMALCA is being a key-actor for developing mathematics in our region
- A lot more needs to be done
- A lot more can be done
- A lot more will be done
- See web page for more: http://www.umalca.org

14.8. Friends of IMU

Presentation by I. Daubechies

Friends of the IMU (or FIMU for short): created under previous EC

- charitable organization in US, i.e. donations from US citizens are tax deductable
- is channel used by Chern Medal Foundation to contribute money funding Chern Medal Award
- is already being used for smaller donations (targeted towards CDC) very recent large donation: Breakthrough Prize Winners
- new website: www.friends-imu.org
- MENAO-related report:

  The International Mathematical Union in the Developing World, see www.friends-imu.org/category/news
- DonAuction at ICM: www.donauction.org

14.9. MPE 2013

Presentation by C. Rousseau

Mathematics of Planet Earth 2013

- An international year of scientific and outreach activities

- Under the patronage of UNESCO
- Endorsed by IMU, ICMI, ICSU, ICIAM
- More than 140 partners around the world
- An exceptional collaboration

MPE2013 and IMU
IMU hosted the MPE Day at UNESCO on March 5 2013, where the MPE Exhibition was launched. Further input to the exhibition is welcome!

IMU co-organized at CIMAT (Mexico) a summer school "Mathematics of climate change, related hazards and risks" together with IUGG and IUTAM. The school was targeting young researchers from Latin America. It was sponsored by ICSU.

Together with UNESCO, IMU supported the distribution of a special issue of Accromath in 14 francophone African countries.

What next?
MPE2013 had nearly no budget: it functioned with partners bringing their own resources. It is a model of cooperation.

MPE2013 has moved into MPE to continue the work, including increasing cooperation with other disciplines:

www.mathofplanetearth.org

Educational and outreach resources have been developed and are available on the website.
Training programs are developing around the world.

15. Presentation of Resolutions Committee

G. Ziegler presented the resolutions drafted by the Resolutions Committee. Each resolution was voted on by show of hands.

Resolution 1

The General Assembly of the IMU expresses its deep gratitude to the Organizing Committee of the ICM 2014 chaired by Hyungju Park and to the Organizing Committee of the General Assembly chaired by Jeong Han Kim for their dedicated work and for their excellent organization, their special efforts in helping delegates in obtaining their visas, and their warm welcome to the delegates.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Resolution 2

The General Assembly of the IMU expresses its deep appreciation to the Executive Committee, in particular to the IMU President Ingrid Daubechies and to the chair of the Program Committee Carlos E. Kenig, for their excellent work during the period 2011-2014. It especially thanks and applauds the IMU Secretary Martin Grötschel for his extraordinary dedication and his passionate work for the IMU and its adhering organizations as the Secretary of the IMU in the last eight years.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Resolution 3

The General Assembly of the IMU thanks Alexander Mielke, Sylwia Markwardt, Lena Koch, and all the other staff at the IMU Secretariat in Berlin for their dedicated work and for all their multiple contributions to the IMU.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Resolution 4

The General Assembly of the IMU expresses its gratitude to those organizations and individuals who have contributed to the Special Development Fund in the past four years.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Resolution 5

The General Assembly of the IMU expresses special appreciation of the Korean mathematical community for the ICM Invitation Program "NANUM 2014" that provided travel grants to Korea for 1,000 participants from developing countries.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Resolution 6

The General Assembly requests that the Executive Committee review the instructions given to the ICM Program Committees concerning the following goals:
1) to achieve gender and geographical balance among plenary and sectional speakers;
2) to ensure that the structure of the program reflects the current state and development of all mathematical areas.

The GA asks that each ICM Program Committee present an interim report to the EC about issue 2) at the time it has a proposal for the structure of the program and for the division into "sections", and that the final report of the Program Committee to the EC about their work specifically address both issues 1) and 2).

VOTE (by show of hands): IN FAVOR = 119, AGAINST = 3, ABSTENTIONS = 5

Resolution 7

The IMU AOs should be invited to make suggestions for possible members of the Program Committee.

VOTE (by show of hands): IN FAVOR = 114, AGAINST = 2, ABSTENTIONS = 11

Resolution 8

The General Assembly endorses the "Guidelines for Joint Commissions of the International Mathematical Union".

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Voting on this resolution took place when item 7.3 of the agenda was discussed.

Resolution 9

The General Assembly permits the IMU Executive Committee to develop Terms of Reference for the International Commission on the History of Mathematics.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Voting on this resolution took place when item 7.3 of the agenda was discussed.

Resolution 10

To take into account the distribution of IMU's activities over its four-year cycle, the General Assembly agrees that the annual surplus reported in an income and expenditure statement be allocated to the reserves and be accumulated up to a total amount of four times the annual membership fees.

German version:
Aufgrund des vierjährigen Zyklus der IMU-Aktivitäten befürwortet die General Assembly der IMU, dass die jährlichen Überschüsse, die sich aus den Jahresbilanzen ergeben, als Rücklagen verbucht und bis zum Vierfachen der jährlichen Mitgliedsbeiträge akkumuliert werden.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

Voting on this resolution took place when item 7.5 of the agenda was discussed.

Resolution 11

The 2015-2018 EC should establish, in 2015, an ad-hoc committee that will consider possible adjustments of the rules governing the IMU prizes and medals. This committee, appointed by the EC and consisting of past chairs of IMU award committees (Fields, Gauss, Nevanlinna, etc.), could in particular formulate recommendations about

1) announcing the prize winners before the opening ceremony of the ICM,
2) the possibility of single awards being shared by several collaborators, and
3) changing or relaxing the currently specified age limits.

The committee should report on its work, including recommendations it wishes to make, to the EC prior to the 2016 EC meeting. Recommendations approved by the EC will be sent to the AOs in 2016, for their consideration, in preparation for voting by the AOs.

VOTE (by show of hands): IN FAVOR = 122, AGAINST = 3, ABSTENTIONS = 2

Considering the discussion by the GA, this resolution was reformulated and voted on retrospectively.

Resolution 12

An IMU member will automatically lose its membership by the end of 2015 if at present (August 11, 2014) it is four or more years in arrears, and if the EC finds that two or more years of dues remain unpaid by December 31, 2015.

VOTE (by show of hands): IN FAVOR = 120, AGAINST = 0, ABSTENTIONS = 7

Resolution 12 needed a two third majority of the total votes of all full IMU members with voting rights. The IMU Secretary explained the procedure to the GA. The number of 120 votes in favor did exceed the required two third majority (102).

Resolution 13

The General Assembly requests that the IMU Executive Committee study the feasibility of introducing a new category of "IMU Regional Member".

Explanation:
Since regional membership may increase the number of countries participating fully in IMU activities and may also increase the number of countries that fully benefit from those activities, it is desirable, in certain circumstances, to have a mechanism by which a regional group of countries may be eligible jointly to obtain full dues-paying membership in the IMU. Eligibility requirements would include
1) that the group of countries shall be contiguous or closely related, geographically,
2) that no country in the regional group be an IMU member country,
3) that each individual country in the group shall already have status as an associate member in good standing of the IMU,
4) that the cumulative mathematical level in the regional group, taken together, meets IMU standards,
5) that there is a regional organization that can collectively represent the countries in the region according to the norms IMU requires of its current adhering bodies.

VOTE (by show of hands): IN FAVOR = 122, AGAINST = 1, ABSTENTIONS = 4

Resolution 14

The General Assembly of the International Mathematical Union wants to express its concern about the academic activity in general, and of the mathematical activity in particular, of Venezuela.
The GA of the IMU wants to express its solidarity with the mathematical community of Venezuela, hoping that it will recover soon from this difficult time.
Explanation:
The economic and political crisis of Venezuela has impacted negatively in all the aspects of the academic life (low salaries, lack of promotions, scarce research grants, etc). Such facts have implied a dramatic decrease in the productivity of all the scientific community, and an exodus of numerous important figures, as well as members of younger generations, to other countries seeking better conditions to develop their academic work.

The GA, in accordance with the Resolutions Committee's decision to not recommend this resolution for vote, did not vote on Resolution 14.

In short, the GA has approved all resolutions, i.e. resolution 1 to 13 was passed.

16. Ballot results of Elections, Finance and Dues voting

The Chair of the Tellers Committee, P. Piccione, passed the ballot results to the President.

The President announced the results of voting.
As decided by the General Assembly, the numerical results of the balloting for the different IMU committees were provided this time.

IMU Executive Committee (EC) slate

IMU President	Shigefumi MORI	Japan
IMU Secretary	Helge HOLDEN	Norway
IMU Vice President	Alicia DICKENSTEIN	Argentina
IMU Vice President	Vaughan JONES	New Zealand/US
EC Member-at-Large	Benedict H. GROSS	US
EC Member-at-Large	Hyungju PARK	Korea
EC Member-at-Large	Christiane ROUSSEAU	Canada
EC Member-at-Large	Vasudevan SRINIVAS	India
EC Member-at-Large	John TOLAND	UK
EC Member-at-Large	Wendelin WERNER	Switzerland

Commission for Developing Countries (CDC) slate

CDC President	Wandera OGANA	Kenya
CDC Secr. Policy	C. Herbert CLEMENS	US
CDC Secr. Grants	Kesavan SRINIVASAN	India
CDC, African Member	Mama FOUPOUAGNIGNI	Cameroon
CDC, Asian Member	Polly SY	Philippines
CDC, Latin Am. Member	Alf ONSHUUS	Colombia

International Commission for the History of Mathematics (ICHM) slate

ICHM	Ciro CILIBERTO	Italy
ICHM	Shrikrishna G. DANI	India

Voting on Recommendations 1. and 2. of the Finance and Dues Committee:

1. We recommend the 2015-2018 budget proposed by the Treasurer to the General Assembly.
2. The unit base membership fee remains the same: it is converted from CHF to Euro based on the average exchange rate over 4 years. We endorse the proposed unit membership fee.

The General Assembly approved the Recommendations 1. and 2.

17. Resolutions balloting

See item 15.

18. ICM 2018

18.1. IMU EC Site Recommendation for ICM 2018

Presentation by M. Grötschel

M. Grötschel gave a summary of the visit of the ICM 2018 site visiting committee in January 2013 and the report submitted by this committee. He cited the FINAL REMARK of this report:

"The Site Visiting Committee is convinced that the Brazilian bid is excellent, that it will get strong support from the local mathematical communities in Rio de Janeiro and São Paulo as well as from the whole of Brazil and South America, and the SVC has no doubt that ICM 2018 taking place in Brazil will be a successful congress.

We were particularly impressed by the great enthusiasm of our Brazilian colleagues."

18.2. Presentation of the Committee for Rio de Janeiro ICM 2018

Presentation by M. Viana

See Appendix 18-2

18.3. Location of ICM 2018 balloting

The General Assembly voted to hold the ICM 2018 in Rio de Janeiro, Brazil, with the General Assembly to be held in São Paulo, Brazil prior to the ICM.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

18.4. Meeting of the 18th IMU General Assembly

M. Viana introduced Paolo Piccione, the chair of the 2018 General Assembly organizing committee.

18.5. ICM 2022, invitation to announce interest to bid

France announced interest to bid for ICM 2022.
Presentation by F. Loeser

Paris ICM 2022
Location: Palais des Congrès de Paris
Dates: August 9-17, 2022
Professional Conference Organizer (PCO): MCI
Budget: €2/2,5M (current euros)

Paris ICM 2022: Sponsors (already contacted)
Presidence of the French Republic
Ministry of Higher Education and Research
City of Paris

Ile de France Region
CNRS
INRIA
French Academy of Sciences
Learned Societies (applied mathematics, mathematics, statistics)
Foundations in mathematical sciences of Ile de France
Institutes: IHES, Institut Henri Poincaré

Paris ICM 2022 : Next steps
Forming the Organizing Committee and the Advisory Committee before summer 2015
Preparing the bid for 2016
Getting your support !
Hoping to see you in Paris in 2022

19. IMU Membership

19.1. New Members
19.2. Group changes

Report by M. Grötschel

IMU membership development
On September 1, 2010 directly after the Bangalore GA, new Associate Members:

- Cambodia
- Moldova
- Nepal
- Oman

The Associate Membership was extended to August 31, 2018 for all four countries.
Associate Membership of other countries extended:

- Kenya: September 30, 2016
- Thailand: July 31, 2017

Further new Associate Members:

- Madagascar: August 1, 2012
- Malaysia: August 1, 2012
- Gabon: June 1, 2014

Up for decision about Associate Membership at this GA meeting:

- Papua New Guinea
- Senegal

New Full IMU members:

- Montenegro: September 1, 2010
- Algeria: February 1, 2012

Upgrade from Associate to Full Member:

- Ecuador: June 1, 2014

Upgrade from group II to group III

- Argentina June 2014
- Mexico June 2014

Upgrade from group III to group IV

- Australia June 2014
- Iran August 2014

Number of Full IMU Members:

- 35 countries in group I

- 09 countries in group II
- 07 countries in group III
- 10 countries in group IV
- 10 countries in group V

Full Members total: 71
Associate Members: 10
Affiliate Members: 04

Membership by continents
Africa: 07 Full Members, 3 Associate
America: 12 Full Members
Asia: 16 Full Members, 6 Associate
Australia: 02 Full Members
Europe: 34 Full Members, 1 Associate

Presentations of New (Associate) Members
New Associate Members, see item 19.3

- Madagascar (Fanja Rakotondrajao appologizes, can't be here because if GA meeting of ISP reference group)
- Malaysia
- Gabon

New Full Members

- Montenegro
- Algeria

19.3. Applications for Membership/Associate Membership, Presentations of new members

Mathematics Activities in Malaysia
Presentation by Kamel A.M. Atan

A BRIEF HISTORY OF MALAYSIAN MATHEMATICS
Prior to the Arrival of Western Mathematics.

- Mathematics of the indigenous people.
- Influence of the Arabian mathematics in Islamic religious schools.

Mathematics of the Colonial Era.
Type of schools:

- Public: Curriculum follows closely the British model.
- Christian Missionary: British model syllabus.
- Independent Private: Curriculum of country of origin.
- Islamic religious: Maintained Arabian mathematics.

Post-independent Era (1957 and beyond).
-Establishment of National Schools.
-Establishment of National-Type Schools.
-Adoption of a common school mathematics curriculum.
-Establishment of Teachers Training Colleges.
-Introduction of higher level university mathematics.

TERTIARY EDUCATION. Universities in Malaysia:
Public (20).
Private (12).
Branch campuses of foreign universities (4)

Lecturers of mathematics : 812
(Mathematics Associate professors: 120
Mathematics Professors: 60)
Degrees with specialization in mathematics are offered at undergraduate and postgraduate levels.
MSc : Research and course work modes.
PhD and Postdoctoral: Research.

RESEARCH ACTIVITIES.
Almost all research in mathematics are carried out in the university faculties, research institutes and centres.
Some are done by informal research groupings.
A number of government-linked industrial agencies form mathematics research divisions.
Main research fundings are from government agencies.
Research results are published in journals or presented in conferences locally and abroad.

COLLABORATIVE RESEARCH PROGRAM
Visiting Scientists.
Sponsored inbound and outbound visits for as long as six months and as short as one week.
Research Students.
Placement of research students at selected research partner institutions local and abroad and inbound foreign research students in local institutions of higher learning.

NETWORKING.
i) Industries.
ii) Government Agencies.
iii) International partners.

REPRESENTATION
i) The Malaysian National Council of Professors.
ii) Malaysian Academy of Sciences.
iii) Confederation of Scientific and Technological Associations of Malaysia.

JOURNAL PUBLICATIONS.
i) Malaysian Journal of Mathematical Sciences.
ii) Bulletin of the Malaysian Mathematical Sciences Society.
iii) Sains Malaysiana.
iv) Pertanika Journal of Science and Technology.
v) Matematika.
vi) Jurnal Teknologi.
vii) Journal of Physical Science.

CONFERENCES HOSTED (2003 – 2014)
* 38 International Conferences, Workshops and Lecture Series. This includes the biennial International Conference on Research and Education in Mathematics (ICREM) and the 5th Asian Mathematics Conference (AMC) held in 2009.
* 54 National Conferences, Seminars, Workshops and Lecture Series.This includes the annual National Symposium on Mathematical Sciences.

OTHER ACTIVITIES
*Trends in International Mathematics and Science Study (TIMMS).
*Program for International Student Assessment (PISA).
*International Mathematical Olimpiad (IMO).
*Mathematics of Planet Earth 2013 (MPE 2013).
*Short Training Programs for Mathematics Teachers.

MATHEMATICS SOCIETIES.
i) Mathematical Sciences Society of Malaysia (PERSAMA).
ii) Institute of Statistics Malaysia (ISM).

iii) Malaysian Society for Cryptology Research (MSCR).
iv) Management Science/Operations Research Society of Malaysia (MSORSM).
v) Malaysian Academy of Mathematical Scientists (AISMM).

SOME RECOGNITIONS
*Prizes won at international and national exhibitions (2003-2014):
i) International Invention,Innovation and Technology Exhibition (ITEX).
ii) World Exhibition on Innovation, Research and New Technologies (EUREKA)
iii) International Exhibition of Inventions New Techniques and Products (Geneva).
iv) National Exhibitions (MTE, MIEXPO)
*Recognition of Prof Dr Ishak Hashim by Thomson Reuters as one of "The World's Most Influential Scientific Minds: 2014".
*Conferment of ERCE award by EMS on the Institute of Mathematical Research (INSPEM).
*Appointment as Fellows of Academy of Science of Malaysia.

LOOKING INTO THE FUTURE:
*To sustain and maintain forward momentum of mathematics progress in the country.
*To be more visible and actively involved in international activities (through cooperation, collaboration and participations).
*To be hosts to other more prestigious international programs (e.g. host to IMC 2022).

A brief Assessment of Current Mathematics Development in GABON

Presentation by Philibert Nang

About Gabon
The Gabonese Republic is a sovereign state on the west coast of central Africa. Located on the equator, Gabon is bordered by Equatorial Guinea on the northwest, Cameroon on the north, the Republic of the Congo on the east and south and the Atlantic Sea on the west. The territory stretches nearly over 270,000 square kilometres, which divide into nine provinces, and a total population estimated at 1,5 million people. Its capital and largest city is Libreville.

Gabon's education system continues to be modelled closely on that of France. French remains the sole medium of instruction; Bantu languages are studied as electives in secondary and higher level institutions. Education is officially mandatory from 6 to 16. Primary education lasts for six years. Secondary schooling consists of a four-year cycle, followed by a three-year programme.

Education in Gabon
Both levels of education are scattered over the nine provinces that constitute the country. Higher education institutes, including some schools of advanced studies, offer curricula in many fields but concentrate in two cities: "Omar Bongo" University (1970) and the University of Health Sciences (2002) in Libreville; and the University of Sciences and Technology of Masuku (1986) near Franceville are the outstanding of them.

In accordance with the Government's overall goal to build an emerging society, there are approximately 9,6 percent of the country's budget which then goes to education. Gabon is a developing country for which the access of science, technology and mathematics stands as a national priority.

Gabon's universities
Description of the state of Mathematics in Gabon:
There are three public universities in Gabon.
The first one, "Omar BONGO University", was founded in 1970 in Libreville, the main town of the country, as mentioned before.

It was originally a multidisciplinary institution. So did it include a faculty of sciences, and especially a department of mathematics. In 1986 it was reformed, and the Faculty of Sciences was relocated in Franceville for the creation of the University of Sciences and Technology of Masuku (USTM), the only university of sciences. The third and last one is the University of Health Sciences.

Mathematics education

Mathematics is taught at all levels, from primary school through secondary school to higher institutes. It is taught intensively, from undergraduate level to the graduate one, in the University of Sciences and Technology of Masuku (USTM) and at the Higher School of Education (École Normale Supérieure de Libreville). The Faculty of Sciences of USTM offers a postgraduate program in Mathematics. In Gabon's universities and institutes, there are about 25 teachers (2 females included) in mathematics, and only 8 of them are active researchers.

Mathematical research

The research in mathematics is carried in a few elite institutions as follows:

- In ENS, there is a research laboratory in Mathematics, in which are organised, since 2010, a bi-weekly high level seminar, and two workgroups on analysis and algebraic analysis. The first workgroup is devoted to the study of analytic pseudodifferential operators, and the second one on D-module theory and perverse sheaves with applications to the theory of singularities.
- In the Faculty of Sciences of USTM, people deal with mathematical physics field, partial differential equations, probability and statistics, and number theory. There are two working groups: one group is devoted on asymptotic theories of multivariate statistics; and the other one on the study of sticky particles models and scalar conservation laws.
- In the African Institute of Computer Sciences (Institut Africain d'Informatique-IAI), there is a laboratory of applied mathematics and computer sciences working on numerical non linear partial differential equations.

Further details about Mathematics education and research in Gabon

- Mathematical Society of Gabon: 1
  - Société Mathématique du Gabon founded in 2013
  - President founder: Pr Philibert Nang
  - Number of members: 25
- Number of Universities and Institutes in which mathematics is taught: 5
- Number of PhD Students in Mathematics in the postgraduate program of mathematics in the university of Gabon: 5
- Institutions in which research In Mathematics is carried: 4
  - University of Sciences and Technology of Masuku (USTM)
  - Higher School of Education (Ecole Normale Supérieure of Libreville - ENS)
  - African Institute of Computer Sciences (Institut Africain d'Informatique - IAI)
  - Polytechnic Engineering School of Masuku (Ecole Polytechnique de Masuku – EPM)
- Mathematics leaders in the University of Gabon:
  - Guy Martial Nkiet, Full Professor, University of Masuku (USTM)
  - Philibert Nang, Professor, 2011 ICTP Ramanujan Prize Laureate, Ecole Normale Supérieure (ENS)
- Estimated number of mathematical research publications (in well known journals) produced by researchers working in Gabon: 65.
- Number of research publications per year produced recently:
  - 2013:7, 2012:6, 2011:2, 2010:3, 2009:3, 2008:6

As it is well known, in the sub-Saharan Africa, there are a lot of impediments to students and researchers in obtaining the kind of education and research they need: the lack of books, of financial support, of high technology tools and, subsequently, of day-to-day information, to cite a few, are among the many factors in the weakness of the research in such a specialised field. In fine, the present environment holds us back from fully expressing our capabilities.

We are deeply grateful to the Executive Committee and the members of the International Mathematical Union (IMU) for accepting Gabon as an Associate member. This is a great opportunity for researchers of our country to interact with mathematicians of the world.

Yours sincerely,
Philibert Nang

APPLICATION of PAPUA NEW GUINEA for Associater Membership
Presentation by Samuel J.L. KOPAMU

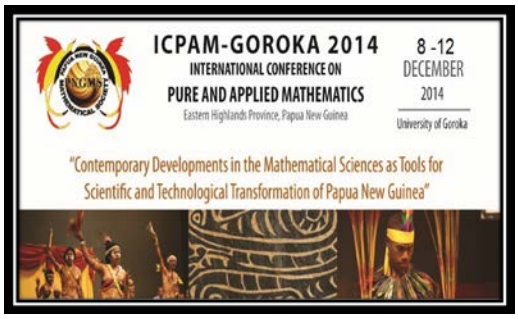
Papua New Guinea (PNG) is applying to become an IMU associate member
A developing country in the South Pacific, Papua New Guinea has a population of 7.5 million people, located just north of Australia, and shares boarders with Indonesia on the west and Solomon Islands in the east.

UNIVERSITIES IN PNG

1. University of Papua New Guinea (UPNG), Port Moresby.
2. PNG University of Technology (UNITECH), Lae.
3. University of Goroka (UOG), Goroka.
4. Pacific Adventist University (PAU), Port Moresby.
5. Divine Word University (DWU)
6. Vudal University (VU), Rabaul.

PNG Mathematical Society (PNGMS)
The PNG Mathematical Society (PNGMS) was formed in 2013 during ICPAM-LAE, and the process of incorporation is now complete.
PNGMS Executive Committee:

- President: Dr. Samuel J.L. Kopamu (UOG)
- V/President: Mr. Samson Menganeng (UNITECH)
- Secretary General: Dr. Cecilia Nembou (DWU)
- Treasurer: Mr. Wilson Tovirika (UNITECH)
- Deputy Treasurer: Mrs. Vagi Bino (UOG)
- Publicity Officers: Mrs. Sharon Pingi and Mr. Rex (UPNG)
- Mathematical Journal: South Pacific Journal of Pure & Applied Mathematics.
- Annual Mathematical Conferences: ICPAM-GOROKA(2014), University of Goroka



Application for Associate Membership

1. Number of PhD holders in mathematics : 10
2. Number of national Phd holders in mathematics: 6 (3 in mathematics education+ 3 in pure and applied mathematics)
3. Number of MSc holders in mathematics : 12 nationals
4. Numbers of mathematics papers published annually : 5-10
5. Number of postgraduates (Honors and Masters) annually: 2
6. Number of Universities: 6

7. Membership of PNG Mathematical Society: 50
8. No organized mathematical activity at present other than annual conferences ICPAM-LAE(2013), ICPAM-GOROKA(2014), etc.

As a developing country, there are a lot of impediments to students and researchers in Papua New Guinea to obtaining the kind of education and research we need.

It is our hope that the acceptance of our application by IMU as associate membership will be a great opportunity for us to interact with mathematicians of the world, and thereby have access to resources and skills presently not available in the country.

APPLICATION of Senegal for Associate Membership

Presentation by Babacar M. Ndiaye

Short history

- ✓ The beginning of the academic mathematics history in Senegal goes back to the year **1957**, when the first University **Cheikh Anta Diop of Dakar (UCAD)** was founded by the French colonial administration.
- ✓ Its **initial academic activities** (teaching and academic program) were coordinated by the French administration until the year **1970**.
- ✓ Now Senegal counts **5 universities** with a Mathematics department each and **2 institutes** with branches in mathematics.

Achievements

Universities / Institutions	**Permanent members**
UCAD	54
UGB	14
University Assane Seck of Ziguinchor (UASZ)	11
University Alioune Diop of Bambey (UADB)	9
University of Thiès and the Polytechnic School	6
African Institute for Mathematical Sciences in Senegal (AIMS Senegal)	4

- ✓ There are **two doctoral schools in Mathematical Sciences** in UCAD (in **2008**) and UGB (in **2012**) created by Senegalese nationals with more than 80 PhD students in total.
- ✓ Each doctoral school is constituted by several **research laboratories in mathematics and their applications**.
- ✓ Since their implementations, more than **25 PhD students** defended their PhD in **mathematics**.
- ✓ **UCAD**:
    1. Laboratory of Algebra, Cryptology, Algebraic Geometry and Applications
        - ✓ Homological algebra, Noncommutative algebraic geometry, cryptography on elliptic curves, etc.
    2. Laboratory of Geometry and Applications
        - ✓ Differential Geometry, Control theory, Complex Geometry, Riemannian and Hyperbolic Geometries.
    3. Laboratory of Computer Science
        - ✓ QOS, Mobility and network security, etc.
    4. Laboratory of Applied Mathematics

- ✓ Probability and Statistics, PDE, Optimization, Numerical Analysis, Functional analysis.

5. Laboratory of Mathematics of Decision and Numerical Analysis
   - ✓ PDE, Geometrical Analysis of Optimal Shapes, Operations Research, Optimization, Numerical Analysis.

✓ **UGB**:

1. Laboratory of Numerical Analysis and Computer Sciences
   - ✓ PDE, Control, Calculus of variations, Information system and database, Coding and cryptography, etc.
2. Laboratory of Studies and Research in Statistics and Development
   - ✓ Statistical methods and probabilities, chronological series, Statistical studies of poverty indicators, etc.

✓ The **SMS** was formed in **December 19th, 1987** from the initiative of some professors interested in the fostering of mathematics in Senegal.

✓ In 2008, **Pr. Mamadou Sanghare** was elected as the president of the Society, a position he occupies until today.

✓ Originally, the **main goal of the SMS** was

1. the improvement of the quality of education in mathematics at all levels countrywide
2. and to provide an environment where Senegalese mathematicians can exchange ideas and devise concrete actions (aiming at the enhancement of the general background conditions for both research and education in mathematics in Senegal).

✓ Over the last 5 years several **international workshops, schools and conferences in mathematical sciences** were organized in the country:

Year	International workshops, schools and conferences
2014	8
2013	5
2012	6
2011	4
2010	4
2009	2

✓ According to the mathscinet databases mathematicians from Senegal have published approximately **544 papers from 2008 to 2014** (only from January to June 2014, we recorded 47 papers).

Year	Number of published papers (from Mathscinet)
2009	82
2010	80
2011	109
2012	112
2013	114

Perspectives

- It is clear from the above achievements how the **Senegalese community of mathematicians increases** in size and in variety.
- In the last 15 years strong **research partnerships** have been initiated. Many of the above laboratories share their master programs and sandwich PhD programs with western laboratories: Canada, France, Germany, Spain, United States, Italy, Sweden, Switzerland, USA, etc.
- **The donors:** the Humboldt foundation; German Academic Exchange Service; IDRC (International Development Research Centre); Simons foundation; World Bank; ICTP; UNESCO-BREDA; IRD; DFID (Department for International Development); Qatar Foundation;

Robert Bosch Foundation; AFD (Agence Francaise de Développement); AUF (Agence Nationale de la Francophonie), UEMOA (Union Economique et Monétaire Ouest Africaine) etc. **continue the funding of mathematical research activities in the country.**

- **The politics**: The National Consultation for Higher Education recently held and its results approved by the recent Presidential Council on Higher Education convened in August 2013 recommends in this respect that the percentage of the University budgets for research be increased through :
  - ✓ **Increasing endowment** through additional State contribution.
  - ✓ The **increase of the budgets** for research groups and laboratories.

For more information about Senegal and scientific research in Senegal:
http://www.gouv.sn/, http://www.recherche.gouv.sn/

19.4. Membership applications balloting: Papua New Guinea, Senegal

The IMU Executive Committee has reviewed the applications of Papua New Guinea and Senegal and recommended to accept the applications.

The General Assembly voted on the application for Associate Membership of Papua New Guinea and approved the application. As of September 2014 Papua New Guinea is an Associate Member of the International Mathematical Union.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

The General Assembly voted on the application for Associate Membership of Senegal and approved the application. As of September 2014 Senegal is an Associate Member of the International Mathematical Union.

VOTE (by show of hands): IN FAVOR = UNANIMOUS

20. Miscellaneous

No request was put forward.

21. Any other item with the permission of the President

No request was put forward.

The President thanked all GA attendants for coming, she thanked the local organizers for the excellent organization and smooth running of the meeting. The President declared the 17th General Assembly closed.

3. International Congress of Mathematicians 2014

3.1. Opening Ceremony

3.1.1. Addresses to the assembly (1)

Hyungju Park, Chairman of the Seoul ICM 2014 Organizing Committee

President Park Geun-hye, Minister Choi Yanghee, Ambassadors, Members of the National Assembly, Excellencies, Distinguished guests, Ladies and gentlemen, Dear friends and fellow mathematicians,

On behalf of the organizers of Seoul ICM, I am truly excited to welcome you from around the world to this Congress.

More than 125 countries are represented in this Congress, and even more if we include the fifty one satellite conferences. I sincerely thank the International Mathematical Union for the help and support it provided during the past years, which saved us from many mistakes and pitfalls. And my heartfelt congratulations go to the prize winners to be announced today.

During the many years of preparations for this Congress, the level of support from the government and corporations of Korea has been phenomenal. The law-making body of Korea, the National Assembly, adopted a resolution in support of Seoul ICM in November 2013 and the Korean government declared the year 2014 as the Korean Mathematical Year in order to maximize the impact of Seoul ICM.

Several prominent corporations made considerable contributions to this Congress underscoring the growing importance of mathematics in the society. This experience of working together with many faces of our society will certainly help to open a new era of expanded roles of mathematics in the 21st century.

With an illiteracy rate close to zero, the education of children is often the highest priority for Korean families. This high regard for education and scholarship explains the steady influx of gifted students into the mathematics profession. It undoubtedly contributed to the rapid economic development of the country.

Our NANUM program required focused and concerted efforts of the Korean math community. It is our wish that the participants of this Congress take the ICM excitement back home, further extending the positive impacts of the Congress to future generations in their respective countries.

This Congress also put much emphasis on public outreach programs. The public lectures by James Simons and by the Leelavati Prize winner, the Baduk match (go game) against renowned masters, and the math movie projection event, to name a few, were made possible by the efforts of our outreach team. These efforts will undoubtedly contribute to making mathematics an essential part of mass culture of our times.

I hope that you enjoy and are rejuvenated by the exciting mathematical lectures and by the company of colleagues from afar. I hope you will also be able to savor some of the fine attractions that our country offers.

Now, this is the opening day. May the excitement last for the remaining days. Again, welcome.

Ingrid Daubechies, President of the International Mathematical Union

President Park Geun-hye, Minister Choi Yanghee, distinguished guests, Prize Winners and families, everybody who is participating and attending here:

In the opening images you saw scenes from past ICMs. We were in Hyderabad four years ago, and before that, in Beijing and Madrid. At the recent General Assembly, which was held just few days ago in beautiful Gyeongju, it was voted that the next ICM will be in Rio in Brazil. But you will hear much more about that in the Closing Ceremony. Now we are here, this year, in Seoul for ICM 2014 in beautiful Korea. During the opening film, you already were introduced to Korea's history, its culture, its beauty, its serenity. During the next few days, we will of course enjoy hearing about the recent advances in mathematics. We will celebrate the IMU Prize Winners. We will revel in being again the company of old friends and in making new acquaintances, making new contacts, maybe laying the base for new collaborations in this international mathematical community. I hope that you will also find some time to enjoy Korea and its beautiful culture, its wonderful nature and its fabulous food. (I'm sure I've gained already several pounds in the last couple of days!) But above all, I think you will find that all this is made possible by the very smooth organization and very hard and sustained work of the Local Organizing Committee. I have had many occasions already, in the preparations to the ICM, to witness their dedication and efforts, and we will continue to do so during the whole ICM. I would like to thank all of them on your behalf, for this work.

To end this welcome address to the ICM, I want to express again my hope that you will enjoy the remainder of this Opening Ceremony and of the whole Conference. Thank you.

3.1.2. Presentation of Medals and Prizes

Presentation of the
Fields Medals, the Nevanlinna Prize, the Gauss Prize, and the Chern Medal Award

Ingrid Daubechies, President of International Mathematical Union

Dear respected participants of the Congress, I am greatly honored to host this memorable event, in my capacity as the President of IMU.

Today's Awards Ceremony at Seoul ICM has a new component compared to past ICMs. Each of the Fields Medalist and the Rolf Nevanlinna Prize winner, who have to be under 40, will be introduced to you by a short movie. These videos are the result of a collaboration of the IMU and the Simons Foundation; the IMU is grateful to the Simons Foundation for having accepted to fund and produce these movies. After each movie, the laureate will step forward to be acknowledged before we proceed to the next movie. The Fields Medalist movies will be shown in the alphabetical order of the last names of the laureates; they will be followed by the movie for the Rolf Nevanlinna Prize winner. After the five movies are concluded, we will proceed to the actual handing out of these five IMU awards.

Fields Medals have been awarded by the IMU since 1936. They recognize outstanding mathematical achievement for existing work and for the promise of future achievement. From the start, they were meant for young mathematicians. The rule is now that to be eligible to receive a Fields Medal, mathematicians must have their 40th birthday after January 1st of the year in which the ICM is held. Let us now meet this ICM's Fields Medalists!

The four 2014 Fields Medalists are, in alphabetical order, Artur Avila, Manjul Bhargava, Martin Hairer and Maryam Mirzakhani.

We will now proceed to the Nevanlinna Prize. The Rolf Nevanlinna Prize has been awarded at every ICM since 1982. It was established by the IMU together with the Finnish Academy of Sciences. It recognizes outstanding contributions in mathematical aspects of information sciences. It is subject to the same age limit as the Fields Medal: to be eligible for the Nevanlinna Prize, the 40th birthday of the winner must be after January 1st of the ICM year.

The 2014 Nevanlinna Prize Winner is Subhash Khot.

At this time, the medals to the Fields Medalists and the Nevanlinna Prize winner will be given to them by the President of the Republic of Korea. We start with the Fields Medals. As before, we will follow the alphabetical order of the laureates' last names. Professor Myung-Hwan Kim, the President of the Korean Mathematical Society, and Professor Sug Woo Shin, Associate Professor of UC Berkeley and Assistant Professor of MIT, will assist the Awards Ceremony. As this ceremony proceeds, I will read the citations for each Medalist.

Artur Avila is awarded a Fields Medal for his profound contributions to dynamical systems theory, which have changed the face of the field, using the powerful idea of renormalization as a unifying principle.

Manjul Bhargava is awarded a Fields Medal for developing powerful new methods in the geometry of numbers, which he applied to count rings of small rank and to bound the average rank of elliptic curves.

Martin Hairer is awarded a Fields Medal for his outstanding contributions to the theory of stochastic partial differential equations, and in particular for the creation of a theory of regularity structures for such equations.

Maryam Mirzakhani is awarded the Fields Medal for her outstanding contributions to the dynamics and geometry of Riemann surfaces and their moduli spaces.

For the Nevanlinna Prize, Professor Pertti Mattila, the representative of the Finnish Academy, will join us on the podium; while he assists with the award ceremony proper, I will read you the citation:

Subhash Khot is awarded the Nevanlinna Prize for his prescient definition of the "Unique Games" problem, and leading the effort to understand its complexity and its pivotal role in the study of efficient approximation of optimization problems; his work has led to breakthroughs in algorithmic design and approximation hardness, and to new exciting interactions between computational complexity, analysis and geometry.

We will now announce the next two IMU Prize winners. The winners of both the Gauss Prize and the Chern Medal Award will be called to the stage and acknowledged first. We start with the first established of these two prizes, namely the Carl Friedrich Gauss Prize.

The Gauss Prize has been awarded at the ICM for the first time in 2006 and is now awarded at every ICM. The Prize was established by the IMU and the German Mathematical Society. It honors a scientist whose mathematical research has had an impact outside mathematics -

either in technology, in business, or simply in people's everyday lives. The Gauss Prize will be presented by Professor Alfio Quarteroni, the Chair of the Carl Friedrich Gauss Prize Committee for 2014, who is now joining us on the podium. Professor Jürg Kramer, the President of the German Mathematical Society will represent the German Mathematical Society.

Alfio Quarteroni, Chair of Carl Friedrich Gauss Prize Committee for 2014

Stanley Osher is awarded the Gauss Prize for his influential contributions to several fields in applied mathematics, and for his far-ranging inventions that have changed our conception of physical, perceptual, and mathematical concepts, giving us new tools to apprehend the world.

Ingrid Daubechies, President of International Mathematical Union

It is now the turn of the Chern Medal Award. The Chern Medal Award was awarded for the first time at the 2010 ICM and is now awarded at every ICM. It was established by the IMU and the Chern Medal Foundation in cooperation with the Simons Foundation. It is awarded to an individual whose accomplishments warrant the highest level of recognition for outstanding achievements in the fields of mathematics. The Chern Medal Foundation and the Simons Foundation will be represented by Trustee May Chu of the Chern Medal Foundation and President James Simons of the Simons Foundation, who are now joining us on the podium.

I present the 2014 Chern Award winner, Phillip Griffiths. The chair of the Chern Medal Award committee, Robert Bryant, asked me to read the citation to you.

Phillip Griffiths is awarded the 2014 Chern Medal for his groundbreaking and transformative development of transcendental methods in complex geometry, particularly his seminal work in Hodge theory and periods of algebraic varieties.

At this time, we are ready for the awards to be handed to the Gauss and Chern Award winners. This will be done by President Park Geun-hye of the Republic of South Korea.

The 2014 Carl Friedrich Gauss Prize winner, Stanley Osher!

For the Chern Medal Award, we will be joined by May Chu, the Trustee of the Chern Medal Foundation, and President Jim Simons of the Simons Foundation.

We will now proceed with the Chern Medal Award.

The 2014 Chern Medalist, Phillip Griffiths!

3.1.3. Address by the President of Korea

Park Geun-hye, President of the Republic of Korea

Honored mathematicians, respected Ingrid Daubechies, President of IMU (International Mathematical Union), distinguished guests from home and abroad, and ladies and gentlemen,

I am highly delighted that the International Congress of Mathematicians, which boasts more than one hundred years of history and tradition, is being held in Seoul.

Today more than 4,000 mathematicians from approximately 120 countries and plenty of young people dreaming to create a better future through mathematics have joined us here. I would like to extend my sincere welcome to all of them. Let me first express my sincere congratulations to seven mathematicians, who have been awarded the Fields Medals, the Rolf Nevanlinna Prize, the Carl Friedrich Gauss Prize, and the Chern Medal Award. In particular, I highly honor and admire the great spirit of challenge and passion of Dr. Maryam Mirzakhani, the first female to be awarded the Fields Medal in its history.

Ladies and gentlemen, the study of mathematics enjoys the longest history within academia and its magnificent legacy has been with us throughout the entire history of humanity. From ancient times when humanity still lived without letters people started to calculate and measure. Indeed, mathematics transformed the life of humanity as universal language, going beyond regions and nations, and serving as the basis of human logical thinking.

Even in this modern era, mathematics is still a critical foundation that stands at the center of the development of advanced science and technology and changes in our lives. Without mathematics, it would have been impossible to develop digital technology, which played a critical role in bringing about the ICT revolution. Without mathematics, we would now live in a world without our favorite movies and animations produced by computer graphics. By applying mathematical models in finance and analysis of Big Data, new services and markets are created. As we can see from these examples, mathematics allows us to solve problems with new methods and principles and creates much higher added values by converging with various fields, such as science and technology, industry, and culture and art. I firmly believe that the development of humanity in the future is closely intertwined with mathematics.

The world has now entered an era of creativity and innovation where a single individual's outstanding creation and ideas can move the entire world. In this sense, creative, logical and rational thinking that we acquire through mathematics is one of the most critical qualifications for our future leaders. That is why I sincerely hope that mathematics will develop not only as a pure academic subject for mathematicians but also as enjoyable and understandable learning for the general public and our youngsters who will be leading the future. I would like to ask the honored mathematicians gathered here to inspire our young generation to enjoy mathematics and grow up as creative and talented individuals with a sense of creativity and rationality who ultimately contribute to the future of humanity.

Honored mathematicians, Korea achieved remarkable economic growth within a short period of time and a parallel advance was achieved in the study of mathematics in spite of a late start. Korea first joined the International Mathematical Union (IMU) in 1981 as a member country of the lowest ranking group I. Later in 1993, its status was elevated to group II and in 2007, it was promoted to group IV, climbing two rungs of the ladder at once. Koreans are deeply grateful to the world's mathematical community who have cordially welcomed Korean mathematicians into their midst. Under the name of "NANUM," we invited approximately 1,000 mathematicians from developing countries to share the dreams and hopes that Koreans have enjoyed. Korea will be more than willing to contribute to co-prosperity of the entire humanity by sharing our experience and know-how with the rest of the world in various sectors, including the economy.

Respected mathematicians, to my knowledge, more than 1,200 papers have been released through this Congress and various public lectures will be delivered by renowned mathematicians in tandem with financial investors. We count on your dedication and commitment to expand the academic foundation of mathematics through deeper and broader discussion and to ultimately contribute to the advancement of humanity. It is my sincere

expectation that many students and public who find mathematics very difficult can have an opportunity to develop genuine interest in mathematics and find out the unique charm and joy that only mathematics can give.

Encircled by beautiful traces of our long history, Seoul is a city with numerous ancient wonders, such as our royal palaces, but also a modern city with state-of-the-art in industry and culture. Please enjoy the beautiful cultural heritage and vitality Korea offers and fill your hearts with precious and wonderful memories during your stay.

Thank you.

3.1.4. Addresses to the assembly (2)

Announcements

Ingrid Daubechies, President of the International Mathematical Union

We have one more announcement to make, one more IMU prize to announce, namely the Leelavati Prize. The Leelavati Prize was awarded for the first time during the Closing Ceremony of the ICM in 2010. It was established by the IMU and the Indian government; it is now funded by Infosys, as a permanent IMU prize to be awarded at every ICM. It is awarded for outstanding contributions to increase the public awareness of mathematics as an intellectual discipline and the crucial role it plays in diverse human endeavors.

The 2014 Leelavati Prize will be awarded to Adrián Paenza for his decisive contributions to changing the mind of a whole country, namely Argentina, about the way it perceives mathematics in daily life and, in particular, for his books, his TV programs, and his unique gift of enthusiasm and passion in communicating the beauty of mathematics.

The prize itself will be awarded only at the Closing Ceremony; you will have your own chance of witnessing his enthusiasm and his passion during the public lecture he will give, in this very hall, at 8 in the evening on August 20, the last full day of the Conference.

Next, I have an extra surprise for you. Although all the IMU prizes have been awarded or announced, there is an extra announcement to be made and an extra award to be given. The Chern Medal Award consists of several components. Two of these are a Medal and an award for the recipient, which Phillip Griffiths, the 2014 Chern Medal Award Winner, received just minutes ago from the hands of President of the Republic of Korea. But there is a third component, which is a check of 250,000 dollars that the Chern Medal Award Winner can direct to a charitable organization of his choice. I learned, with great delight, that Phillip Griffiths, has designated the African Mathematics Millennium Science Initiative, or AMMSI, as the designee of this award. AMMSI is an organization close to the heart and the concerns of the Commission for Developing Countries (CDC) of the IMU, it was featured yesterday at the one-day symposium Mathematics in Emerging Nations: Achievements and Opportunities (MENAO), organized by the IMU. AMMSI is affiliated with several CDC initiatives that help developing countries reach higher level of mathematics and sustain and foster their mathematical communities. I would like to invite May Chu and Jim Simons, who are representing the Chern Medal Foundation and the Simons Foundation, respectively, the Chern Medal Award Winner for 2014, Phillip Griffiths, and Wandera Ogana, the director of AMMSI, to join me on the stage, please.

Phil Griffiths is known for not only his outstanding mathematics and his brilliant and effective service to the mathematical community; in recent years he has also been very active in fostering mathematics in developing countries, especially in Africa. I am sure that this award is appreciated not only by AMMSI but by every one of us who strives to work towards bringing mathematics everywhere. Thank you so much, Professor Griffiths.

IMU has become more active in the last few decades in fostering the growth of advanced mathematical education and research in Emerging Nations. The NANUM initiative, cited several times already and in particular by the President of Korea, was a wonderful initiative of the Korean Local Organizing Committee, as well as the whole Korean mathematical community, that fit beautifully in this whole framework, thereby freeing up CDC resources. Typically the CDC sets aside money every year, prior to every ICM, to bring mathematicians from developing countries and fund their participation in the ICM.

With part of these freed up resources, CDC organized the one-day MENAO symposium yesterday. The symposium made the case, through presentations of economics expert in these matters, as well as through case studies (Korea was one among those) and, examples, that promoting advanced mathematical development in a country benefits its economic development.

MENAO also showcased many further opportunities, where, with modest funding, a great impact can be obtained. We had presentations from a whole alphabet-soup of organizations, each of which does fantastic things with fairly modest means, reaching many mathematicians. Just to give a few examples: CIMPA organizes fantastic summer schools in all developing countries in the world; UMALCA, the Latin American and Caribbean association, coordinates immense efforts from the more developed countries in that region to help the less developed; TWAS, the World Academy of Sciences, strives to find fellowships for graduate students everywhere in the developing world; CANP, an initiative of ICMI, the instruction branch of the IMU, helps build capacity for mathematical education in less developed regions by establishing network programs. So many more initiatives were showcased at MENAO, among which AMMSI, which we just saw honored by the Chern Medal Award Winner.

In connection with all this, CDC is launching the Adopt-a-Mathematics-Graduate-Student initiative, which we hope will interest mathematicians in developed country interested in mentoring and helping support a student in a developing country. If this is your case, CDC is working on a framework to match you, one-on-one with such a student. You can find a preliminary description on the Friends of the IMU webpage; more will come on the CDC webpage soon.

At MENAO, we couldn't yet announce the fantastic gift directed by 2014 Chern Medal Award Winner to AMMSI, because the Chern Award winner hadn’t been announced publically. But we had yet another fantastic announcement, which I am happy to also broadcast to all of you here. Namely, the five inaugural winners of the Breakthrough Prize in Mathematics, Simon Donaldson, Maxim Kontsevich, Jacob Lurie, Terence Tao and Richard Taylor, have let me know just a few days ago that they will each donate $100,000, for a total of $500,000, to the IMU CDC to endow a fund that will award Breakout Graduate Fellowships to math grad students from and in the developing world.

The IMU is profoundly grateful for the support from Phil Griffiths and from the five Breakthrough Prize Winners to graduate education in the developing world. It also hopes that this generous and shining example by top leaders of our mathematical community, who believe in the small and collective efforts that we make and the impact these have, will inspire others, both within and from outside the mathematical research world. Should you already

want to emulate them in a small way, you can do so right during ICM by participating in DonAuction, a fundraising initiative that will last only for the period of the ICM. Check it out at www.donauction.org or at the IMAGINARY stand in the ICM Exhibition space.

IMU's most important business listed at the top of its charge is the organization of our quadrennial International Congress. During the Congress, we will hear Plenary Lectures by outstanding mathematicians, who have been asked make them accessible to a wide range of mathematicians present here. We also will have Invited Lectures in many different directions. This ICM will have a record number of cross-listed talks, in the different sectional meetings, illustrating the large extent to which different subfields within mathematics are cross-fertilizing and influencing each other, a wonderful development. We will, of course, all celebrate our Prize Winners, who will give their own lectures. We will have public evening lectures, the first one tonight by Jim Simons and the last one on August 20th by the Leelavati Prize Winner, Adrián Paenza. Apart from all this, I hope that you will also enjoy some of the outreach activities, and visit the ICM exhibition space. And if you get a chance, visit the Bridges 2014 conference, held in parallel to ICM, just a subway ride away in Gwacheon Museum organized by the Bridges Organization of Math and Art.

I hope you will fully enjoy the ICM, the core of the Conference itself, the many other activities that the Local Organizing Committee has organized around it and your stay in the city of Seoul. Thank you so much for coming.

IMU Status Report

Martin Grötschel, Secretary of the International Mathematical Union

The exquisite glamour and the particular thrill of this opening ceremony are almost over. It is now time for the “boring stuff”. The IMU Secretary is supposed to report, in the last presentation of this event, a glimpse of the “State of the Union”.

Before doing this, let me mention that there has been very hard work behind the shine that you have seen and the lightness and friendliness that you have experienced in Seoul so far. I chaired the organizing committee of ICM 1998, and I remember the effort involved well. Having been in close contact with the ICM 2014 organizing committee, I do know what Hyungju Park and his team have suffered in the last years, in particular in the recent months and days. Let us not forget, the team consists of volunteers and they do all that in their free time with great energy and outstanding enthusiasm. Please give an extra applause to the colleagues involved in the organization of this great congress and all the additional activities associated with it.

My job is to report to you about those people and organizations who have been working in the last years behind the scenes for IMU and the mathematical community in general. I want to point out that it has been a pleasure to collaborate with all the colleagues. Consensus could always be reached, even despite initial dissents, since everyone served a joint good cause: to promote and foster mathematics. Having been active for IMU for the last 20 years and finishing my term as IMU Secretary at the end of this year, I can honestly state that I have enjoyed all the work, that I feel happy to be a mathematician and to belong to this wonderful community.

The role of the IMU Secretary is not to provide you with a vision of mathematics and tell you how I or how IMU thinks the future of mathematics is going to be. Many lectures at this congress will take care of that. I will tell you about some details of our work so that you know what IMU has done in the recent four years. It will be brief, and I will highlight only a few memorable topics.

The ICM-related committees are of particular importance. You have seen the winners of the IMU awards a few moments ago and you have certainly studied the list of invited ICM lecturers. Many colleagues were involved in choosing them. The IMU Executive Committee (EC) set up the ICM 2014 Program Committee and one committee for each of the IMU prizes: the Fields Medals, Nevanlinna Prize, Gauss Prize, Chern Medal Award and the Leelavati Prize as well as for the ICM Emmy Noether Lecture.

The *Program Committee* (PC) is responsible for the scientific program of ICMs; the 2014 PC was chaired by Carlos Kenig and had eleven further members: Erwin Bolthausen, Alice Chang, Welington de Melo, Hélène Esnault, Tim Gowers, Ravi Kannan, Jong Hae Keum, Claude Le Bris, Alex Lubotzky, Jarik Nesetril, Andrei Okunkow. The PC was supported by nineteen section panels. They jointly succeeded in coming up with an outstanding list of speakers and in reaching a reasonable balance of regions, gender and mathematical fields. A rough count shows that the number of PC and panel members is about the same as the number of invited speakers, i.e. one PC/panel member chose one speaker – a truly significant selection effort.

The *Fields Medal Committee* consisted of Luigi Ambrosio, David Eisenbud, Kenji Fukaya, Étienne Ghys, Benedict Gross, Frances Kirwan, János Kollár, Maxim Kontsevich, Michael Struwe, Ofer Zeituni, Günter Ziegler and was chaired by IMU President Ingrid Daubechies. This committee is fully responsible for the choice of the award winners. The same rule holds for the other IMU prizes. The EC does not interfere; all IMU prize selection committees work autonomously - their choice is IMU's choice. I think we all agree that great choices were made.

The S*election Committee for the Nevanlinna Prize* was chaired by Avi Wigderson and had Thierry Coquand, Yuri Nesterov, Jaikumar Radhakrishnan, Éva Tardos, and Leslie Valiant as additional members. The *Gauss Prize Selection Committee* consisted of Weinan E, Barbara Keyfitz, Andrés Weintraub, Aad van der Vaart and Alfio Quarteroni as chair. Robert Bryant chaired the *Chern Medal Award Selection Committee* which had Kazuo Murota, Felix Otto, Alain-Sol Sznitman and Claire Voisin as additional members. Finally, David Mumford chaired the *Leelavati Prize Selection Committee* and was supported by Oh Nam Kwon, Guillermo Martínez, M.S. Raghunathan, and Srinivasa Varadhan. The task of the Leelavati Prize Selection Committee is particularly difficult since it has to search the world with its many different languages and cultural habits to find a person that contributed significantly to the public awareness of mathematics as an intellectual discipline and of the crucial role it plays in diverse human endeavors. A wonderful Argentinian prize winner was detected. Please, attend his lecture on August 20.

The responsibility for all IMU activities rests with the *IMU Executive Committee* (EC), which consists of a President, a Secretary, two Vice Presidents, six Members-at-Large, and the Past President, who has no voting rights. The EC is elected by IMU's *General Assembly* (GA), which appoints the EC for a four-year term. The GA is the "international parliament of mathematics" and consists of the delegates of all members of IMU. Each member is represented by a number of delegates that depends on the membership group (1 to 5) it adheres to.

The GA met on August 10 and 11, 2014 in Gyeongju and decided on the IMU leadership for the term 2015-2018. Shigefumi Mori will be the next President, Helge Holden the IMU Secretary, and Alicia Dickenstein and Vaughan Jones the new Vice Presidents. The Members-at-Large will be Benedict Gross, Hyungju Park, Christiane Rousseau, Vasudevan Srinivas, John Toland and Wendelin Werner. Shigefumi Mori, a former Fields Medalist, is the first IMU President from Asia ever. VP Alicia Dickenstein is the first mathematician from Argentina joining the EC and Hyungju Park the first Korean member of the EC. With Vaughan Jones and Wendelin Werner the EC has three Fields Medalists as its members: the highest EC Fields Medal density ever. Together with Ingrid Daubechies, these eleven colleagues will work hard in the next four years to promote, encourage and support many international mathematical activities.

There are subtle issues that the IMU usually does not mention in public. IMU often receives requests to help mathematicians who have been imprisoned for political reasons (not for crimes) or who have been treated unfairly. Advice is requested from political institutions intending to advance mathematics. Mathematical institutes in danger of getting shut down or in financial trouble ask for support in their struggle to survive, and we seek for donors and sponsors for mathematical activities. IMU representatives work behind the scenes and try their best to help mathematicians wherever possible. If you have crucial difficulties and feel that international assistance might be of advantage, just send a message to the IMU Secretary.

Significant work is done in IMU's Commissions and Committees. The largest commission is the *International Commission on Mathematical Instruction* (ICMI) that, founded in 1908, is actually older than IMU itself. ICMI has a wide range of activities. I want to mention just one which I consider to be of particular importance: the Capacity and Network Project (CANP). CANP aims to enhance mathematics education at all levels in developing countries making their people capable of meeting the challenges these countries face. CANP helps develop the educational capacity of those responsible for mathematics teachers and creates sustained and effective regional networks of teachers, mathematics educators and mathematicians, also linking them to international support. The major activity of a CANP project is a two-week workshop for about forty participants, half of them coming from the host country and half from regional neighbors, primarily aimed at mathematics teacher educators. CANP workshops have been held in Mali with participants from Sub-Saharan Africa in September 2011, in Costa Rica in August 2012 with Central American and Caribbean participants, in Cambodia in 2013, and the next one will be held in Tanzania in September 2014. Financial support came primarily from IMU, contributions from UNESCO, ICSU, ICIAM, RECSAM and SEAMS are acknowledged.

The Internet and the World Wide Web have transformed mathematical communication at least as much as the introduction of journals. This transformation and many of the commercial pressures affect mathematicians in many ways. The IMU EC formed the *Committee on Electronic Information and Communication* (CEIC) in 1998 to watch these developments, advise the EC, through it the IMU and mathematicians generally about these trends and best ways to adapt to these changes. I want to mention here only three panels organized by CEIC at this congress that represent typical aspects of CEIC activity. Lead by the CEIC chair Peter Olver, CEIC members and invited experts will discuss the perspectives of "Mathematical Massive Open Online Courses", provide their views of "The Future of Mathematical Publishing" and describe efforts that may lead to "The World Digital Mathematics Library" that we are all dreaming of, namely an electronic repository that makes the mathematical literature of all time online available for everyone everywhere in the world free of charge. Please, stay informed by attending these panel discussions.

The *Commission for Developing Countries* (CDC) has been mentioned so often so far at this opening ceremony that I will not add much to it. It is impossible, though, not to praise in this context the NANUM project that is an initiative of our Korean colleagues to invite about 1,000 mathematicians from the developing world to ICM 2014. I hope that the NANUM grantees will seize the unique chance to meet and network here with colleagues from the world over. The MENAO (Mathematics in Emerging Nations: Achievements and Opportunities) Symposium that CDC launched yesterday capitalized on the NANUM grantees and brought together a large number of mathematicians from the developing world, active and potential sponsors, and colleagues with particular interest in supporting mathematics in developing countries. There were outstanding lectures that showed how mathematics has helped shape countries, lives, individuals and communities. These lectures were more than a loud call to IMU to keep on going in this direction.

At the GA meeting last weekend, Wandera Ogana has been elected as the new CDC president, Herb Clemens and Kesavan as the CDC secretaries, and the three new CDC members representing Latin America, Africa and Asia come from Columbia (Alf Onshuus), Cameroon (Mama Foupouagnigni) and Philippines (Polly W. Sy). Three more CDC members will be appointed in the near future.

During the last four years the following countries have joined IMU as Associate Members: Cambodia, Gabon, Madagascar, Malaysia, Moldova, Nepal, and Oman. The applications of Papua New Guinea and Senegal were approved two days ago. They will be new IMU Associate Members as of September 1, 2014. IMU has three new Full Members: Montenegro, Algeria and Ecuador, which was upgraded from Associate to Full Member.

To summarize the membership development: IMU has now seventy-one full member countries, twelve are associate members, and four international organizations are affiliate members. At ICM 2014, we count participants from 125 countries, and thus, there is more room to grow.

Papua New Guinea and other new Associate Members are not hotspots of mathematics yet, but IMU is trying hard to develop mathematics everywhere. Let us look at Korea and let me go back with you to the year 1981. How many papers did mathematicians from the Republic of Korea, the host country of this event, publish in 1981 in international journals? Have your own guess! The almost unbelievable answer is 3! Korea is now number 11 in the world ranking of mathematical publications. What a progress! Let us hope that some of the countries that now became IMU members or associate members will experience the same steep growth that, to a large extent, is based on a strong emphasis on education.

I started my presentation with saying that I am not going to tell you visions about mathematics; but I have one slide that I would like to show you - and I hope it indicates something to think about. It is my firm belief that mathematics is THE scientific endeavor of this century! The reason for my conviction is that all advanced industries and all advanced sciences have meanwhile understood that mathematics is utilized in great depth and breadth for the understanding of nature, the modelling of industrial processes, the shaping of products, etc. Companies that want to stay competitive need mathematics, and if we want to save resources and make careful use of our environment, mathematical modelling, simulation and optimization are indispensable.

All this is unfortunately not so well known in the public, and that is something we have to change by intensifying our outreach activities, one reason why the Leelavati Prize was set up. It may sound strange, but also many mathematicians are not aware of the influence that

mathematics has in real life in the world around us. It seems that we have to explain also within our community how important mathematics is.

Yesterday at the MENAO event, Eric A. Hanushek, an economist investigating the influence of education on economic development, reported his finding that cognitive skills are causally related to economic development and that variations in growth rates across countries can be explained by consideration of the role of cognitive skills. He emphasized the importance of mathematical education in these processes. Hanushek's observations were corroborated by Korea's former Minister KunMo Chung, who spoke about the contribution of mathematics to the development of a country. The clear statement was that the development of skills, in particular mathematical skills, is the most important aspect of development and growth. He also stressed that education at the top level does not suffice, good mathematical education on all levels is necessary. That is a message we have to bring home to the ministries in our own countries. We have to work on the whole range of education in order to go forward and grow.

My final slide is an organizational chart. Four years ago the General Assembly decided that the International Mathematical Union should have a permanent office. Since 1920 IMU has been run by volunteers only. The GA felt that some sort of professionalization would be necessary and asked for bids for establishing a permanent IMU Secretariat. Berlin won the contest and the new office with five employees was opened in the beginning of 2011. But, of course, IMU is not dominated by the Secretariat; it is still lead by the committees and commissions I have told you about and run by volunteers who contribute to IMU in their free time. Look around and see what volunteers can achieve!

This is the end of my report about what IMU has been doing. I do hope you feel somewhat encouraged thinking about contributing to IMU and its activities in the future. Please, also consider contributing to the development of mathematics in your own country, join the mathematical organizations and societies in your scientific environment, promote our science and make it stronger.

Thank you for your attention.

3.2. Closing Ceremony

3.2.1. Addresses to the assembly (1)

Hyungju Park, Chairman of the Seoul ICM 2014 Organizing Committee

Ladies and gentlemen and my fellow mathematicians,

I am so happy to be here in this very gracious ending of what we have been going through for nine days. We wanted this to be, instead of a formality, we wanted this Closing Ceremony to be more festive and filled with expectations for the next one. Here, you will soon hear from the next ICM Chair about their plans and we already started looking forward to that. So I will briefly report some numbers and some statistics about this ICM so that maybe you can all share what we have achieved and what we have done for the past nine days. Before we move on, during our Conference Dinner, I confessed some of our mistakes and people thought that was fun. So I will reveal some more of our mistakes today.

Early this spring, we were told that the Pope will be visiting on the day of the Opening of ICM. So we all panicked because we were hoping that the President of Korea will come to our Opening and award the medals and prizes and it's not easy to compete against the Pope. We were very worried and eventually the Vatican graciously changed their schedule. My suspicion is that some of the members of the Local Organizing Committee who are Catholics maybe made some extra efforts to change the Vatican's mind.

Another big crisis hit us several months ago also when we discovered that COEX, this convention center, was undergoing a huge renovation project. If you actually go down to the basement, where hundreds of small restaurants and cafeterias are, the whole area has been renovated. That means that poor mathematicians will be busy listening to the lectures but will be starving. So that was another crisis we had. We worked with many people and the COEX people and they actually helped us a great deal. They rented us big rooms, C1, for free. That room was given to us for free so that we can run a small food court there. That food court was offered to us free of charge and that solved the problem. But, in a sense, it actually was even better than usual because mathematicians could all come there and chat over lunches and I think it worked better that way. At this point, I would like to show my gratitude to the COEX management for being so flexible.

Of course, a TV station called EBS was very gracious and they actually put the Opening Ceremony on air, live, during the Opening. It was like a sports event being broadcasted live with commentators. So this time, our Opening Ceremony was broadcasted to whole Korea live with two math professors as commentators. It created a new job. Now mathematicians can be hired as commentators.

You might have noticed we have filmed all the plenary lectures, invited lectures and important events. They are being uploaded to Youtube and they are all available with links on our homepage. So you can actually re-watch. If you missed any interesting lectures, you can watch them through our homepage now. We didn't hire professionals for that. Twenty-some volunteers teamed up and they rented equipment. They filmed all the things, did the editing and stayed until 1 a.m. each day to finish editing and put them up on Youtube. Because our Wi-Fi bandwidth is limited, they couldn't do it during daytime so they did it until 1 a.m. in very late nights. And I think it's really touching that these volunteers were not paid at all. We just covered their transportations. I think that's a huge act of sacrifice and dedication. So, thanks to their efforts. I think the whole math community of the world now can watch and savor the memories and interesting mathematics that was presented in this Congress.

There were other things but I would just like to say one thing, though. We have offered to invite 1,000 mathematicians from developing countries. Not all of them made it here. I wish to express my sorrow for that. It turned out many of them didn't have an international travel experience before so assumed that visas can be obtained on the spot on the same day, which is not usually the case. Whenever somebody called us asking for help in obtaining a visa to Korea, we called the Korean embassy in that country and we requested emergency actions and usually it worked. The Korean foreign ministry supported our initiatives a lot and they acted to issue the visa in an expedited manner. However still, many of the NANUM recipients didn't get visas and didn't let us know and I feel very sorry that many NANUM recipients couldn't come because of the visa problems. As far as I know, there are two mathematicians who wanted to come but could not because of political reasons. I hope the international math community would address this in the future so that this is not repeated. I will not release the identities of those two but I know as a fact that they did not obtain passports from their government because of their political beliefs.

We are very grateful for all the things. We are grateful for the good things that happened and we are grateful for your forgiveness for what we didn't do well. And I thank you for just seeing the bright side and telling us that we did a good job. I know we probably screwed up some of the things but thank you for not telling that to us now. But later, feel free to let us know so that we can pass that onto the next organizers so they don't repeat our mistakes.

Ok, so I guess I will show some numbers. I will do it very quickly. We had four Fields Medalists. Let us congratulate them again. We have more.

We had these presentations. This is scientific programs. So we had a lot. We had minimal, I think, no-shows. Every conference has some no-shows. That's not avoidable, I think. But we had very little. The number of invited lecture presenters, we had 188. We had many abstracts. You see the number is a little too much because Congress participants, we had 4,680 regular participants plus 537 accompanying persons. So we had a total of 5,217 people who are registered. We had many media representatives here, many journalists. And there were over 20,000 high school kids and from the general public visiting us. How did we count them? Because we asked them to sign up for the Simons lecture and these big events and then the people who just came without prior signing-up, we charged them one dollar for entrance. So we can now count the money. So that's how we came up with 21,227 participants of this Congress. I thank the general public for the enthusiasm. So that's the number of participants. There were a huge number of Korean participants and there were many colleagues from USA. That's the statistics regarding the regions and that's the number of participants.

NANUM. Eventually I told you that we issued invitations but many people couldn't come and that's the end result. Those are the ones who actually brought their documents and got the reimbursement. So those were the reimbursements we issued. I hope that everybody got their reimbursement so far. By the way, there were 85 countries represented in the NANUM program.

We had, again, a lot from the general public; especially the exhibitions were very well visited. We had many booths. We had 564 staff members: 63 members of the Local Organizing Committee and we had, more than anything, 282 volunteers on site. Again, my deepest gratitude goes to the volunteers. These boys and girls really did a great job and they are still here helping us. By the way, after this Closing Ceremony, we're throwing a party for them so they will have a party all night.

Believe it or not, there have been close to 1,500 media coverages about this Congress during this Congress. This doesn't count the coverages made before the Congress. I think this is unheard-of, unprecedented, and this will be what we will start with. Other people in other science disciplines in Korea are just envying mathematicians for having done this. So these are the articles that appeared. By the way, this LED is too bright that no pointer will work with it. I'm very sorry to the plenary speakers who gave talks here, who couldn't use their pointers because pointers simply do not work with this. So you see that the Korean public was especially thrilled to see the first female Fields Medalist together with the first woman president of Korea together with the first woman president of IMU.

I know I overused my time. I was pretty on time during the Opening so this is a payback. So thanks a lot and we will go on with others, especially the next ICM plan will be exciting. So let us hear from others.

3.2.2. Presentation of Prizes

Presentation of the Leelavati Prize, sponsored by Infosys

Ingrid Daubechies, President of the International Mathematical Union

The time has now come for the Awards Ceremony for the Leelavati Prize.

The Leelavati Prize was awarded for the first time during the Closing Ceremony of ICM 2010 in Hyderabad. The prize was established by the IMU and by the government of India; it is presently funded by Infosys, as a permanent IMU prize to be awarded at every ICM.

The Leelavati Prize accords high recognition for outstanding contributions to increasing public awareness of mathematics as an intellectual discipline and the crucial role it plays in diverse human endeavors.

Following the precedent set at its first awarding at ICM 2010, it was decided that the Leelavati Prize winner will be announced during the Opening Ceremony, but that the award ceremony itself is part of the closing exercises of each ICM. Adrián Paenza, the 2014 Leelavati Prize winner, gave an exciting public lecture yesterday in this hall, in which he inspired kids (who mobbed him afterwards) to not give up on math, so they would end up seeing the beauty in it, and he encouraged all mathematicians to be more involved in the teaching of mathematics in schools so that we can show them the "right door" to which to enter math.

Adrián Paenza: I would like to call you forward to hand out the prize to you. You have been awarded the prize for your decisive contributions to changing the mind of a whole country about the way it perceives mathematics in daily life and, in particular, for your books, your TV programs and your unique gift of enthusiasm and passion in communicating the beauty and joy of mathematics.

Infosys, the company funding this prize, had hoped to be able to send an officer to represent them, but in the end scheduling problems prevented this. Instead, Mr. Narayana Murthy, the founder of Infosys and the Chairman of their Board, asked me to read the following statement.

"Infosys is proud to sponsor the Leelavati Prize, which recognizes contributions in public outreach in mathematics. I would like to congratulate Adrián Paenza on winning this prize. Mathematics is often viewed as complicated by students and adults alike. Adrián has translated his love for the subject into work that addresses this issue via popular media like books and television. I'm sure this has helped remove some mysticism and phobia around mathematics for many. We are pleased to recognize his accomplishments and enthusiasm in these fields to the Leelavati Prize. Thank you."

Adrián Paenza, 2014 Leelavati Prize Winner

"It is a great honor for me to be here. But as an Argentinian mathematician, I am not unique in being honored this year. Argentinian mathematicians have been doing great work for so many years, and this year several of us are being honored. Miguel Walsh, just 26 years old, got the Ramanujan Prize; Alicia Dickenstein was elected as Vice-President of the IMU a few days ago, and now it is my turn, receiving the Leelavati Prize. South America in general can be

proud -- with Arthur Avila receiving a Fields Medal at this ICM, last week. None of these achievements are isolated; seeing them as part of a whole framework makes us even happier.

Math is great. We need to grant public and free education for everybody. We also need to understand that education is a basic human right. We, mathematicians, should be more involved, as Ingrid was saying, in trying to lead our kids thru the 'right door'.

So, thank you very much and I also want to say a couple of words in Spanish, thanking also my students and my colleagues at the University of Buenos Aires. Without them, my work would definitely have been impossible. So...

"Muchisimas gracias a todos los argentinos también. Sientan este premio como que es un premio para ustedes. Mi gratitud para todo mi país". (Translation: "Many thanks to all the argentinians too. Feel this award as an award to all of you. My gratitude to everybody in my country")

3.2.3. Addresses to the assembly (2)

Ingrid Daubechies, President of the International Mathematical Union

This is the last event of the ICM. There will be many IMU activities after the ICM; let me tell you a little bit about them. In January 2015, a new Executive Committee will take over. Today we have here our new President, Shigefumi Mori, who will speak after me (this is the last time I get to address you all in my capacity of IMU President!) Helge Holden will be the new Secretary. Alicia Dickenstein and Vaughan Jones will take office as Vice Presidents, and we have also new Members-at-Large of the Executive Committee. I will still be present at Executive Committee meetings but without a vote. So I am fading away, and happy to do so.

At the General Assembly in Gyeongju, the IMU created the IMU Circle, which consists of former organizers, committee chairs, EC members of the IMU and other people who have been a great service to the IMU. Their list will soon be posted on the IMU website, which is, as you all should know, mathunion.org.

We also have new members for the International Commission on the History of Mathematics (ICHM) and new members will soon be added to the Committee on Electronic Information and Communication (CEIC). All this information can be found on mathunion.org. The new members of the Commission for Developing Countries I would like to introduce explicitly. They are President Wandera Ogana, C. Herbert Clemens, Srinivasan Kesavan, Alf Onshuus, Mama Foupouagnigni and Polly Sy from the Philippines.

At this ICM, apart from the programs that the Programs Committee put together, there were also three extra panels that were organized by the Committee on Electronic Information and Communication: Mathematical Massive Open Online Courses (MOOCs), Future of Publishing and World Digital Mathematics Library (WDML). Blogs on the first and the third topics will be accessible via mathunion.org as always. On the second topic, there did not seem to be any apparent feeling that a blog was needed. If many of you feel that the blog on publishing should be reopened, please let us know.

Just prior to the ICM, CDC organized a one-day symposium on "Mathematics in Emerging Nation: Achievements and Opportunities", which we call MENAO for short. Lots of the

material that was available, talks and other materials will be posted on the CDC page on mathunion.org. (At the end of this, I hope you will know, almost like a mantra, that you need to go to mathunion.org to find news about the IMU!)

There was also a longer report written on IMU in the developing world in the context of this meeting, which is called "The IMU in the Developing World". That report, since it was suggested by the organization Friends of the IMU (FIMU), has been posted on FIMU's website, friends-imu.org.

Yesterday, as you saw on the video, DonAuction culminated with a live prize drawing emceed by Cédric Villani, who did a wonderful job, as always. There were, in the end, over 400 different people who contributed, here and online. Over 400 people... And the total was over ten million Korean Won, I think that deserves your applause! All of you, you are friends of the IMU.

For the transparency of the whole drawing process, we will post everything on donauction.org. Please give us a little time to get home and to get over sleep deprivation and then everything will be posted. If you missed the whole DonAuction initiative, don't worry. There will be other opportunities on Friends of the IMU to donate to its efforts to raise money for the CDC. These efforts with DonAuction are a mirror at a much smaller scale, at a scale we can afford, of the fantastic gifts that I announced at the Opening Ceremony of the five Breakthrough Prize winners and of the 2014 Chern Prize Winner, who together directed 750,000 dollars towards the efforts of the CDC.

That was what I wanted to tell you about IMU after the ICM. I am now very happy and honored to introduce to you our wonderful new IMU President, Shigefumi Mori.

Shigefumi Mori, President-Elect of the International Mathematical Union

On behalf of the newly elected members of the Executive Committees (ECs) of IMU and its commissions, I would like to express our sincere gratitude to the Nominating Committee and the Election Committee both chaired by Professor Ragni Piene and Delegates of General Assembly (GA) of IMU.

Following a Chinese proverb that encourages one to study the past to learn new things, I would like to comment on the spectacular success of ICM 2014. The success depended on the following people.

EC members, in particular, President Ingrid Daubechies, Secretary Martin Grötschel. Committees involved in the Local Organization in Korea: Executive Organizing Committee (OC) chaired by Prof. Hyungju Park, IMU GA OC chaired by Prof. Jeong Han Kim, and Local Program Committee chaired by Prof. JongHae Keum. I only mentioned three, but there are more committees and especially many more people behind them, without whom this congress would not have been this successful.

For the MENAO event just before ICM 2014, Korean Government launched a project called NANUM which invited 1,000 researchers from developing countries. This is quite significant, and they have set a new style of contribution.

Although not apparent from the surface, the academic content of ICM 2014 was designed by the Program Committee chaired by Professor Carlos Kenig. Without this committee the whole congress is just impossible, and again behind it there are Panel Committees and so many

people involved. Although Hyungju Park mentioned 5,000 people from oversea there are many more people involved.

ICM 2014 is also receiving generous support from many organizations, including Friends of IMU, Simons Foundation, Niels Henrik Abel Board, and Mathematics Societies of many countries.

Very helpful volunteers gave a personal touch to ICM 2014.

Finally I should add Medalists, who volunteered to show up in social events and they were really helpful.

IMU is fortunate to be supported by so many people as above. I feel happy to be part of it, which is one of the reasons why I accepted to be the President nominee.

Now looking ahead, I would like to mention my colleagues in the newly elected IMU EC. Though I have some experience of IMU, various things have changed since then, and I would like to learn especially from the current members, and it was very fortunate that all the people elected just happened to be hare at the Congress and we could meet.

The members made not only excellent academic achievements but also sincere services to the mathematics community. For instance, the Secretary elect Professor Helge Holden has a broad experience with European Mathematical Community and we already started working together and going to make a good team. I can continue talking about other members, but this is not the right moment and I just say that I am confident in my fellow EC members.

I should also mention the stable IMU Secretariat in Weierstrass Institute at Berlin. This is new to me since this did not exist when I was involved in EC more than ten years ago.

Furthermore IMU circle, as mentioned by President Daubechies, was formed this year, which consists of mathematicians who have made sustained and distinguished contributions to IMU.

These are the new people with whom we will work together and we will also have a new committee for women in mathematics. Though its name is not fixed, President Daubechies will continue to be the key person in the committee.

There are new things we have to cope with. Mathematical communities are emerging in developing countries and MENAO (Mathematics in Emerging Nations: Achievements and Opportunities) organized by CDC (Commission for Developing Countries) was very timely for this direction. Education is indispensable for mathematics in developing world, and ICMI (International Commission on Mathematical Instruction) should take part. They should work with the help of ICSU (International Council for Science), that is, under the umbrella of ICSU. There are also problem of world digital mathematical library, and the list continues.

I do not have any intention to pull IMU in any specific direction. I would like to listen to various people, which is the Japanese or Asian way. My only main concern is to contribute to the promotion of the international cooperation in mathematics. This is how I view the IMU Presidency.

Marcelo Viana, Chair of the ICM 2018 Organizing Committee

Dear Colleagues,

On August 11, at Gyeongju, the General Assembly of the IMU unanimously approved the Brazilian bid to organize the International Congress of Mathematicians ICM 2018 in Rio de

Janeiro. This will be the first time, in its more than centennial history, that the ICM will take place in the Southern Hemisphere.

We are honored by the IMU-GA's decision and thrilled by the perspective of bringing the ICM - and all that it embodies - to Latin America. Ours is a young region of the world, where the Congress can and will be a powerful tool to disseminate Mathematics in the whole society, especially among the younger generations. Indeed we have chose "Sowing Seeds" as the theme for the Rio de Janeiro Congress.

We are also daunted by the challenge of following on our Korean colleagues footsteps: Hyungju Park and his team did a terrific job in making this year's Congress a big success and theirs will indeed be a tough act to follow. But be assured that we will put the best of Brazilian creativity and ingenuity to the task of making ICM 2018 an equally memorable event.

Actually, preparations for the Congress are already actively under way. The website went live a few days ago (check www.icm2018.org) and it is now possible to submit proposals for satellite events. Most specially, I invite you all to sign-up for the ICM 2018 Newsletter: just go to the website, click on Newsletter and fill-in your name, email address and country. It only takes a small fraction of a minute! And it will help us keep you current with the preparations.

Até breve no Rio de Janeiro! (See you soon in Rio de Janeiro!)

Ingrid Daubechies, President of the International Mathematical Union

Every day, ICM participants told me how much they were enjoying the Congress. So many people worked very hard to make this ICM a success – and the time has come to thank them!

The Program Committee and the members of the Panels for the different disciplines carefully put together the scientific program that we all enjoyed. The prize selection committees did their thoughtful and considered work to select the Prize Winners. The Plenary and Invited Speakers, and the people who assisted them in preparing their talks, surely deserve our thanks for preparing carefully and giving us clear presentations of their field and their work. The Chairs of all the sessions helped keeping the complex schedule on track. The different Panels, organized by the ICM and the IMU, led to an interesting dialog with the audience on the topics that were their focus. The contributed talks provided a rich and diverse collection of results. The exhibitors gave us even more mathematical food for thought.

The receptions and parties were wonderful and we are grateful to each organization that hosted one! We owe special thanks to the Mayor of Seoul, who hosted the banquet for the Congress. And the IMU is extremely grateful to the President of the Republic of Korea, who did us the great honor of attending our Opening Ceremony and awarding the Fields Medals, the Nevanlinna Prize, the Gauss Prize and the Chern Medal Award.

But the people we should thank most of all are the local organizers! The Local Organizing Committee, led by its Chair, Hyungju Park, worked incredibly hard for more than four years, in order to get everything organized into the smallest detail – and to deal brilliantly with every crisis as it came up. They were assisted by a veritable army of incredibly devoted volunteers, who we thank most wholeheartedly as well. The NANUM program was a wonderfully generous initiative and it made it possible for so many mathematicians to come to an ICM, an

experience that would otherwise have remained just a dream for them... Let's thank NANUM's Chair, Dongsu Kim, and the whole Committee for its hard work.

Finally, I want to thank all of you, participants who came from far away or from nearby, and who, with your enthusiasm for mathematics, certainly contributed a lot to the success of the 2014 International Congress of Mathematicians in Seoul!

4. ICM 2014 Travel Grants

The Republic of Korea, the host country for ICM 2014, has experienced a remarkable mathematical development over the last 50 years. As an act of solidarity with their colleagues in emerging nations, the Korean ICM hosts have been inviting 1,000 mathematicians from the developing world to attend ICM 2014. This invitation program was called *NANUM* which means *generous sharing* in Korean. The travel grants awarded were in the range of approximately US$1,500 - US$2,500 per person according to the regional groups, making a total sum of US$2 million under this program. The application and selection procedures for *NANUM 2014* were based on merit and with due regard for gender and geographical balance.

The summary below is an extract of the status report of H. Park, chair of the ICM 2014 organizing committee, accounting on the status of the NANUM 2014 program.

Travel Grants

NANUM 2014

- Total 923 grantees are selected so far. (75 grantees declined to receive the offer, 68 not registered)
- ICM Travel Fellowships, funded by 4 organizations (NIMS, KIAS, ICWM, ICM)

(Exchange rate) USD:KRW=1:1,100

Funding by	Area	Amount	No. of Grantees
NIMS (National Institute for Mathematical Science)	1	₩1,200,000	33
	2	₩1,300,000	22
	3	₩1,500,000	35
	4	₩1,600,000	20
	5	₩1,700,000	0
	6	₩1,900,000	3
TOTAL			**113**

Funding by	Area	Amount	No. of Grantees
KIAS (Korea Institute for Advanced Study)	1	₩1,200,000	95
	2	₩1,300,000	42
TOTAL			**137**

Funding by	Area	Amount	No. of Grantees
ICM	1	₩1,200,000	64
	2	₩1,300,000	40
	3	₩1,500,000	41
	4	₩1,600,000	90
	5	₩1,700,000	34
	6	₩1,900,000	13
	7	₩2,100,000	18
	8	₩2,300,000	38
	9	₩2,400,000	33
	10	₩2,500,000	58
		₩2,000,000	1
		₩500,000	5
TOTAL			**435**

5. Impressum

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