IMU

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INTERNATIONAL MATHEMATICAL UNION

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Secretariat:

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Takustr. 7
D-14195 Berlin, Germany

as of January 1, 2011

International Mathematical Union
Secretariat
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http://www.mathunion.org

Dear Members of the International Mathematical Union,

This release[1] is the post-congress bulletin of the IMU of 2010. It contains the report of the meeting of the 16th General Assembly which took place on August 16-17, 2010 in Bangalore, India, and a summary of the Opening and Closing Ceremonies of the International Congress of Mathematicians 2010, August 19-27, 2010, Hyderabad, India.

The delegates of the 16th General Assembly made important decisions. They elected the Executive Committee of the IMU, IMU's Commission for Developing Countries and the IMU representatives to the International Commission on the History of Mathematics for the term 2011-2014. The delegates of the IMU Adhering Organizations decided that a permanent secretariat of the IMU be established and that this permanent secretariat be hosted by the Weierstrass Institute in Berlin, Germany. The delegates approved the 2011-2014 budget and membership dues and a number of Statutes changes. The location of the ICM 2014 and of the meeting of the 17th IMU General Assembly was also adopted. And finally, 6 applications for IMU (associate and affiliate) membership were approved by the delegates.

ICM 2010 was another high point in IMU's history. One reason for this was, no doubt, that India's President graced the congress with her presence. IMU's prizes went to worthy awardees, the Chern Medal was presented for the first time as well as the Leelavati Prize. There were plenty of excellent lectures, talks, sessions, discussions, etc., social events were welcome changes. The Indian ICM 2010 hosts did a great job.

ICM 2010 is history. Let us look ahead and take up new challenges.

With best wishes

Martin Grötschel
IMU Secretary

[1] only electronically

Contents

1. IMU Leadership

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

Commission for Developing Countries (CDC) 2011 – 2014

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

International Commission on the History of Mathematics (ICHM) 2011 – 2014

Jesper Lützen	ICHM	Denmark
Kim Plofker	ICHM	USA

International Commission on Mathematical Instruction (ICMI) 2010 – 2012*

William (Bill) Barton	ICMI President	New Zealand
Jaime Carvalho E Silva	ICMI Secretary-General	Portugal
Angel Ruiz	ICMI Vice President	Costa Rica
Mina Teicher	ICMI Vice President	Israel
Mariolina Bartolini Bussi	ICMI EC Member-at-Large	Italy
Sung Je Cho	ICMI EC Member-at-Large	Korea
Roger Howe	ICMI EC Member-at-Large	USA
Renuka Vithal	ICMI EC Member-at-Large	South Africa
Zhang Yingbo	ICMI EC Member-at-Large	China
Michèle Artigue	ICMI EC Ex-officio Member (Past President)	France
Ingrid Daubechies	ICMI EC Ex-officio Member (IMU President)	USA
Martin Grötschel	ICMI EC Ex-officio Member (IMU Secretary)	Germany

* The transition process according to the changed election model ends in 2012, four-year terms of service start in 2013.

Committee on Electronic Information and Communication (CEIC) 2008 – 2014**

Peter Olver	CEIC Chair (chair as of 2011)	Jul 1, 2008 – Dec 31, 2014	USA
Thierry Bouche	CEIC Member	Jan 1, 2011 – Dec 31, 2014	France
Olga Caprotti	CEIC Member	Jul 1, 2008 – Dec 31, 2012	Finland
James Davenport	CEIC Member	Jul 1, 2008 – Dec 31, 2012	UK
Carol Hutchins	CEIC Member	Jul 1, 2008 – Dec 31, 2012	USA
László Lovász	CEIC Member	Jan 1, 2011 – Dec 31, 2014	Hungary
Ravi Vakil	CEIC Member	Jan 1, 2011 – Dec 31, 2014	USA

** CEIC terms of membership are staggered.

IMU Executive Committee (EC) 2007 – 2010

László Lovász	*IMU President*	*Hungary*
Martin Grötschel	*IMU Secretary*	*Germany*
Zhi-Ming Ma	*IMU Vice President*	*China*
Claudio Procesi	*IMU Vice President*	*Italy*
M. Salah Baouendi	*IMU EC Member-at-Large*	*USA*
Manuel de León	*IMU EC Member-at-Large*	*Spain*
Ragni Piene	*IMU EC Member-at-Large*	*Norway*
Cheryl E. Praeger	*IMU EC Member-at-Large*	*Australia*
Victor A. Vassiliev	*IMU EC Member-at-Large*	*Russia*
Marcelo Viana	*IMU EC Member-at-Large*	*Brazil*
John M. Ball	*IMU EC Ex-officio Member (Past President)*	*UK*

2. Report of the 16th General Assembly[2]

Report of the 16th General Assembly of the International Mathematical Union (IMU)

Bangalore, India
August 16-17, 2010

AGENDA

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2. Appointment of Subcommittees
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   - 2.2. Credentials Committee
   - 2.3. Tellers Committee
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3. Review of the activities of the Union (part 1)
   - 3.1. Overview on Union activities
   - 3.2. CDE/DCSG presentation, including vote on new CDC Terms of Reference
4. Future IMU Stable Office
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   - 4.2. Presentations of the IMU Stable Office candidates
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     - 4.2.2. IMPA, Rio de Janeiro
     - 4.2.3. WIAS, Berlin
   - 4.3. Report of Stable Office Committee (SOC)
   - 4.4. Question time
   - 4.5. Vote on Stable Office (Yes or No) + Vote on Statutes change para 28 and 29
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   - 6.3. ICHM presentation
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   - 8.2. Presentation of slates proposed by the Nominating Committee
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     - 8.2.2. IMU Secretary
     - 8.2.3. IMU Vice Presidents and IMU EC Members-at-Large

[2] This report has already been distributed as an attachment to the circular letter IMU AO CL 1/2011 of March 9, 2011.

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1. Opening

The IMU President L. Lovász opened the 16th General Assembly (GA) of the IMU and cordially welcomed the participants of the meeting. He introduced the members of the IMU Executive Committee (EC) to the audience. The GA agenda was approved.

2. Appointment of Subcommittees

2.1. Procedures for Election (vote on changes)

The IMU Secretary M. Grötschel gave a survey on the changes of the Procedures for Election that were proposed to the General Assembly. The major changes concerned the introduction of the aspect of geographical distribution of the members of the IMU Executive Committee, the change to "CDC" of all CDE related terms and activities as well as the introduction of the CDC nomination process, and the institution of an Election Committee working at the 2010 General Assembly. Further a number of minor mostly editorial changes were proposed.

The proposed changes were approved and the new Procedures for Election adopted by the 16th General Assembly.

See: http://www.mathunion.org/organization/ec/procedures-for-election/.

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

2.2. Credentials Committee

M. de León 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*

The General Assembly approved the following committee.

Credentials Committee:
Marta Sanz-Solé, *Chair* (Spain)
Ruth Kellerhals (Switzerland)
Qiman Shao (Hong-Kong)

VOTE (by show of hands): IN FAVOUR = 134, ABSTENTION = 1

2.3. Tellers Committee

R. Piene introduced the persons proposed for the Tellers Committee and explained the duties of the committee.
Duties of the Tellers Committee:

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

The General Assembly approved the following committee.

Tellers Committee:
François Loeser, *Chair* (France)
Rajendra Bhatia (India)
Etienne Desquith (Ivory Coast)
Yboon Victoria Garcia Ramos (Peru)
Takashi Tsuboi (Japan)
Karen Vogtmann (USA)

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

2.4. Finance and Dues Committee

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

- *Review the proposed 2011-2014 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*

The General Assembly approved the following committee.

Finance and Dues Committee:
Christiane Rousseau, *Chair* (Canada)
Erwin Albert Karl Brüning (South Africa)
Hernán Cendra (Argentina)
Dohan Kim (Republic of Korea)
Jaroslav Nesetril (Czech Repulic)
Ragnar Winther (Norway)
Ex officio: Martin Grötschel, Sylwia Markwardt

VOTE (by show of hands): IN FAVOUR = 134, ABSTENTION = 1

2.5. Resolutions Committee

M. Viana explained the duties of the Resolutions Committee and presented the proposed members.
Duties of the Resolutions Committee:

- *Accept resolutions put forth by delegations prior to the close of the first day's sessions of the General Assembly (August 16)*
- *Review and edit resolutions received from the delegations*
- *Formulate resolutions*
- *Present the resolutions to the General Assembly with recommendations*

The General Assembly approved the following committee.

Resolutions Committee:
Freddy Dumortier, *Chair* (Belgium)
Ramachandran Balasubramanian (India)

Nalini Joshi (Australia)
Roberto Markarian (Uruguay)
Mitsuhiro Shishikura (Japan)
John Francis Toland (United Kingdom)

VOTE (by show of hands): IN FAVOUR = 134, ABSTENTION = 1

2.6. Election Committee

L. Lovász explained the duties of the Election Committee and presented the proposed members.
Duties of the Election Committee:

- *Settle all issues coming up during the election process, in particular*
  - *to oversee the form of the ballot papers*
  - *and to clarify all matters coming up when suggestions from the floor are made.*

The General Assembly approved the following committee.

Election Committee:
David Mumford, *Chair* (USA)
John Ball (United Kingdom)
Masaki Kashiwara (Japan)
László Lovász (Hungary)
Jacob Palis (Brazil)

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

3. Review of the activities of the Union (part 1)

3.1. Overview on Union activities

President's address to the delegates, László Lovász

Introduction: goals of the IMU

At the beginning of this General Assembly, I would like to give you an overview of the main achievements, challenges, and problems of our Union, as I have experienced over the last four years. I hope that against this background you will be able to better appreciate the specific problems we will discuss later.

Life connected with mathematics has many aspects: besides research in pure math, it includes math education (at many levels, from Kindergarten to doctoral programs), applications of mathematics (in industry, finance, sciences and humanities), and popularization (in media, books, and schools). The main focus of the IMU is research, but we have always felt responsibility for the other aspects. Applied mathematics has several organizations, and our international Commission of Mathematical Instruction has a large degree of autonomy. We don't want to monopolize mathematics in any sense, but we feel that close cooperation with organizations and individuals engaged in all these activities is vitally important. Many of these connections will be agenda items of our Assembly.

I will group my thoughts around these aspects of mathematical life, and then talk a bit about some very important issues concerning the administration of the Union.

1 Research

1.1 Congress

The main event in the life of the IMU is our Congress. Often one can hear scepticism about having such congresses in general. One of the points people make is the large size of it (at least for a mathematics meeting). Indeed, a single participant will only know a small fraction of the other participants and one can walk around for a long time without seeing a familiar face. A participant will be able to follow only a small fraction of the section talks. A lot of effort has been made, especially at recent congresses, to make the invited talks, especially the plenary talks, accessible to a general mathematical audience; but it is still difficult to follow so many ideas from different parts of mathematics within such a short time.

However, talking to scientists working in physics, computer science or other branches of science, they are envious of the fact that we mathematicians have such an event, where the latest developments are described, most of the most important prizes are awarded and the recipients describe their work, and much more.

There are many proposals to change the format of the Congress: some propose new sections, others suggest to make it shorter, etc. I believe that substantial change in the duration or format would do more harm than good. Details of the program are decided by the Program Committee for each Congress, and cautious adjustments are made as our science develops.

1.2 Prizes

Prizes are the most visible and perhaps also emotionally charged elements of our activities. They are important to motivate researchers, and also to draw attention to the most important developments in our field, both among mathematicians and the broader public.

Four major Prizes of the Union will be awarded at the opening ceremony: the Fields Medals (typically four of them), the Nevanlinna Prize, the Gauss Prize, and the new Chern Medal Award, financed by the Chern Foundation, named after the outstanding mathematician S.S.Chern.

The new *Leelavati Prize* for popularization of mathematics, named after a 12th century Indian mathematical text, will be awarded at the closing ceremony. This prize is funded by the Indian Government, and at this time it is not clear whether it will be awarded again at the next Congress, although we feel that it is an excellent cause and we are grateful to the Indian Government and to the local organizers for establishing it.

The IMU recommends or appoints committee members for a number of other prizes: the Abel Prize, the Ramanujan Prize (for young researchers from developing countries), and the Gruber Foundation's Cosmology Prize. ICMI sponsors the Felix Klein and Hans Freudenthal Awards.

On the other hand, IMU does not *nominate* people to receive prizes of other organizations; we feel this would be improper.

There have been other suggestions concerning the prizes, mainly the Fields medals: for example, to raise the age limit of 40. I am very much in favor of not changing the scope of a prize: I believe that it is very important that the meaning of a Prize remain the same over the years.

One exception here is the level of the financial award, which is inadequate for all our prizes except the Chern Medal. Of course, a Fields medal or Nevanlinna Prize in itself brings the recipient well-deserved recognition, and probably in most cases even financial benefits through promotions, job offers etc. But there is a danger that with almost 2 magnitudes of difference between, say, the Fields Medals and the Abel prize, the significance of the Fields medals erodes in the eye of the media, then in the eye of the general public, then even in the

mathematical community. We have been working on this problem, but we insisted that the name of the Prize and the rules of awarding it must remain unchanged, and our attempts have failed so far.

1.3 Quantitative evaluation of research

The Union tries to follow those disputes and trends that influence the everyday life of mathematicians around the word. One of these is the quantitative evaluation of research, which often centers around the notion of "impact factor", but is in fact a much more general issue. Jointly with ICIAM and IMS, we appointed a committee to look into the problems of quantitative evaluation of research, which published a very well received document, available on our web site, which gives a very balanced analysis of when impact factor and similar methods can and cannot be applied.

However, we don't consider the issue closed.

– First, it is not enough to explain why the use of impact factor is not proper in certain decisions; it is also necessary to make recommendations to departments and funding agencies what methods we consider justified.

– Second, very disturbing information about cheating with impact factors has come to light. We intend to continue our work on this issue, and as a preparation, we organize a panel discussion at the ICM where all participants will have the possibility to learn about these issues and express their concerns and recommendations.

1.4 Digitalization, internet

IMU has stated the ambitious goal that all mathematical material be accessible over the internet, and whenever possible, for free. Progress in this direction is slow but steady. We are happy to report:

– All Proceedings of previous ICM-s and ICME-s are available for free.

– The American Mathematical Society (AMS) just a few days ago completed a complete digital archive of its mathematical research journals, and made it freely available to all mathematicians through the generosity of an anonymous donor.

Commercial publishers have also digitalized their publications, but the cost of downloading is often prohibitive in many countries. An additional new development is bulk subscription to journals from large publishers, by consortia of universities, sometimes whole countries, which effectively takes out the decision subscriptions from our hands.

IMU remains concerned with this problem, but complicated issues of international copyright make it difficult to propose a uniform system. Nevertheless, we mathematicians can do a lot ourselves to reduce the problem:

– We can post preprints of our papers on the Arxiv (let's hope it remains in place for a long time) or simply on our home pages, and we can encourage our colleagues to do so. We can favor those Journals for our publications which do not object to this.

– Many of our younger colleagues are afraid of publishing in free electronic journals, since they may not be valued equally in tenure or grant procedures. This may be so, but many of us here are senior people who have an influence on university authorities and grant agencies, and we should fight for evaluation based on quality and not on the publisher of the journal.

IMU could play an even larger role in this, by providing means for a just ranking of journals. We will have a round table discussion about these problems during the Congress.

1.5 Research projects

Unlike many other scientific Unions, the IMU does not have research programs or projects targeting specific goals. Such programs would clearly be incompatible with pure research, but

even in applied math they would be counterproductive: We believe that one of the strengths of mathematics is its broad applicability, and also the variety of mathematical areas that have applications. To favor any of these could hinder research in other, potentially equally important areas.

This does not mean that the IMU is not open to be part of interdisciplinary projects, and in general to cooperation with other scientific unions and communities. We made substantial efforts to improve our relations with ICSU and UNESCO.

2 Education

We believe that mathematics education is a crucial element in improving mathematical literacy of society as well as in raising the next generation of math researchers. At the same time, we realize that mathematical education has different goals, problems, and different ways of measuring results. The IMU has a Commission, the ICMI, to deal with math education. The General Assembly in 2006 gave a larger degree of autonomy to this Commission, including separate elections for their officials. I would say that this did not loosen the connections between IMU and ICMI, to the contrary, I feel that we have developed an excellent working relationship.

3 Developing world

The main body of the IMU dealing with the developing world is our Commission for Developing Countries (CDC). In this form, this is a new Commission, whose creation was approved by postal ballot by the members of the IMU. Its charge is a combination of the charges of the former Commission for Development and Exchanges (CDE) and the Developing Countries Strategy Group. We hope that having a single commission to deal with all issues in connection with developing countries makes the work more efficient and decreases the possibility of important issues falling between the cracks.

One aspect of our relationship with the developing world is by far not satisfactory: this is IMU membership of developing countries. We have made efforts to increase the number of our members. The main point here is not to collect more membership fee; in fact, IMU has introduced Associate Membership through which countries with a developing mathematical life can participate in the activities of the Union (except voting) without paying membership fees. To have more application for membership from certain regions I appeal to all of you: if you know of non-member countries where you have professional connections, please see if you can help our colleagues there to form an organization and apply for (at least) Associate Membership in IMU.

4 Popularization

This area is becoming more and more important, and the IMU has to pay a lot of attention. There are excellent examples of successful popularization programs. However, due to language and cultural differences, methods in popularization are not as easily adaptable to other countries as, say, research programs. I will get back to this question a bit later.

5 Politics

5.1 UNESCO

Last Summer I met Dr Szollosi-Nagy, a Program Director at UNESCO, an engineer who recognizes the significance of mathematics, who suggested that the IMU propose an international program in mathematics to UNESCO. To work out the details, we organized a workshop last November, during the World Science Forum in Budapest, where besides our EC and UNESCO, also ICMI, ICIAM, ICTP and CIMPA were represented. This workshop produced two documents: a short call for action and a more detailed proposal. The first document points out that while mathematics plays a rapidly increasing role as a universal language for science, mathematical illiteracy is growing and interest in the study of

mathematics is declining. We asked UNESCO to take the lead in improving mathematical education and awareness.

Our detailed proposal, in a nutshell, envisions a Program that could act as a "broker"of programs in mathematical research, education and popularization, developed and tested by local communities. It would facilitate translations of educational and popular material, and provide a "certificate of authority" to programs that are serious. All countries would be targets of these activities, but the main beneficiary would be the developing world, where it should contribute to capacity building in mathematics.

UNESCO is interested, but the timing of our proposal was not good, since the Director General and many UNESCO officers have changed shortly after. Nevertheless, we are talking with them, and appointed Michelle Artigue as our liaison person. The experience of ICMI is very important here. I hope to establish some level of cooperation better than before.

I feel whether or not UNESCO will take an action, thinking about these issues together had the result that we all see the possibilities better. The next EC should think about how much of this can we ourselves realize and thereby make UNESCO support more likely.

5.2 Political issues

There are some events which bring the IMU in contact with politics. The most dramatic ones are when a mathematician is kidnapped or unjustly imprisoned. Needless to say, we do our best to help, but this is not always straightforward. For example, when a mathematician was kidnapped, we made confidential contact with our local colleagues, and were advised not to make any public move, because this would make hostage negotiations more difficult by increasing the stakes for the kidnappers. Luckily, our colleague was eventually freed. In another case, when massive protest seemed the best route, we joined this protest (unfortunately, our colleague was probably murdered by that time).

IMU does not have the resources and local knowledge to interfere in labor disputes, unless there is some expressed discrimination against mathematics. For example, we intervened (successfully) when a government wanted to close a mathematics department.

Visas for scientists and treatment of foreigners is becoming, unfortunately, an increasing concern. Under threats of terrorism, governments are often tightening their visa policies to irrational levels. IMU stands firmly by the principle that no scientist should be punished for actions of his or her government. The EC has joined the protest of ICSU against US visa policies by moving our EC meeting from the US to another country. Unfortunately, unexpected events like terrorist attacks can create difficult situations like we experienced with Indian visas for this meeting. It took enormous efforts on the part of the Indian organizers to make sure that the delegates and Congress participants get visas, for which I would like to express our gratitude.

6 Administration

6.1 Stable office

The last General Assembly (Santiago de Compostela, 2006) charged the EC with looking into the possibility of setting up a permanent office. It is natural to be skeptical about this: after all, the IMU has functioned very well over many years while staying as informal and un-bureaucratic as possible, just having a small office wherever the Secretary was located. But looking deeper into the issue made it clear that the charge by the GA was justified. With stricter and stricter legislation targeting money laundering and terrorism, it becomes more and more difficult to move the office from one continent to another any time a new Secretary is elected. There was also a pressing need to solve the problem of secretarial help for CDC and ICMI.

Looking deeper into the issue also revealed that, unfortunately, the finances of the Union do not allow the rental and staffing of a new office. Therefore we turned to the community for help: we thought that providing some office space and secretarial help may be within the possibilities of some larger research institute or university department.

The response was overwhelming, and this is how we are now in the position of having the decision about the stable office on the agenda of this meeting. You will hear more about this very soon; right now I just want to express my most sincere thanks to all the organizations who followed up on our call and explored how they can help the IMU within their resources.

6.2 Fund raising

Another aspect of modern life is that virtually no organization can exist without fund raising. IMU cannot operate from the budget based on membership fees alone: We need resources for our prizes, and also for our programs in the developing world, just to name the two most important goals. To facilitate fund raising, we created an organization called "Friends of IMU", registered as a not-for-profit organization in the United States. This organization handles, among others, the financial aspects of the new Chern Medal Award mentioned before, and also donations from members of the American Mathematical Society to the Special Development Fund, which this way are tax-deductible. We have thought of setting up fund raising organizations in other countries, but this is a difficult and costly process, and we can only afford it if substantial donations can be expected.

3.2. CDE/DCSG presentation, including vote on new CDC Terms of Reference

Presentation by Marcelo Viana, Chair of the Committee for Developing Countries

Commission for Developing Countries of the IMU

Commission on Development and Exchanges

Since 1978, *IMU's Commission on Development and Exchanges* has supported mathematicians in the developing world, through

- research travel support
- conference support

Total Budget 2006 – 2009 USD 212,541.35

Year	Applications Received	Applications Circulated	Awards Made	Conferences in Developing Countries	Conferences in Developed Countries	Individual Research Travel Support
2006	83	70	43	31	2	10
2007	60	54	53	31	2	20
2008	58	55	45	27	5	13
2009	56	56	55	30	10	15
Total	257	235	196			

Members (2007-2010)

Shrikrishna G. Dani (India, President)
Gérard Gonzalez-Sprinberg (France, Secretary)
Graciela L. Boente (Argentina)
Paulo Cordaro (Brazil)
Jean-Pierre Gossez (Belgium)
Mary Teuw Niane (Senegal)
Marta Sanz-Solé (Spain)
Jiping Zhang (China)
László Lovász (President of IMU)
Martin Grötschel (Secretary of IMU)

Developing Countries Strategy Group

In 2002, the IMU General Assembly in Shanghai resolved to expand IMU's commitment to mathematics in the developing world.
This led to the establishment, in 2003, of the *Developing Countries Strategy Group.*
Mandate: Increase and coordinate IMU's activities in support of mathematics and mathematics education in the developing world.
DCSG acts as a "clearinghouse" and coordinating agent for activities of IMU itself, national agencies, professional societies and foundations, in support of mathematics and mathematics education in the developing world.
Total Budget 2006 – 2009 USD 287,701.57

- Administered the IMU program of travel awards for developing country mathematicians to attend ICM2006 in Madrid and ICM2010 in Hyderabad.
- Helped the London Mathematical Society establish and gain funding for the program Mentoring African Research in Mathematics (more information at ICM2010 MARM panel).
- Advised ICTP on the establishment and awarding of the Ramanujan Prize.
- Worked with the French *Centre International de Mathématique Pures et Appliquées* and with French, U.S. and Japanese mathematicians to establish and sustain a Masters degree program in mathematics at the Royal University of Phnom Penh, Cambodia.
- Collaborated with the U.S./IMU Adhering Body (USNCM) to establish the Volunteer Lecturer Program. IMU has so far sponsored 5 Volunteer Lecturers: 1 to Tanzania, 2 to Nigeria, 2 to Laos. CIMPA and USNCM have sponsored over 20 lecturers to Cambodia, plus one recent lecturer to El Salvador. (But 40 other mathematicians have offered their services!)
- Prepared the report "Mathematics in Africa: Challenges and Opportunities" requested and financed by the John Templeton Foundation. (Report available on IMU website.)
- Provides continuing support to the African Mathematics Millennium Science Initiative (scholarship program for African graduate students, conference support).
- Vets applications of developing country mathematicians to participate in programs of the world's leading mathematics research institutes.
- Supports the participation by developing world mathematicians in workshops and panels of International Council of Industrial and Applied Mathematics.
- Supports workshops and mathematics expositions of the International Commission on Mathematics Instruction in the developing world.
- Backs up CDE, easing CDE budget limitations and supplementing CDE grants in cases of extraordinary need and importance.
- Advises the IMU President, Secretary, and Executive Committee on matters related to mathematics in the developing world.

Members (2007-2010)

Herbert Clemens (US, Chair)
Jill Adler (South Africa)
Hajer Bahouri (Tunisia)
John M. Ball (United Kingdom)
Shrikrishna G. Dani (India)
Jean-Pierre Gossez (Belgium)
Andreas Griewank (Germany)
Lê Dung Trang (Italy)
Jacob Palis (Brazil)
Peter Pang Yu Hin (Singapore)
Ragni Piene (Norway)
Michel Jambu (France)
Sheung Tsun Tsou (United Kingdom)
László Lovász (President of IMU)

IMU work for Developing Countries

Funding:

- A continuing grant of USD 45,000 per year from Norway's Abel Fund.
- IMU's funds as derived from Adhering Body dues and other sources.
- Contributions form National Societies (Japan, Switzerland) and other institutions.

The resources available fall way short of the challenges before us!

Commission for Developing Countries

2006 General Assembly Recommendation:
Merge CDE and DCSG into
Commission for Developing Countries (CDC)
Merger approved by postal ballot in 2009.
Vote on the CDC Terms of Reference to be taken at this GA.
Mandate:

- Manage, strengthen, and promote the programs of the IMU in developing and economically disadvantaged countries.
- Search for funding to support the corresponding activities.
- Establish institutional partnerships with scientific organizations with common goals.

What's keeping CDC busy at the moment:

Manage ICM 2010 Travel Grants Program:
Travel grant awards to mathematicians from developing countries to attend ICM 2010.

- A little under 800 Applications
- 120 Awards:
- 57 Senior Mathematicians
- 63 Young Mathematicians

Panel: Herbert Clemens, Shrikrishna G. Dani, Wilfrid Gangbo, Zhiming Ma, Anatoly Vershik, Marcelo Viana

CDC plans for the next four years:

Continue and strengthen current activities:

- research travel grants and conference grants
- Volunteer Lecturer Program
- regional studies and projects
- articulation and mutual leveraging of mathematical initiatives of governments, agencies and individuals
- stop-gap funding for programs in crisis
- support of mathematics education
- attention to new regions of the world and their mathematical communities

But IMU does not have the resources to even begin to meet the needs of our colleagues in the developing world

- to develop and sustain their own mathematical research
- to form and guide a new generation of university and (post)-graduate students of mathematics
- to strengthen stature, norms and professionalism of academic institutions in their countries
- to network with other centers to gain critical mass through mutual reinforcement of programs and lecturer and student exchanges
- to establish sustained links with outside mathematical centers and resources

The needs…

- student support while studying for advances degrees
- access to advanced training in both core and applied mathematics
- re-conceptualizing teaching and administrative workloads to allow time and energy for continuing research
- networking with other centers to gain critical mass through mutual reinforcement of programs
- nourishing links with outside mathematical centers and resources

- employment opportunities for mathematics professionals in their own countries

…exceed the resources available by many orders of magnitude.

The current problem is not so much lack of human resources:
Wise leadership by home country colleagues is everyday more manifest throughout the developing world.
Our professional colleagues in the developed world are ready to help: the abundance of professional generosity, as manifest in such initiatives as the Volunteer Lecturer Program, provides compelling evidence.
Efforts to make use of the regionally existing resources are also increasingly consistent in some parts of the world (e.g. EMALCA courses in Latin America).
There is an abundance of untapped mathematical talent in the developing world, and the desire of students to learn mathematics, and to become mathematics-based professionals, is perhaps nowhere stronger than among the students we encounter in our outreach to developing countries.
A major bottleneck at this point is financial in nature:
There are simply not the economic resources available for those who want to study advanced mathematics and who have the capacity to excel.
Unlike physical hunger, or disease control, or even economic development, the crucial importance of quality mathematics and mathematics education in the developing world is often not given its due by governments, international agencies or, in many cases, in what we ourselves say and do.
And so we welcome all initiatives to enhance support for mathematical activities in the developing world.

A resolution before this General Assembly:
"The U.S., French, British and Norwegian Adhering Bodies respectfully request the IMU Executive Committee to study the feasibility of convening a Donor's Conference as a satellite to ICM 2014.
Preliminary conference planning during 2011-12 would involve identifying long-term success stories and their agents, potential donor foundations, agencies and governments, and professionals capable of organizing such a conference and of framing a persuasive case for the benefit to the profession, and to mankind, of mathematical development in the emerging world."

Sources:
Herbert Clemens
Shrikrishna G. Dani
Janhavi Joshi (CDC Secretariat at Ohio State)

Vote on the CDC Terms of Reference 2010

The proposal of new CDC Terms of Reference was already approved by postal ballot in 2009. After some editorial revision, the GA was requested to vote on the revised version of the Terms.

The General Assembly approved the CDC Terms of Reference.

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

4. Future IMU Stable Office

4.1. Presentation of the proposal to install a stable office, including proposal of the resulting changes of the Statutes (paragraphs 28, 29)

Presentation by Ragni Piene, Chair of the Stable Office Committee

GA 2006 Resolution 11:

The General Assembly recommends that the incoming Executive Committee of the IMU studies the establishment of stable administrative structure and funding mechanisms, including possible fund-raising, for the support of the expanding IMU activities, and report to the 2010 General Assembly with concrete proposals.

IMU EC actions:

- October 2007: the EC launched a bid to host the Stable Office
- Ten institutions showed their interest
- By end of 2008, six serious proposals
- January 2009: the Stable Office Committee (SOC) formed, with members John Ball, Salah Baouendi, László Lovász, Ragni Piene (chair)
- Selected three finalists: Fields Institute (Toronto), IMPA (Rio de Janeiro), WIAS (Berlin)
- The SOC and the EC found that each of these would provide IMU with an excellent office
- The EC resolved that the GA should decide matters according to the following procedures:

Proposed Resolution I:
The General Assembly endorses the establishment of a Stable Office for the International Mathematical Union.

Proposed Resolution II:
The General Assembly endorses the 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 ~~one of its Members-at-Large for that purpose.~~ another person for this position.
29. The legal domicile of the Union shall be located at the offices of the ~~Secretary.~~ Union.

(With the new wording of paragraph 28, the Executive Committee will have the option to appoint the Office Manager of the Stable Office or another mathematician from the (or a neighboring) institution as a Treasurer.)

Proposed Resolution III:
The General Assembly expresses its gratitude to all institutions which showed their support for IMU by putting in a bid or otherwise considering the possibility of hosting our Stable Office.

The procedure

- Presentations from each of the three institutions
- Report from the SOC's site visits and its assessment of the bids
- Time for discussion and questions
- Vote on Proposed Resolution I
- If favorable vote, then vote on Proposed Resolution II
- Vote on Proposed Resolution III
- After lunch, (eventual) vote to decide on the location of the Stable Office. (The vote will be by written ballots, and in two rounds unless one site gets more than 50% of the cast votes.)

4.2. Presentations of the IMU Stable Office candidates

4.2.1. Fields Institute, Toronto

Presentation by Edward Bierstone

"I think that the IMU would find its perfect home at the Fields Institute.
I know no other institution where I feel more at home"
—Stevo Todorcevic (Paris VII and Toronto)

WHY A STABLE OFFICE?

Institutional memory
• promotion of international cooperation
• celebration of great research achievements

Outreach
• to young people in the developing world
• to governments and scientific organizations

The Fields Institute is in a unique position to advance both aspects of the IMU's mission. The Institute combines tradition and experience with openness and diversity.

"I love the architecture with light-filled lecture halls, afternoon tea next to the fireplace, Coxeter's piano, and the beautiful spiral stairs"
—Balint Virag (Toronto)

"Of all places where mathematicians enjoy quality time to be creative, Fields is one of the best"
—David Brydges (Past-President, International Assoc. Math. Physics)

RECENT DISTINGUISHED LECTURERS
Lai-Sang Young, (Courant); David Cox, (Oxford); Persi Diaconis, (Stanford); Eva Tardos, (Cornell); Alain Connes, (Collège de France); Timothy Gowers, (Cambridge); Hendrik Lenstra, (Leiden); Shafi Goldwasser, (MIT, Weizmann Inst.); Jean-Christophe Yoccoz, (Collège de France); Yum-Tong Siu, (Harvard).

SOME RECENT PROGRAMS
Arithmetic and Hyperbolic Geometry, Foundations of Computational Mathematics, Mathematics in Quantum Information, Dynamics and Transport in Disordered Systems, Mathematics of Drug Resistance in Infectious Diseases

"What is most impressive about the Fields Institute is the diversity of activities, spanning all mathematically based research"
—Allan Borodin (Toronto)

FIELDS INSTITUTE PARTNERS
CRM, Perimeter Institute, PIMS, MITACS, Carleton University, McMaster University, U Ottawa, University of Toronto, University of Waterloo, Western, York University.

SOME FACULTY AT PARTNER UNIVERSITIES
Henry Kim, Nancy Reid, Jeremy Quastel, Yael Karshon, Jim Arthur, Walter Craig, Stephen Cook, Larry Guth, Robert McCann, Lisa Jeffrey

FIELDS FUNDING
Annual budget $4.5 million: Ontario, NSERC/CRSNG, NSF
Additional funding: University of Toronto, CMS/SMC, Toronto

No other city better represents the world's population in a single place.
"...we all enjoyed the atmosphere inside the institute and at cafes and restaurants nearby"
—Andrew Granville (U. Montréal)

Canadian Prime Minister Harper announces $20 million funding for mathematics institutes in Africa.

FIELDS INSTITUTE OFFER
1 Administrative Positions
2 Space and Facilities
3 Archive
4 Fields-IMU-Perimeter Fellowship

1 THREE STAFF POSITIONS
• General administrator
• Joint administrator of ICMI and CDC
• Two half-time positions (financial administration and IT support)

2 OFFICE AND MEETING SPACE

3 ARCHIVE
The University of Toronto has one of the world's largest university libraries with top-notch archiving and digitizing services
Michael Doob, (University of Manitoba)

ORIGINAL BRONZE CAST OF FIELDS MEDAL

4 FIELDS-IMU-PERIMETER FELLOWSHIP
Neil Turok (Director, Perimeter Inst. and founder, African Inst. Math. Sci.)
Eric-Martial Takougang (AIMS graduate, current Ph.D. student)

"I was a graduate student when the Fields Institute was founded...
it became a tremendous positive force in my career and those of my colleagues"
—Izabella Laba (UBC)

OFFICE MANAGER
Kumar Murty (University of Toronto, Chennai and Tata Institutes)

IMU VP NOMINEE
Christiane Rousseau (Université de Montréal)

"I am proud of what the Fields Institute has contributed to mathematics, here at Toronto, in Canada, and internationally"
—Jim Arthur, Past-President, Amer. Math. Soc.

Experience, global outreach, openness and diversity
www.fields.utoronto.ca/IMU/gainfo.pdf

4.2.2. IMPA, Rio de Janeiro

Presentation by Cesar Camacho

IMU @ IMPA

Choosing a permanent seat for the IMU is a momentous decision that must be made with the long term future of the Union at heart

Why IMPA as a seat for the IMU

- IMU aims to promote the development of Mathematics and the dissemination of mathematical knowledge in all parts of the globe
- Mathematical talent is uniformly distributed among the world population but Mathematics is not developed uniformly
- The presence of the developing world in the IMU remains unsatisfactory
- IMPA is committed to the development of Mathematics across Brazil and the whole Latin American region
- As the host of the IMU permanent office, IMPA will be uniquely placed to expand its action from the regional to the world stage

What we are

- A center for excellence located in a developing country
- A research center and graduate school with strong scientific links around the world
- Located in Rio de Janeiro, the heart of academic and cultural Brazil
- Committed to the development of Mathematics across the country and the whole region
- Part of IMPA's mission is to recruit young talented people to Mathematics
- IMPA sponsors an annual Mathematical Olympiad for schools in Brazil involving 20 million students, the largest in the world

What we offer

- Stable substantial funding: USD 800,000 per year
- All physical and human resources needed: office space, staff, equipment, archives, computers, websites
- Support for the mobility of IMU officials
- Broad plan of activities that will greatly enhance the Union's presence around the world

Plan of Activities:
IMU Annual World Conferences
IMU/IMPA Visitors Program
IMU activities in developing countries
IMU Archive Project

IMU Annual World Conferences *in the developing world*:

Northern Africa & Middle East
Central & Southern Africa
Indian Subcontinent
Central Asia
Far East & Pacific
Latin America

IMU Annual World Conferences
IMU/IMPA Visitors Program for *mathematicians from both developed and developing countries to visit Rio de Janeiro*
USD 250,000 per year

IMU Annual World Conferences
IMU/IMPA Visitors Program

IMU activities in developing countries	*in collaboration with CDC* *USD 200,000 per year*

IMU Annual World Conferences
IMU/IMPA Visitors Program
IMU activities in developing countries
IMU Archive Project

4.2.3. WIAS, Berlin

Presentation by Alexander Mielke, Jürgen Sprekels, Günter Ziegler

The stable IMU Office in Berlin: the German bid

"Wind of Change" in Berlin (since 1989):
Fall of the Berlin Wall 1989
ICM 1998
German Year of Mathematics 2008
WIAS, DMV, FU, HU, TU, U Potsdam, ZIB, MATHEON, BMS

Location:
- Central Europe – good flight connections
- In the heart of the German capital
- Close to governmental buildings, scientific organisations, funding agencies, etc.

Berlin-Brandenburg Academy of Sciences, WIAS main building, WIAS second location

The Offer:
- Sufficient space: 370 sqm
- Fully equipped, ready to use
- Up-to-date IT facilities

Office 1-5, Meeting Room, Reading Room, Archive
Head of Office, IMU Treasurer: A. Mielke
General Administration, Adm.Supp. ICMI/CDC, Financial Administration, IT Support/ Librarian/Archive
Full back-up for all positions by permanent WIAS staff
Financed by special grant of German government (appr. 0.5 Mio. € per year)

Commitments:

1. Core Funding:
   City of Berlin, Federal Ministry of Education and Research
   Dr. Angela Merkel, Chancellor of Germany
   Prof. Annette Schavan, German Minister of Education and Research

2. Additional funding and further support
   - Einstein Foundation (1 Mio. € grant)
   - German Research Foundation (DFG)
   - Alexander von Humboldt Foundation
   - Deutsche Telekom Foundation
   - Stifterverband für die Deutsche Wissenschaft
   - Berlin-Brandenburg Academy of Sciences and Humanities (support for IMU archive)

Backbone:

- WIAS is part of a research organisation with more than 1,350 employees
  - Experienced administration (75 persons)
  - Access to further services such as lawyers, project management, public relations services, etc.
- DMV Head Office at WIAS
  - DMV Media and Public Relations Office

Players:
We are looking forward to serving the IMU !
C. Bär (DMV, U Potsdam), H. Baum (HU), P. Deuflhard (ZIB, FU), H. Föllmer (HU), M. Grötschel (ZIB, TU), D. Knees (WIAS), J. Kramer (HU, BMS, DMV) G. Huisken (AEI, FU), B. Lutz-Westphal (FU), V. Mehrmann (TU, MATHEON), K. Polthier (FU, BMS), C. Schütte (FU, MATHEON), B. Wagner (WIAS), H. Yserentant(TU)

4.3. Report of Stable Office Committee (SOC)

Report by Ragni Piene

SOC was formed in January 2009, with members Ball, Baouendi, Lovàsz, Piene. For impartiality reasons, IMU Secretary Martin Grötschel (Berlin) and EC Member Marcelo Viana (Rio) were excluded from all EC dealings with SO matters.
SOC considered the six proposals from

- ICTP (Trieste, Italy)
- AIM (Morgan Hill, USA)
- EPLF (Lausanne, Switzerland)
- Fields Institute (Toronto, Canada)
- IMPA (Rio de Janeiro, Brazil)
- WIAS (Berlin, Germany)

and found that three were better suited than the others: Fields, IMPA, WIAS.

The site visits (2009)

- WIAS May 8 (Ball, Lovász, Piene)
- IMPA October 6–7 (Ball, Piene)
- Fields October 8–9 (Ball, Piene)

At each site we met with the director, academic and administrative staff, members from surrounding mathematical community, politicians, etc. We were shown the proposed site of the office spaces and explained how the office would be run. We were given relevant information concerning finances and formal setup.

Our main concerns:
Firstly

- the commitment of the people and the finances — especially with respect to long term stability.

Also

- legal issues and the functioning of the office
- development of work for the commissions ICMI and CDC
- accessibility (visa issues)
- possibilities for expansion and fundraising

Assessment: An oral summary of the views of the Stable Office Committee was given, under the headings:

1. The people
2. Finances
3. Office functions
4. CDC, ICMI, Archives

The Stable Office Committee was convinced that all three sites would be able to fulfill the needs of IMU, and that the small differences in details were in favor of different bidders.

Conclusions:
The SOC and the EC found that all three bids are very generous and impressive, and that therefore the choice of the site should be made by the General Assembly.
Finally, we hope that, regardless of the outcome of the vote, the bidding institutions will continue to offer their support to IMU.

4.4. Question time

The participants of the General Assembly were invited to ask questions concerning the three bids, R. Piene moderated the question time, the presenters of the stable office bids and R. Piene and the President and Secretary answered the questions. The discussion was about the longevity and stability of financial support, the immediate connection and communication between the secretary and the office, balanced distribution of meeting places on the continents, the archive and presence of IMU on the Internet, visa problems, the constitutional position of the staff in the stable office, the desirability of establishing a permanent office, a possibly more distributed system of different functions. The French delegation declared that they were not convinced of the need of establishing the stable office. Also the UK and Indian delegations were doubtful to some extent. The EMS representative strongly recommended to install a permanent office, the representatives of ICIAM and of the former IMU secretariat in Brazil also supported the proposal. The Australian delegation suggested to review the performance of the stable office in 2018 and to add this to the motions to be passed by the GA.

4.5. Vote on Stable Office (Yes or No) + Vote on Statutes change para 28 and 29

The General Assembly agreed to the suggested amendment (*review the arrangements in 2018*) of proposed resolution I.

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

The General Assembly approved the amended *Resolution I.*

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

VOTE (by show of hands): IN FAVOUR = 119, OBJECTIONS = 9, ABSTENTIONS = 4

The General Assembly approved *Resolution II* of the Stable Office Committee.

The General Assembly endorses the 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 ~~one of its Members-at-Large for that purpose.~~ another person for this position.
29. The legal domicile of the Union shall be located at the offices of the ~~Secretary.~~ Union.

VOTE (by show of hands): IN FAVOUR = 131, OBJECTIONS = 1

The General Assembly approved *Resolution III* of the Stable Office Committee.

The General Assembly expresses its gratitude to all institutions which showed their support for IMU by putting in a bid or otherwise considering the possibility of hosting our Stable Office.

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

The 3 resolutions were passed on to the GA Resolutions Committee.

5. Vote on the IMU Stable Office candidate institutions

The GA delegates proceeded to the vote on the IMU Stable Office candidate institutions on written ballots.

6. Review of the activities of the Union (part 2)

6.1. CEIC and electronic IMU, vote on Best Practices document

Presentation by John Ball, Chair of CEIC

Membership: John Ball (Chair and EC rep), Olga Caprotti, James Davenport, Michael Doob, Carol Hutchins, Peter Olver, Ulf Rehmann.

2011-14: Peter Olver (Chair), Thierry Bouche, Olga Caprotti, James Davenport, Carol Hutchins, László Lovász (EC rep), Ravi Vakil.

Members who retired in 2007, 2008*:* Jonathan Borwein (Chair), David Eisenbud, John Ewing, Alf van der Poorten.

The committee met in Providence 2007, Budapest and Oxford 2008, Minneapolis 2010.

Terms of reference:

(a) 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.
(b) 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 and other methods.

(c) 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.
(d) Advising the EC about potential opportunities to foster the growth of electronic infrastructure, and selectively creating tools for this purpose.

(As amended by IMU Executive Committee, Bangalore, 2010.)

Some issues addressed by CEIC

- **Archiving of the IMU records (paper and electronic).** The IMU archivist Guillermo Curbera manages the paper records, currently in Helsinki, which will be transferred to the stable office. Most business is now done electronically, and so the archiving of the electronic records, for both historical and current access reasons, is important and raises difficult issues being faced by many organizations. An augmented subcommittee of CEIC reported to the EC. Implementation awaits the decisions on the stable office. The immediate priority is to ensure that no electronic material is lost. Curbera will also interview past IMU officers at the ICM as a historical record.
- **Copyright agreements for ICM 2010** (including for videoing) were drafted and adopted.
- **Digitization of ICM Proceedings.** Remarkable work has been done by Keith Dennis and Ulf Rehmann to digitize all proceedings of the International Congress of Mathematicians from 1893-2006 (after which the Proceedings were born digital), and to obtain the copyright where possible. This will be announced at the ICM.
- **IMU-Net.** This is the electronic newsletter of IMU (you are encouraged to subscribe if you do not already). It is proposed that in future it becomes a blog as well. There is a section *IMU on the Web* on CEIC matters (currently moderated by Carol Hutchins).

Round Table on *The Use of Metrics in Evaluating Research*

26 August 18.00-20.00
Panellists: László Lovász (Chair), Douglas Arnold, Frank Pacard, José-Antonio de la Peña, Malcolm MacCallum.
Follow-up to IMU/ICIAM/IMS *Citation Statistics* report.

- Are impact factors and other such indices good measures of journal quality, and should they be used to evaluate research and individuals?
- What can be done about unethical practices like impact factor manipulation? (See *Nefarious Numbers*, D. Arnold & K. Fowler.)
- Is there a role for metrics in evaluating research?
- Are there better alternatives?

Best Current Practices for Journals

Document written by CEIC and Doug Arnold.
First Draft February 2010
Considered by EC late February 2010
Revised version widely circulated to editors, publishers, individuals for comment, leading to substantial further revision.
Final draft approved by EC July 2010.
Presented to GA for endorsement.
How should a good mathematics journal be organized and managed?

- Journals remain an important tool of mathematical research through quality control, improving content and presentation, dissemination and archiving.

- Basic principles of transparency, integrity and professionalism.
- Rights and responsibilities of authors, referees, editors and editorial boards, and publishers (e.g. openly available description of peer review and publication process, transmission of referee reports in full to authors, need for procedures for handling unethical behaviour.)

The GA discussed the document on best practices. There was controversy about the sentence on page 3 "We believe that in best practice such comments should be used exceptionally, rather than as a general procedure." The majority of delegates voted in favor of not deleting this sentence and make no changes to the document.

The General Assembly endorsed the Best Current Practices for Journals subject to changes that might be made by CEIC and endorsed by the EC.

J. Ball reported that IMU and ICIAM are proposing setting up a working group on ranking journals. This was commented by the ICIAM president R. Jeltsch and extensively explained by D. Arnold on the basis of his paper "Nefarious Numbers". The GA was in favour of the proposal.

6.2. ICMI presentation

Presentation by Bill Barton, President of ICMI

Present Representing ICMI

Bill Barton (NZ)	President of ICMI
Jaime Carvalho e Silva (Portugal)	Secretary-General of ICMI

Mathematics Education in the International World of Mathematics

- Special section at ICM's
  - Teaching and history of mathematics (1900)
  - Mathematics Education and Popularization of Mathematics ($\geq$ 2002)
- Founding of ICMI @ 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, – ICME-1, Lyon, 1969 …to … – ICME-12, Seoul, Korea, 2012

Organization & Governance of ICMI

- Executive Committee
  President, two Vice Presidents, Secretary-General, five members-at-large, IMU representatives. The EC meets face-to-face once annually.
- Members (85)
  The 68 member countries of IMU, plus 4 more associate member countries, plus 13 non-IMU affiliated countries.
- Finances - Modest! IMU gives ICMI a subvention, as a sub-commission of IMU. Individual and institutional participants in ICMI programs contribute much (>50%) *pro bono* effort and financial support.

Relations with IMU

- Representation:
  (a) IMU liaison member on ICMI EC, plus ex officio members;
  (b) ICMI representation at parts of IMU EC meetings, and at GA;
  (c) Consultation with ICMI regarding the Mathematics Education and Popularization Section of the ICMs.
- Elections: This is the first Executive elected by the ICMI General Assembly from a slate constructed by a nominating committee with strong representation from IMU. Process went very well.
- Collaboration: Administration, Development activities, Special Projects (Pipeline Project, Klein Project).

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)
- ICTMA – International Study Group for Mathematical Modeling and Applications (2003)

Affiliated Societies

In chronological order of affiliation
- 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)

Core Activities of ICMI

1. ICME Conferences
2. ICMI Regional Conferences
3. ICMI Studies
4. Development Activities
5. ICMI Awards

1. International Congresses on Mathematical Education (ICMEs)

- ICME-11, Monterrey, Mexico, July, 2008
  2526 Participants, 88 countries. Proceedings due at the end of this year
- ICME-12, Seoul, Korea, 8-15 July, 2012
- ICME-13, Bidding in process, decision by 2011

2. ICMI Regional Conferences

- EARCOME: China, 2005; Malaysia, 2007; Tokyo 2010
- CIAEM: Brazil, 2003; Mexico, 2007; Brazil 2012
- EMF: Tunisia, 2003; Canada, 2006; Dakar 2009
- AFRICME: S. Africa, 2005; Kenya, 2007; Botswana, 2010

3. ICMI Studies

- #18 Statistics Education in School Mathematics
- #19 Proof and Proving in Mathematics Education
- #20 Educational Interfaces between Mathematics and Industry (EIMI) (joint with ICIAM)
- #21 Mathematics Education & Language Diversity
- #22 (Task Design)
- #23 (In the area of Primary Mathematics)

4. Development Activities

- Solidarity Program – founded by Miguel de Guzman
- Solidarity Taxes – 10% of registration at ICMEs
- CDC Collaboration
- UNESCO Activities – "Experiencing Mathematics" Exhibition,
  – Capacity Development Project

5. ICMI Awards

- Launched in 2003
- Awarded in odd numbered years and presented at ICMEs
  - Felix Klein Award: For lifetime achievement: Guy Brousseau, France, 2003; Ubiratan d'Ambrosio, Brazil, 2005; Jeremy Kilpatrick, USA, 2007; Gilah Leder, Australia, 2009
  - Hans Freudenthal Award: For a major program of research in mathematics education during the past decade: Celia Hoyles, UK, 2003; Paul Cobb, USA, 2005; Anna Sfard, Israel, 2007; Yves Chevallard, France, 2009

Pipeline Project

- Final report now available.
- Serious data collection and analysis issues.
- Globally, there are no serious concerns except, possibly, with respect to teachers.
- Nationally, there are some countries that have problems. Government policy and economic factors are the main determinants.
- Recommendations:
  - National structures for data be put in place.
  - ICMI maintains a website for international comparisons.
  - Possible follow-up on the quality of the Pipeline (especially changes over time).

Klein Project <http://kleinproject.org>

- Design Group has met three times.
- Klein meetings have been held in Portugal, Spain, UK, Brazil, USA.
- Book design decided, authoring under way.
- Website established, contributions sought.
- Considerable interest and excellent discussion between mathematicians, mathematics educators, and teachers.

ICMI thanks IMU for its considerable support and excellent relations. We look forward to continued work together.

6.3. ICHM presentation

The President referred to IMU Bulletin No. 58 concerning the report of activities of the International Commission on the History of Mathematics.

6.4. IMU finances/dues

Presentation by Martin Grötschel, IMU Secretary

IMU finances 2009 (as an example)
Statement of income and expenditure 2009

	A	F	G	H	I
1	**INTERNATIONAL MATHEMATICAL UNION**				
2					
3	**Statement of Income and Expenditure*– 2009**				
4	**for the year ended December 31, 2009**				
5					
6		**Budget 2009**	**Actual 2009**	**Budget 2009**	**Actual 2009**
7		**CHF (Swiss Franc)**		**EUR (Euro)**	
8	**Expenses**				
9	**Schedule A:**				
10	Secretarial help, IMU office	22.660	0	15.234	0
11	Secretarial help, President	5.150	1.968	3.462	1.323
12	Accountant	9.270	0	6.232	0
13	ICMI	15.450	15.378	10.387	10.337
14	CDE	6.180	2.391	4.155	1.607
15	Office expenses (including postage)	16.480	4.527	11.079	3.043
16	Travel expenses of the EC	30.900	24.407	20.773	16.406
17	President's and Secretary's expenses	4.120	4.279	2.770	2.876
18	Contribution to ICSU	9.785	9.844	6.578	6.617
19	IMU Bulletin	1.500	3.541	1.008	2.380
20	Audit fee	8.755	15.182	5.886	10.205
21	General Assembly	4.120	0	2.770	0
22	World Directory of Mathematicians	0	0	0	0
23	Contingencies	2.060	22.708	1.385	15.264
24					
25	**Subtotal of Schedule A**	**136.430**	**104.225**	**91.718**	**70.057**

3	**Statement of Income and Expenditure*– 2009**				
4	**for the year ended December 31, 2009**				
5					
6		**Budget 2009**	**Actual 2009**	**Budget 2009**	**Actual 2009**
7		**CHF (Swiss Franc)**		**EUR (Euro)**	
8	**Expenses**				
9	**Schedule A:**				
10	Secretarial help, IMU office	22.660	0	15.234	0
11	Secretarial help, President	5.150	1.968	3.462	1.323
12	Accountant	9.270	0	6.232	0
13	ICMI	15.450	15.378	10.387	10.337
14	CDE	6.180	2.391	4.155	1.607
15	Office expenses (including postage)	16.480	4.527	11.079	3.043
16	Travel expenses of the EC	30.900	24.407	20.773	16.406
17	President's and Secretary's expenses	4.120	4.279	2.770	2.876
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25	**Subtotal of Schedule A**	**136.430**	**104.225**	**91.718**	**70.057**

		Budget 2009	Actual 2009	Budget 2009	Actual 2009
		CHF (Swiss Franc)		EUR (Euro)	
25	**Subtotal of Schedule A**	**136.430**	**104.225**	**91.718**	**70.057**
26					
27	**Schedule B:**				
28	IMU non-CDE conference support	20.000	0	13.445	0
29	ICMI scientific activities	27.810	27.682	18.696	18.607
30	CDE scientific activities	115.000	128.918	77.311	86.656
31	CDE support staff	56.000	86.029	37.647	57.827
32	CEIC scientific activities	25.000	1.535	16.807	1.032
33	Website support	6.253	2.150	4.204	1.445
34	ICM Site Committee	2.000	4.496	1.345	3.022
35	Program Committee for ICM	8.240	19.995	5.540	13.440
36	Subvention to ICM	28.840	87.313	19.388	58.690
37	Prize Committees (subvention)	11.100	7.709	7.462	5.182
38	Awards	0	15.621	0	10.500
39	Travel grants (young & senior)	61.000	0	41.008	0
40	Media Relations	3.500	0	2.353	0
41	**Subtotal of Schedule B**	**364.743**	**381.448**	**245.206**	**256.402**
42					
43	**Total Expenses (A & B)**	**501.173**	**485.673**	**336.924**	**326.460**

		Budget 2009	Actual 2009	Budget 2009	Actual 2009
		CHF (Swiss Franc)		EUR (Euro)	
45	**Income**				
46	Membership dues	371.304	398.360	249.617	267.769
47	ICSU Grant	0	0	0	0
48	Special Development Fund	32.000	36.175	21.513	24.316
49	Interest on bank accounts	16.000	7.015	10.756	4.715
50	Donations	59.220	60.039	39.812	40.357
51	Other income	0	45.039	0	30.377
52	Draw from Reserves	22.649	0	15.226	0
53	Return to Reserves	0	0	0	0
54	**Total Income**	**501.173**	**546.628**	**336.924**	**367.535**
55					
56	**Income less Expenses**	**0**	**60.955**	**0**	**41.075**
57					
58	**Transition to P&L Statement:**	**Transfer to liabilities from donations not yet spent**			**-24.316**
63		**Excess (deficit) of income over expenditure:**			**16.759**
64					
65	**Actual Euro Income and Expenses converted to Swiss Franc, using the December 31, 2009 rate**				
66	**of 1 Euro = 1,4877 Swiss Franc**				
67					
68	***Based on the corrected version of the Budget for 2007-2010, published in IMU Bulletin No. 55, 2007**				

IMU finances/dues

Some significant CHF expense changes 2009:

- Audit fee: budget 8.755, truth 17.000
- Contingencies: budget 2.060, truth 22.708

Some significant CHF income changes 2009:

- Almost all countries paid their dues (positive)

- Interest: budget 16.000, truth 7.009

Development of IMU net assets

Net assets	31.12. 2005:	562.289 $
Transfer	01.01. 2007:	307.465 €
Net assets	31.12. 2009:	499.543 €

International Mathematical Union							
Proposed Budget for 2007-2010 (Swiss Francs)							
Expenses	Approved Budged for 2003-2006			5% Dues increase	5% Dues increase	5% Dues increase	5% Dues increase
Schedule A:	1995-1998	1999-2002	2003-2006	2007	2008	2009	2010
Draw from Reserves				45,545	28,778	11,039	0
Return to Reserves							-7,672

Positive financial development only because of:

- Self exploitation of all IMU representatives
- Travel costs often paid from other sources (economy air fair)
- Significant contributions of all institutions that have hosted IMU activities (e.g., EC meetings)
- Almost no IMU expenditure for the IMU office in Berlin
  (DFG grant not represented in IMU budget ~ 200.000€ for 4 years)
- Secretarial help for IMU officers provided by local institutions
  (e. g., ICMI: Hodgson, Barton,…)

In kind contributions by many volunteers

Excel Table of IMU budget plan 2011-2014,
see Bulletin 58
Exchange rate development during the last 3½ years:
1 € ~ 1.21 US$ – 1.58 US$ (contingencies problem)

IMU finances/**dues**
2010 Base Unit Contribution: 1605 CHF ~ 1080 € ~ 1550 US$
1 € ~ 1,4877 CHF (31.12.2009)
Proposal: 2% increase annually

2% increase	No. of Unit Contributions	2011	2012	2013	2014
Unit Contribution		*1637*	*1670*	*1703*	*1737*
Group I	1	1637	1670	1703	1737
Group II	2	3274	3340	3406	3474
Group III	4	6548	6680	6812	6948
Group IV	8	13096	13360	13624	13896
Group V	12	19644	20040	20436	20844

7. Ballot result of vote on IMU Stable Office

The IMU President L. Lovász announced the result of the vote on the location of the IMU Stable Office.

VOTES for

WIAS, Berlin	75
IMPA, Rio de Janeiro	37
Fields Institute, Toronto	23

The General Assembly decided that WIAS, Berlin, will get the right to host the Stable Office of the IMU.

The President congratulated the WIAS and thanked the three institutions for their tremendous efforts. The WIAS Director J. Sprekels thanked the GA in a short speech for their vote.

8. Nominating Committee

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

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

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

8.2.5. IMU Representatives to ICHM

Presentation by David Mumford, Chair of the Nominating Committee

D. Mumford presented the members of the IMU Nominating Committee (NC), he explained the process of the NC nomination and the work of the NC to put forward the slates. He introduced to the GA the slates that the Nominating Committee has put together from all the nominations received and outlined the motivation behind.

8.3. Nominations from the floor

There were no nominations from the floor.

9. Further Statutes changes, explanation and votes

M. Grötschel reported about the successful use of electronic voting within the EC and asked whether it would be an option to try to extend electronic voting to the Adhering Organizations. The GA was in favor of this proposal.

M. Grötschel introduced the proposed changes in the Statutes. Most changes were editorial, some naming schemes were corrected, but no substantial changes were made

The General Assembly approved the proposed Statutes changes.

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

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

D. Mumford presented the proposals of candidates to the General Assembly. The candidates who were present at the meeting introduced themselves to the audience, those who were not at the meeting were introduced by the EC, D. Mumford or some colleagues.

10.1. Executive Committee (EC) of IMU

IMU Executive Committee (EC)

IMU President	Ingrid Daubechies (USA)
IMU Secretary	Martin Grötschel (Germany)
IMU Vice Presidents	Christiane Rousseau (Canada) Marcelo Viana (Brazil)
EC Members-at-Large *(8 candidates for 6 posts)*	Manuel de León (Spain) Yiming Long (China) Tetsuji Miwa (Japan) Cheryl E. Praeger (Australia) Claudio Procesi (Italy) Vasudevan Srinivas (India) John Francis Toland (United Kingdom) Wendelin Werner (France)

10.2. Commission for Developing Countries (CDC)

Commission for Developing Countries (CDC)

CDC President	José-Antonio de la Peña (Mexico)
CDC Secr. Policy	C. Herbert Clemens (USA)
CDC Secr. Grants	Srinivasan Kesavan (India)
CDC Asian Member *(2 candidates for 1 post)*	Hoang Xuan Phu (Vietnam) Jiping Zhang (China)
CDC African Member *(2 candidates for 1 post)*	Oluwole Daniel Makinde (South Africa) Wandera Ogana (Kenya)
CDC Latin Am. Member *(3 candidates for 1 post)*	Carlos Cabrelli (Argentina) Rafael Labarca (Chile) Márcio G. Soares (Brazil)

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

International Commission on the History of Mathematics (ICHM)

ICHM Representatives *(5 candidates for 2 posts)*	P. P. Divakaran (India)

Wenlin Li (China)
Jesper Lützen (Denmark)
Peter M. Neumann (UK)
Kim Plofker (USA)

10.4. Election of the 2011-2014 EC, CDC, and ICHM officers

The GA delegates proceeded to the vote on the IMU EC, the CDC, and the ICHM on written ballots which were then counted by the Tellers Committee.

11. Finance and Dues Committee

11.1. Recommendation

Report by Christiane Rousseau

Ch. Rousseau explained that the Finance and Dues Committee has looked into the report on finances and dues and the proposed dues increase and the budget proposal for the term 2011-2014. One difficulty of the financial planning has been the uncertainty about the stable office, however, the Committee recommended a 2% increase over the next four years. The Committee also recommended to adopt the proposed budget which has been established along the lines of previous years, but which should be restructured after 1 year in order to adapt it to current necessities. Then also the separation into Schedule A and B should be reviewed.

11.2. Balloting

The General Assembly approved the three motions proposed by the Finance and Dues Committee, that were to be included in the GA Resolutions.

Motion 1
That the increase of dues be 2% per year for the years 2011-2014, not to be revisited before the next meeting of the GA.

VOTE (by show of hands): IN FAVOR = 133, ABSTENTIONS = 2

Motion 2
That we operate in 2011 under the proposed budget, and that a new budget for 2012-2014 be submitted to vote to the Adhering Organizations by the end of 2011, under the constraints of resolution 1.

VOTE (by show of hands): IN FAVOR = 134, ABSTENTION = 1

Motion 3
That the EC be invited to revise the statutes concerning the distinction between general expenses (Schedule A) and special expenses (Schedule B).

VOTE (by show of hands): IN FAVOR = 133, ABSTENTIONS = 2

	No. of Unit Contributions	2011	2012	2013	2014
Unit Contribution		*1,637*	*1,670*	*1,703*	*1,737*
Group I	1	1,637	1,670	1,703	1737
Group II	2	3,274	3,340	3,406	3,474
Group III	4	6,548	6,680	6,812	6,948
Group IV	8	13,096	13,360	13,624	13,896
Group V	12	19,644	20,040	20,436	20,844

International Mathematical Union					
Proposed Budget for 2011-2014 (Swiss Francs)					
EXPENSES	**Approved Budged for**	**2% Dues increase**	**2% Dues increase**	**2% Dues increase**	**2% Dues increase**
Schedule A:	**2007-2010**	**2011**	**2012**	**2013**	**2014**
Secretarial help, IMU Secretary	22.660	20.000	20.000	20.000	20.000
Secretarial help, IMU President	5.150	8.000	8.000	8.000	8.000
Accountant	9.270	9.500	9.500	9.500	9.500
ICMI	15.450	16.000	16.000	16.000	16.000
CDC	6.180	6.300	6.300	6.300	6.300
Office expenses (including postage)	16.480	16.800	16.800	16.800	16.800
Travel expenses of the EC	30.900	32.000	32.000	32.000	32.000
President's and Secretary's expenses	4.120	5.000	5.000	5.000	5.000
Contribution to ICSU	9.785	9.785	9.785	9.785	9.785
IMU Bulletin	1.500	2.200	2.200	2.200	2.200
Audit fee	8.755	17.000	17.000	17.000	17.000
General Assembly	4.120	5.000	5.000	5.000	5.000
IMU office transfer		17.500	17.500	17.500	17.500
Contingencies	2.060	50.000	50.000	50.000	50.000
Subtotal of Schedule A	**136.430**	**215.085**	**215.085**	**215.085**	**215.085**
Schedule B:					
IMU non-CDC conference support	20.000	3.750	3.750	3.750	3.750
ICMI scientific activities	27.810	40.000	40.000	40.000	40.000
CDC scientific activities	115.000	120.000	120.000	120.000	120.000
CDC support staff	56.000	7.500	7.500	7.500	7.500
CEIC scientific activities	25.000	21.000	21.000	21.000	21.000
Website support	6.253	8.000	8.000	8.000	8.000
ICM Site Committee	2.000	3.000	3.000	3.000	3.000
Program Committee for ICM	8.240	10.000	10.000	10.000	10.000
Subvention to ICM	28.840	29.420	29.420	29.420	29.420
Prize Committees (subvention)	11.100	12.000	12.000	12.000	12.000
Travel grants (young & senior)	61.000	62.220	62.220	62.220	62.220
Media Relations	3.500	4.000	4.000	4.000	4.000
Subtotal of Schedule B	**364.743**	**320.890**	**320.890**	**320.890**	**320.890**
Total Expenses (A & B)	**501.173**	**535.975**	**535.975**	**535.975**	**535.975**
INCOME					
Membership dues	390.015	435.442	444.220	452.998	462.042
ICSU Grant	0	0	0	0	0
Special Development Fund	32.000	30.000	30.000	30.000	30.000
Interest on bank accounts	16.000	1.000	1.000	1.000	1.000
Donations (Abel Fund)	59.220	56.000	56.000	56.000	56.000
Draw from Reserves (here in 2010)	3.938	13.533	4.755	0	0
Return to Reserves (here in 2010)	0	0	0	4.023	13.067
TOTAL INCOME	**501.173**	**535.975**	**535.975**	**535.975**	**535.975**
INCOME LESS EXPENSES		**0**	**0**	**0**	**0**

12. Review of the activities of the Union (part 3)

12.1. ICSU

Presentation by Deliang Chen, ICSU Executive Director

Recent ICSU Activities

Outline

- ICSU and its vision
- Strategic themes & ICSU's role
- Key priorities 2006-2011
- Engaging in ICSU: focusing on strategic planning

ICSU

- Founded in 1931, based on two earlier bodies known as the **International Association of Academies** (IAA; 1899-1914) and the **International Research Council** (IRC; 1919-1931)
- 121 **National Members** (representing 141 countries/regions), and 30 International Scientific **Union Members such as IMU**
- 19 **Interdisciplinary Bodies (e.g. WCRP, IGBP)**
- Unique **worldwide** access to intellectual resources

The ICSU Vision

"A world where science is used for the benefit of all, excellence in science is valued and scientific knowledge is effectively linked to policy-making. In such a world, universal and equitable access to scientific data and information is a reality and all countries have the scientific capacity to use these …**."**

Strategic themes

Three inter-related themes:
International Research Collaboration ; Science and Policy ; Universality of Science

Key Priorities: 2009-2011

Consolidating/refocusing existing activities:

- Visioning process for Earth system research
- New World Data System (WDS) and Strategic Coordinating Committee for Information and Data (SCCID)
- Reviews of Regional Offices

- Science for policy

Implementing new programmes:

- Integrated Research on Disaster Risk (IRDR)
- Ecosystem Change and Society (PECS)
- [Health and Wellbeing in the changing Urban Environment]

Foresight and strategic planning:

- Strategic Planning for 2012-17 (incl. foresight analysis)
- Rio+20

ICSU Regional Offices

	Located	Inauguration date	Host Institution
Regional Office for Africa (ROA)	Pretoria, South Africa	September, 2005	National Research Foundation (NRF)
Regional Office for Asia and Pacific (ROAP)	Kuala Lumpur, Malaysia	September, 2006	Academy of Sciences Malaysia (ASM)
Regional Office for Latin America and the Caribbean (ROLAC)	Rio de Janeiro, Brazil	April, 2007	Brazilian Academy of Sciences (ABC)

Each RO has a Regional Director and receives strategic scientific guidance from a Regional Committee (RC)

Science for Policy

Regular UN engagement

- UN Commission for Sustainable Development
- UNEP and IPBES (Biodiversity and Ecosystems)
- UNESCO
- WMO

Policy oriented science programmes; Education and outreach e.g. IPY

Universality of Science

Strengthening national base

- Establishment of three Regional Offices with Regional Committees
- Expansion of National Membership from 103 in 2005 to 119 in 2010 covering 133 countries

Strengthen disciplinary base

- Process of strengthening social sciences input
- Efforts to further involve technology and engineering
- Closer contact with Unions (e.g. participation in Union GA)

Support partnerships within ICSU

- Grants programme

Freedom and responsibility (CFRS)

Union Engagement in ICSU

- Executive Board
- CSPR, CFRS
- Panels
- Consultations
- Linked initiatives
- Grants programme
- Regional Offices
- Interdisciplinary bodies

Strategic Planning

12.2. ICIAM

Presentation by Rolf Jeltsch, President of ICIAM

History and Facts
- World Organisation
- Society of Societies
- Full members are applied
- Associate members are general

Members

Continent	Full	Associate	Total
Europe	9	8	17
North America	2	2	4
Latin America	1	0	1
Asia	6	4	10
Australia & Oceania	1	0	1
World	1	0	1
Total:	19	13	34

Activities
- ICIAM Congresses, every 4 years, 1987,…
  Paris, Hamburg, Edinburgh, Washington, Sydney,
  2007 Zurich more than 3000 delegates
  2011 Vancouver 18 – 22 July www.iciam2011.com
- ICIAM Prizes, since 1999
- Olga Taussky-Todd Lecture
- Support for Developing Countries, 3 – 4 conferences each year
- Projects: Quantative assessment with IMU, IMS; EIMI with ICMI; Working group: ranking journals with IMU

ICSU - Application for Associate Membership
Why? Get involved in projects before these are defined
Need: Support of at least 9 ICSU members (at least 3 unions, 3 academies)
Motivate your academy to support application

New Members: Motivate societies in your country to become an ICIAM member

12.3. Friends of IMU, Itô Fund, and Fundraising

L. Lovász reported that the Friends of IMU (FIMU) was created recently and registered in the US as a 501(c)(3) organization, it is a charitable tax free organization with the goal to collect donations and use it for the purposes of IMU. At the moment there were two donations, one concerned the Chern Medal Award, the other one the donations by AMS members to support IMU activities in the developing world.
Board of Directors: David Mumford (chair), Jim Arthur, M. Salah Baouendi, Martin Grötschel (ex officio), László Lovász (ex officio).
L. Lovász expressed his thanks to the Chern Medal Foundation that financed the prize itself as well as basically covered the expenses of establishing this organization. L. Lovász also thanked the AMS which provided a lot of help during this process.

Y. Miyaoka reported that in 2006 K. Itô was awarded the Gauss prize which he donated to the IMU as a fund to support young researchers. In order to celebrate Itô's achievement the Japan Mathematical Society established its own fund, the Itô fund, with the aim to support young Japanese researchers as well as international research exchange programs. The fund has raised about 200000 $ but this amount is not enough to support programs. It is still trying to collect money but under the present circumstances this is very hard, however, they are still committed to such activities.

M. Grötschel reported that the EC spent some time on thinking on how to raise more funds for IMU activities. There was some success with respect to raising money for work in the developing world. M. Grötschel mentioned contributions from the Norwegian Niels Henrik Abel Memorial Fund, the support from the Liverholme and Nuffield Foundations. He invited the GA participants to help IMU and make suggestions on possibilities to raise funds.

12.4. ICM 2010

12.4.1. Report of the Program Committee

Report given by Hendrik Lenstra, Chair of the Program Committee

According to the PC guidelines it was the main task of the Program Committee to come up with the list of invited, plenary, and sectional speakers for the ICM. They had to take into account balance among subfields of mathematics, gender balance and geographical balance, in particular representation of developing countries. H. Lenstra explained how the committee attempted to achieve these goals. He suggested that for the next Program Committee one person particularly knowledgeable about developing countries (Committee for Developing Countries) should be appointed. H. Lenstra thanked all the people who helped the Program Committee putting together the speaker lists.

12.4.2. Report of the EOC

Presentation by M. S. Raghunathan, EOC Chairman

Registration

- All delegates have to register at HICC (the venue of the Congress).

- Registration starts at 10 am on 18/08/2010 at HICC and closes at 8pm.
- Registration at venue on 19th will start at 8 am and closes at 10 am. It will be continued after 2 pm.
- Those arriving too late for registration in the morning on 19th can collect invitations for the inaugural function at the venue. You need to give your registration ID number and show your photo ID. Please note that entry to the inaugural function is possible only with the invitation card.

Inauguration

- The Honourable President of India Shrimati Pratibha Patil has kindly consented to inaugurate the Congress and give away the prizes.
- The inaugural function will take place on August 19, 2010 at 11 AM in the Hyderabad International Convention Centre (HICC), which is the venue for the entire Congress.
- Among the dignitaries who would be attending the function are:
  - Shri E S L Narasimhan, Honourable Governor of Andhra Pradesh.
  - Shri K Rosaiah, Honourable Chief Minister of Andhra Pradesh.
  - Professor Syed Hasnain, Vice Chancellor, Hyderabad University and Member, Scientific Advisory Committee to the Prime Minister.

The Venue

- The venue is the Hyderabad International Convention Centre.

Programme of the Inaugural Function

10:55 Arrival of the President of India
11:00 National Anthem
11:02 Lighting of the Lamp
11:05 Welcome by Organising Committee Chair, Prof M.S. Raghunathan
11:08 Address by IMU President, Prof L. Lovász
11:12 Chief Minister, Govt of Andhra Pradesh, Dr. K. Rosaiah
11:15 Awards Ceremony
11:45 Address by the President of India, Smt. Pratibha Devisingh Patil
11:55 Vote of Thanks by Secretary, EOC - ICM 2010, Prof Rajat Tandon
11:57 National Anthem
12:00 Departure of the President of India

Prizes

- The prizes to be given away are: Fields Medals, Nevanlinna Prize, Gauss Prize and Chern Prize.
- As all of you are aware, the Chern Prize is a new prize instituted last year.
- All the prize-winners as well as the laudators chosen for them have accepted our invitation to attend the Congress and the inaugural function.

Leelavati Prize

- The (Local) Executive Organising Committee (EOC) instituted a one-time international prize called 'Leelavati Prize', for outstanding work for public outreach for mathematics.
- Nominations were sought from mathematical societies as well as renowned university departments and research institutions from all over the world.
- The committee to choose the awardee consisted of : Professors M S Narasimhan (chair), John Ball, László Lovász, Jacob Palis and M S Raghunathan
- The committee has decided to give the prize to Dr Simon Singh.

- The EOC proposed that the prize be given away at the closing function and the EC has accepted the proposal.

Programme of Talks

- The Programme Committee (PC) had drawn up a list of 20 plenary and 169 sectional talks to all of whom the EOC sent out invitations.
- One plenary speaker and seven sectional speakers dropped out after initially accepting our invitation.
- The schedule of invited talks is put up on our website.
- As is the tradition, there is no other activity when a plenary talk is in session.
- The plenaries will be held in a hall with a capacity of more than 3000.
- Sectional talks will take place in six or seven parallel sessions in rooms with a capacity of hundred or two hundred.
- There will be two special talks: the Abel Lecture by S R S Varadhan and the Noether Lecture by Idun Reiten.
- Short communications and poster sessions will take place in parallel with sectional talks.
- A speaker preparation room has been setup for speakers to prepare and upload their talks.

Proceedings

- The Sectional speakers were requested to submit their contributions to the Proceedings (online) by March 15, a deadline that was extended to April 15. Plenary Speakers were requested to submit by May 15.
- We received 154 submissions of abstracts by sectional speakers and these are printed in the programme book.
- 151 submissions of full manuscripts were received by the extended deadline and these are printed in three volumes - Volumes 2, 3 and 4.
- All three volumes are ready in both DVD and hard copy form.
- The DVDs will be given to all the delegates and hard copies to those who have ordered them.
- A limited number of hard copies of these volumes will be available for sale at the venue; orders may also be placed there.
- The plenary talks, lectures by the prize-winners and their laudators will be printed in Volume 1.
- Volume 1 in DVD form will be sent later to all delegates and hard copies to those who have ordered them.

Public Outreach

- On a suggestion from Professor Martin Groetschel two talks, one addressed to high school students and one to undergraduates, are being organised at the Global Peace Auditorium. They are:
- Bill Barton, '*Where is mathematics taking us - an exciting ride into the future*'; Date and time: 23/08/10, 11 AM
- Gunter Ziegler, '*Proof of the book*'; Date and time: 23/08/10, 3 PM
- On August 25, Simon Singh will be giving a 1 hour talk titled '*Fermat's Last Theorem - the making of a documentary*' at HICC at 5 PM.

Chess

- World Champion Viswanathan Anand will play simultaneous chess against 40 opponents on 24/08/10 at HICC.
- From among the delegates (and accompanying persons) who applied to play, 35 were chosen on a first-come first-served basis. The names can be found in our website.

English Play
- Two performances of the much acclaimed play 'A disappearing number' by the renowned theatre company Complicite of London will be staged at the Global Peace Auditorium in Hyderabad on August 21 and 22 at 7 PM.
- The play has for its back-drop the Hardy-Ramanujan story.
- Tickets for purchase were made available online from 07/08/10 to delegates, 4 days before plans were opened for the public.

Dance-drama
- A Bharatha Natyam dance-drama by the troupe Nrityashree of C V Chandrashekar is one of the cultural offerings to the delegates.
- The performance is scheduled for 20/08/10 at HICC at 6PM.

Music Concert
- There will be a Hindustani vocal music concert by the leading artiste Ustad Rashid Khan on 25/08/10 at 7 PM (venue: HICC).
- Prior to the concert, on 21/08/10 and 24/08/10, there will be two one hour lectures both at 5 PM on Indian Music appreciation by Prof. Sunil Mukhi.

Leelavati Ballet
- There will be repeated screenings of the DVD of the ballet Leelavati conceived and choreographed by the brilliant dancer, the late Chandraleka, on two days: August 21 and 26.

Closing Ceremony
- Shri Prithviraj Chavan Honourable Minister of Science of Technology, Government of India will be the chief guest and will present the Leelavati Prize to Dr Simon Singh
- Announcements about new EC and next ICM

13. IMU leadership ballot results

The President announced the results of voting on the IMU leadership 2011 - 2014

IMU Executive Committee (EC) 2011 - 2014

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

Commission for Developing Countries (CDC) 2011 - 2014

CDC President	**José-Antonio de la Peña (Mexico)**
CDC Secretary Policy	**C. Herbert Clemens (USA)**
CDC Secretary Grants	**Srinivasan Kesavan (India)**
CDC, Asian Member	**Hoang Xuan Phu (Vietnam)**
CDC, African Member	**Wandera Ogana (Kenya)**
CDC, Latin American Member	**Carlos Cabrelli (Argentina)**

International Commission on the History of Mathematics (ICHM) 2011 - 2014

ICHM Representatives	**Jesper Lützen (Denmark)**
	Kim Plofker (USA)

After some controversy about whether or not the detailed results of the vote (number of votes for each candidate) shall be announced or whether the tradition of not making the detailed results public shall be continued, a motion was put forward.

Motion 4:
That the results of the vote on the IMU leadership be read before the General Assembly.

VOTE (by show of hands): IN FAVOR = 9, AGAINST = 126

The General Assembly decided not to make public the detailed results of the vote on the IMU leadership.

14. Resolutions

14.1. Presentation of the Resolutions Committee

Presentation by Freddy Dumortier, Chair of the Resolutions Committee

Resolutions of the IMU General Assembly 2010

Resolution 1

The General Assembly of the IMU expresses its deep gratitude to the Organizing Committee of the ICM 2010 chaired by M.S.Raghunathan and to the Organizing Committee of the General Assembly chaired by G. Misra for their excellent organization, their special efforts in helping delegates in obtaining their visas and their warm welcome to delegates.

Resolution 2

The General Assembly of the IMU expresses its deep appreciation to the Executive Committee, especially to the IMU President László Lovász and to the IMU Secretary Martin Grötschel, as well as to the chair of the Program Committee Hendrik Lenstra, for their excellent work during the period 2007-2010.

Resolution 3

The General Assembly of the IMU expresses its gratitude to the Konrad-Zuse-Zentrum in Berlin for their generous support to the IMU.

Resolution 4

The General Assembly of the IMU thanks Mireille Chaleyat-Maurel, Cecilia Kulczár and Sylwia Markwardt for their multiple contributions to the IMU.

Resolution 5

The General Assembly of the IMU expresses its gratitude to those bodies that have contributed to the Special Development Fund in the past four years.

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.

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.

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.

Resolution 9

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

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.

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.

Resolution 12

The General Assembly of the IMU expresses its gratitude to all institutions which showed their support for IMU by putting in a bid or otherwise considering the possibility of hosting IMU´s Stable Office.

Resolution 13

The General Assembly of the IMU approves an increase of dues of 2% per year for the years 2011-2014, not to be revised before the next meeting of the GA.

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.

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).

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.

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.

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.

Resolution 19

The General Assembly of the IMU shares the concerns expressed by the World Science Forum organized in Budapest, November 2009, by IMU, ICMI, and ICIAM, and strongly endorses its call for an international effort to improve mathematical research, education and awareness in all countries, and asks UNESCO, together with the scientific community, to take the lead in launching such an initiative.

Resolution 20

The General Assembly of the IMU continues to endorse the principle of Universality of Science expressed in the International Council for Science (ICSU) ARTICLE 5 of the STATUTES, as adopted by the 1998 General Assembly, and endorses the additional ICSU Statement on the Universality of Science (2004). Notwithstanding heightened tensions, security concerns, etc., the General Assembly of the IMU urges free exchange of scientific ideas and free circulation of scientists and mathematicians across international borders. The IMU opposes actions by governments and other organizations to restrict contacts, interactions, access and travel in the international mathematical community, particularly when such restrictions penalize individual mathematicians for the actions of their governments.

Resolution 21

The General Assembly of the IMU resolves that the next meeting of the General Assembly be held at a time and place conveniently linked to the International Congress of Mathematicians in Seoul, Korea, in 2014.

14.2. Resolutions balloting

The General Assembly adopted Resolutions 1 to 21.

VOTE (by show of hands): IN FAVOR = 131, ABSTENTIONS = 4

Recommendation to the incoming EC or the next General Assembly: Look into the possibility of splitting the Nominating Committee into two committees (for the EC and for the CDC/ICHM)

15. ICM 2014

15.1. IMU EC Site Recommendation for ICM 2014

Presentation by Manuel de León, ICM 2014 Site Committee

Site Committee
Following the recommendation of the 1990 General Assembly in Kobe, Japan, the guidelines below have been in place for the operation of the Site Committee for the ICM2014:

1. The Site Committee shall consist of the members of the Executive Committee and the President of the Local Organizing Committee of the previous ICM.
2. All Adhering Organizations were formally invited to place bids to hold ICM 2014.
3. The Site Committee made its recommendation by May 31, 2009. The recommendation of the Site Committee was communicated to all Adhering Organizations.
4. The final decision will be taken by this General Assembly (16-17, 2010 in Bangalore).

Information Requested
Among other relevant information that each potential host country may want to supply, the Site Committee wishes to know about the following items:
I. Finances
II. Infrastructure
III. Accessibility
It is also expected that the local mathematical community gets involved in the preparations of the Congress, so as to create a nice ambiance during the meeting.

Information Requested: Finances

- A potential host country may consider a budget of about 1.5 million US dollars, of which about 0.5 or 0.6 million US dollars might be raised through registration fees
- Registration fees should be at most about 300 US dollars.
- Printing costs of the Proceedings and other material (posters, announcements, summary of invited lectures,...) as well as mailing, deserve special attention.
- The host country should be prepared to lodge freely about 120 young research mathematicians from developing countries, selected by IMU.
- In special cases, invited speakers are expected to receive some financial support.
- Registration fees are waived for invited speakers and the above young research mathematicians from developing countries.
- There is an IMU subvention to the ICM as well as some provision in its budget to defray costs of the General Assembly Meeting that takes place just before the Congress.

Information Requested: Infrastructure and Accessibility
Infrastructure

- It is important that good facilities to hold the Congress are available.
- All lectures should take place in sizable, well equipped, pleasant and audible rooms.
- Special attention should be given to the plenary talks.

Accessibility

- The city and site of the Congress should be easily accessible (flight connections transportation to the site of the Congress)
- Lodging facilities constitute an important item.

Site Committee 2014
- László Lovász
- Zhi-Ming Ma
- Martin Grötschel
- Manuel de León

IMU has received the following three bids for ICM 2014:
- Montreal (Canada)
- Rio de Janeiro (Brazil)
- Seoul (South Korea)

Visits
- The Site Committee has visited the three candidates
  - Seoul (Grötschel, Lovász, Ma)
  - Rio de Janeiro (de León, Grötschel)
  - Montreal (de León, Grötschel, Lovász)
- The Site Committee found the three bids really good, with an strong involvement of the local mathematical community, good financial provisions and convenient congress centers.
- The Site Committee reported his findings to the EC, and the EC decided to recommend Seoul as the site for the ICM2014.
- We thank Brazil and Canada for their excellent proposals and for graciously accepting the EC's decision

15.2. Presentation of the Committee for Seoul ICM 2014

Presentation by Hyungju Park, Chair of the OC ICM 2014

Executive Summary
The IMU Adhering Organization of the Republic of Korea, the Korean Mathematical Society (KMS), hereby submits its bid to host ICM 2014 in Korea.

Dreams and Hopes for Emerging Nations

The highlights of its proposal include:

Readiness

1. Korea, despite a relatively short history in modern mathematical research, has made significant progress in quality and quantity of research in mathematics. It is currently in IMU Group IV, and in terms of 2007 SCIE publications in mathematics, it was ranked 12th in the world, more than doubling its publications in less than 10 years.
2. The Korean government has shown tremendous interest in the pursuit of the KMS to host ICM 2014 in Korea. It has awarded a cash grant of US$250,000 to aid its bidding efforts. Also, President Myung-bak Lee of Korea has written an enthusiastic letter of support to accompany this proposal.
3. The Korean government has made a formal decision to offer financial support to SEOUL ICM. Its support is expected to exceed US$3,000,000.

4. With the strong support being mobilized from the government and corporations, SEOUL ICM is expected to be a turning point for mathematics in Korea; to reach out to the public and to be recognized by society.

Toward a Collaborative Math Community

1. The KMS considers its bidding efforts to have a positive symbolic impact on the IMU member countries whose mathematical research in modern standards has a relatively short history. This motivated the motto of this proposal: "Dreams and Hopes for Emerging Nations".
2. In order to realize the proposal's theme, the KMS offers to invite 1,000 mathematicians in developing countries (DC) to Korea during ICM 2014.
3. To invite 1,000 DC mathematicians to Korea, the KMS has set up a SEOUL ICM Travel Fellowship Fund. The fund has so far attracted commitments of US$860,000, and is expected to receive over US$2 million by 2014, mainly from global corporations.
4. The KMS has every intention to make SEOUL ICM 2014 the best-attended ICM, not only in terms of the number of participants, but also in terms of its cultural impacts on the countries that could benefit from such opportunities to attend an ICM.

Accessibility and Affordability

1. Korea has state-of-the-art convention facilities and services. The proposed venue has an auditorium large enough to house more than 7,000 people, and has 7,500 hotel rooms within 5km radius.
2. Korea has agreements with over 160 countries for no-visa entry. The Ministry of Foreign Affairs and Trade of Korea respects the IMU stance on the freedom of academic exchanges, and will make every effort to expedite the issuance of travel visas to bona-fide registered participants of SEOUL ICM.
3. Over 3,700 flights from 142 cities in 43 countries arrive in Korea every week. Coupled with easy access, a variety of accommodations will be made available to the participants of ICM 2014, ranging from university dormitories to five star hotels.
4. Seoul is one of the safest places in the world for foreign travelers, with low levels of crime, cutting-edge medical facilities and capable police and security authorities.
5. Korea, with a five-millennia-long history, is an attractive place to visit and has its own unique cultural heritage, distinct from that of other Asian countries. A visit to the country's numerous historical relics, seven of which are designated UNESCO World Cultural Heritage Sites, will make ICM participants' journey all the more special.

Conclusion

The KMS very much hopes to realize in Asia the exemplary positive impacts that the three ICMs in Europe achieved during 1994-2006. SEOUL ICM will make possible a significant and meaningful increase of interaction and cooperation among Asian countries. This will add to the momentum gained by previous ICMs in Asia. The 1,000 mathematicians to be invited to SEOUL ICM, many of whom would not have been able to visit an ICM otherwise, will bring the ICM excitement back home, further extending the positive impacts of SEOUL ICM to future generations in their respective countries. The KMS cordially requests the IMU Executive Committee to review and examine its proposal carefully and to consider its merits.

Respectfully submitted

Dohan Kim
President, The Korean Mathematical Society

Hyungju Park
Chair, The Committee for SEOUL ICM 2014

15.3. Location of ICM 2014 balloting
15.4. Meeting of the 17th IMU General Assembly

Gyeongju Ancient Capital City of 1,000 years(BC 57 ~ AD 935, Silla Dynasty)

- 2 hours by train, 4hours by bus, from SEOUL
- KTX train to open in 2013 >2 hours from Incheon Airport to Gyeongju
- Three UNESCO cultural heritages in the city of Gyeongju
- 4,000 Hotel rooms within 20 minutes in the historic area of Gyeongju
- Some of the SEOUL ICM Travel Grant will be allocated to cover the expenses of some delegates from developing countries.

The General Assembly voted to hold the ICM 2014 in Seoul, Korea, with the General Assembly to be held in Gyeongju, Korea prior to the ICM.

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

15.5. Vote on establishment of the ICM Emmy Noether Lecture

Presentation by Cheryl Praeger, IMU EC

The IMU General Assembly, Shanghai 2002 had adopted the following in Resolution 5:

> "The General Assembly recommends continuing the tradition of the 1994, 1998, 2002 ICMs, by holding an Emmy Noether lecture at the next two ICMs (2006 and 2010), with selection of the speakers to be made by an IMU appointed committee."

ICM Emmy Noether Lectures:
"To honour women who have made fundamental and sustained contributions to the mathematical sciences"

- 1932 Emmy Noether
- 1990 Karen Uhlenbeck
- 1994 Olga Ladyzhenskaya
- 1998 Cathleen Synge Morawetz
- 2002 Hesheng Hu
- 2006 Yvonne Choquet-Bruhat
- 2010 Idun Reiten

The list of Resolutions adopted by the 2010 General Assembly includes in Resolution 8 the approval to hold an Emmy Noether Lecture at each ICM:

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.

16. IMU Membership

16.1. New Members

16.2. Group changes

Report by Martin Grötschel

M. Grötschel reported on the systematics of membership information on the IMU Web site. A content management system (Typo 3) has been introduced. For the next term, distributed data management is scheduled to be applied where the adhering organizations are responsible for their data management on the IMU Web site on their own.

IMU Membership Development 2007 – 2010

2007	
Ecuador	Associate Member
Kyrgystan	Associate Member
Czech Republic	Group II -> Group III
Poland	Group III -> Group IV
Korea	Group II -> Group IV
Iran	Group II -> Group III
2008	
Kenya	Associate Member
Colombia	Member
Norway	Group II -> Group III
2009	
Thailand	Associate Member
2010	
Finland	Group II -> Group III
African Mathematical Union	Affiliate Member

Representatives of some new members (Ecuador - J.de los Reyes, Kenya – C. Procesi by proxy, Colombia - A. Onshuus, AMU – D. Makinde) gave short presentations on the activities of their mathematical societies.

16.3. Applications for Membership/Associate Membership Presentations of Cambodia, Moldova, Montenegro, Nepal, Oman

☐ **CAMBODIA**, Chan Roath

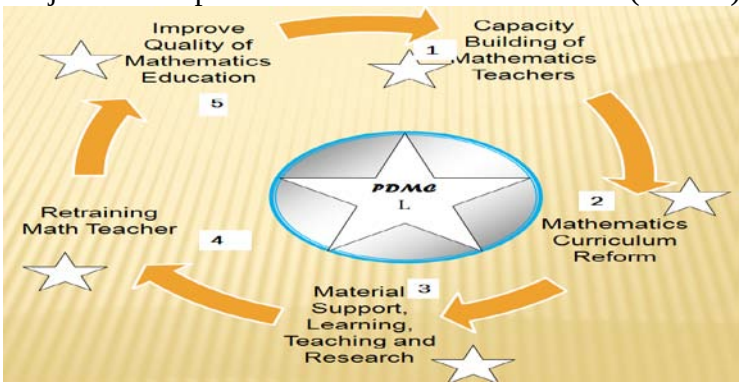
Cambodian Mathematical Society
Request For Cambodia To Be Accepted as an
Associate Member of the International Mathematics Union

- Why Cambodian Mathematical Society would like to be as an Associate Member of the International Mathematics Union ?
- What benefits that Cambodian Mathematical Society will get from Associate Member of IMU?

Introduction

- Land area: 181,035 Km^2
- Provinces/municip. 24
- Population: 13.5 millions
- Pop. Growth rate: 2.1%
- Pop. Density: 76
- Household size: 5.1
- GDP per capita: 513(2007)
- Occupation classification:
  - Agriculture 74.2%
  - Industry 7.0%
  - Services 18.8%
- Literacy rate 73.6%
- Gen. edu. Studts: 3,289,286
- Higher edu. Studts: 110,090
- HE students per 100,000P: 656
- HE non fee-paying students (2007-08): 13,620 (4,782F)
- HE fee-paying students (2007-08): 96,470 (35,422F)
- No. of public HEIs: 33
- No. of private HEIs:44
- Teacher training institutions: 1 NIE, 6 RTTCs, and 18 PTTCs

Project Development Mathematics in Cambodia (PDMC)



1. Capacity Building
2. Curriculum Reform
3. Material Support learning, teaching and research mathematics
4. Improve the methodology of teaching mathematics
5. Using ICT in Mathematics Education
6. Encourage, Award and Incentive base competition.

23-25 February 2011, Cambodia

- The 4th International Conference on Science and Mathematics Education in Developing Countries
- Web-site: www.cambmathsociety.org/conf/HOME.html

Please come to joint with us !

☐ **MOLDOVA**, Anatoly Vershik from the Russian delegation gave a short presentation on the mathematical society of Moldova because no representative from Moldova was at the GA

Moldova's application for Associate Membership

Moldova is one of (smaller) former SU republics, with a reliable mathematical activity, mainly in the areas of algebra, partial differential equations, general topology, optimal control and dynamical systems.
It has a few dozens of researchers with publications in good international journals, participation in international conferences, international research grants, etc. Many of them are absolvents of Moscow State University

Also:
Two universities with known mathematical departments; about 10 other universities teaching mathematics; a national research institute of Mathematics and Computer Science
Enthusiastic pedagogical community; good (for a small country) results in international school olympiads
A general mathematical journal edited by national Academy of Sciences; a specialized journal in algebra edited jointly with Polish colleagues
Mathematical community is represented by Mathematical Society with almost 200 fellows (a member of EMS and the current applicant for associate membership in IMU)

Specific features:
- A poor country; business not interested in advanced research
- Serious emigration; many remaining recognized researchers approach retirement age or are in it

+ Scientific success and integration into the international scientific community is one of few attractive living trajectories for youth ready to work
+ Traditional scientific relations with Russia, Ukraine, and Romania

☐ **MONTENEGRO**
Application for full IMU membership

No representative of Montenegro was present at the GA, reference was made to the written application submitted to the IMU.

HISTORY AND REVIEW OF THE MAIN ACTIVITIES OF THE SOCIETY OF MATHEMATICIANS AND PHYSICISTS OF MONTENEGRO

The Society of Mathematicians and Physicist of Montenegro exists since 1947 when it was established the Society of Mathematicians, Physicists and Astronomers of Yugoslavia in which our Society was taking an active role. After the splitting of Yugoslavia and establishing the Federal Republic of Serbia and Montenegro our Society became an active member of the Society of Mathematicians, Physicists and Astronomers of Serbia and Montenegro.

When Montenegro became an independent state, it was organized the general assembly of all mathematicians of Montenegro in December 2006., where it was established the Society of Mathematicians and Physicists of Montenegro. It was officially registered as legitimate non-

govermental organization of Montenegro. Accordinlgy to its full legitimate status the Society obtained its official stamp.

The President of the Society is Prof. dr Milojica Jacimovic and the vice presidents are Prof. dr Predrag Miranovic and Prof. dr Svjetlana Terzic.

In the framework of the Society the following sections are active: sections for teaching of mathematics, physics and programming, sections for young mathematicians, physicist and programmers and section for scientific research.

In the previos years the membership of our Society in the international organizations was realized through the societes it was the part of. In July 2008. the Society of Mathematicians and Physicists of Montenegro became a member of European mathematical society. In this way our Society has been enabled as a legitimate member to take part in all European educational and scientific activities.

The Society of Mathematicians and Physicists of Montenegro is jointly with Faculty for Natural Sciences and Mathematics of the University of Montenegro, founder of the research journal Mathematica Montesnigri.

Our Society was earlier very active member of ther Society of Mathematicians and Physicists of Yugoslavia, and after that of such Society of Serbia and Montenegro. Some of the activities performed by our Society are: Society organized Congress of Mathematicians, Physicists and Astronomist of Yugolavia in Becici, Montenegro; it also twiced organized, in 1995. and 2004., the Congress of Mathematicians and Congress of Physicists of Serbia and Montenegro in Petrovac, Montenegro. The Society organized also for several times state competitions in mathematics and physics for the pupils of elementary and secondary school in former Yugoslavia and later in Serbia and Montenegro.

The Society was till 2006., jointly with Faculty of Natural Sciences and Mathematics of the University of Montenegro, responsible for the organization of the competition for the pupils of elementary and secondary school in Montenegro at all levels.

In the last two years the Society also organized the participation of the young mathemticians and physicists from Montenegro in Balkan olymiads and International mathematical olympiads.

AN OVERVIEW OF EDUCATIONAL AND RESEARCH ACTIVITIES IN MATHEMATICS IN MONTENEGRO

- There are three univesities where the mathematics is thaught : University of Montenegro, University of Mediteran, Univesity of Donja Gorica;
- The main research activities in mathematics are related to University of Montenegro;
- There is one Society of Mathematicians in Montenegro acting as the part of the Society of Mathematicians and Physicists of Montenegro;
- There is about 30 professors in mathematics, about 10 young mathematicians on doctoral studies and about 500 teachers in mathematics in secendory schools; formally, all they are the members of the Society;
- In Montenero there is about 30 acrive researchers in the areas of Analysis (the greater part), Topology, Probability, Optimization, Discrete mathematics, Algebra. In the recent yers some of their results were published in highly ranked mathemtical journals: Commentari Mathematici Helvetici, Transaction of the American Mathematical Society, Journal of Mathematical Analysis and Applications, Nonlinear Analysis, Computational Mathematics and Mathematical Physics, Annales of Academie Scientiarium Fennicae Mathematica, Differential Equations

- In the recent years mathematicians living in Montengero published 5-8 papers in respected mathematical journals and about 10 – 15 in other mathematical journals;
- Mathematical journals published in Montenegro: (1) Mathematica Montisnigri and (2) Proceedings of the Section of Natural Sciences of Montenegrin Academy of Sciences and Arts.

☐ **NEPAL**, Bhadra Man Tuladhar

Application for Associate Membership of International Mathematical Union (IMU)

Higher Education

• Six universities	Offering mathematics
– Tribhuvan University	1959
– Nepal Sanskrit University	1986
– Kathmandu University	1991
– Purbanchal University	1995
– Pokhara University	1997
– Lumbini Buddhist University	2004

Nepal Mathematical Society (NMS)
Nepal Mathematical Society was founded on January 19, 1979 with following objectives:

- To enhance the academic Excellency in studying, teaching, research and applications in Mathematics.
- To preserve and promote the professional ethics and rights and welfare of teachers and researchers of Mathematics.
- To work continuously for promoting Mathematics, maintaining good relations with the national and international educational and academic organizations.
- To work for increasing the popularity of Mathematics in local levels.

NMS has 13 Executive Members and 5 Advisory Board members:
Executive Members for NMS (2009-2012)
President: Prof. Dr. Bhadra Man Tuladhar, Vice President: Mrs. Sharada Shrestha, Secretary: Dr. Chet Raj Bhatta, Joint Secretary: Dr. Kanhaiya Jha, Treasurer: Mrs. Kabita Luitel
Members :8
Advisory Board Members
Prof. Dr. Hom Nath Bhattarai, Prof. Dr. Santosh Man Maskey, Prof. Dr. Shankar Raj Pant, Prof. Yadav Prasad Koirala, Prof. Prakash Shakya

Number of mathematics professors in Nepal and research activities
There are altogether 44 Ph. D. degree holders, 11 received Ph. D. degree in Nepal.
Nepali mathematics community consists of 23 Professors, 85 Associate Professors, and about 250 lecturers.

Events of 2009-2010: Held

- May 14, 2009 - Annual Convention of NMS and election of its new Executive Committee members for 2009-2012.
- October 17-19, 2009 -Workshop on Fuzzy Logic
- December 27, 2009 - January 5, 2010 - Winter School on Number Theory and Cryptography organized by Kathmandu University.
- January 17-19, 2010 - National Mathematics Conference held in Biratnagar, East Nepal: 80 participants, 38 papers presented.
- May 15, 2010 - Nepal Mathematics Day Celebration.

Recent Event

July19–31, 2010 - Number Theory in Cryptography and Its Applications, CIMPA–UNESCO–NEPAL RESEARCH SCHOOL, Kathmandu University, Nepal - A Satellite Conference of ICM 2010.

21 Foreign Participants: Pakistan, India, Sri Lanka, Thailand, Bangladesh, Czech, Italy, Spain & 26 Nepali participants.

11 Resource Persons - France, Italy, Canada, Spain, India, Japan and Nepal.

Upcoming Event

Dec 30, 2010 - Jan 7, 2011 - Third International Conference on Lie-Admissible Treatment of Irreversible Processes (ICLATIP-3), Kathmandu University, Nepal.

☐ **OMAN**, Ibrahim Eltayeb

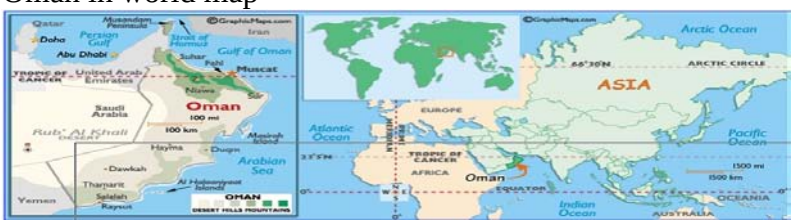
Application of Oman for Associate Membership of the IMU

Mathematics in the Sultanate of Oman

Plan of the talk

- The country
- Higher Education in Oman
  - Universities and colleges of higher education
  - General Foundation Program
- Research in mathematics
  - Publications
  - Conferences attendance
  - Conference organization
  - Weekly seminars
  - Recognition
- Conclusion

Oman in world map



- Area of 309,500 Km2

- Population of 3 million
- Capital is Muscat
- Official language is Arabic but higher education science-based instruction is in English

Higher Education in Oman
- Higher Education introduced in 1986
- Students study for 12 years before they apply for Higher education after taking a national school certificate examination
- 5 Universities and 17 Colleges of higher education
- Total student intake of about 15 thousands
- Compulsory General Foundation Programme: English, Mathematics, Computer Literacy and Study Skills

Research in mathematics
- More than 80 active researchers.
- Promotion is largely based on research (quality assessed by anonymous external referees)
- Average production of papers is about 2/3 paper per year.
- Quality of research is essential.
- Attendance of international conferences is on average one conference for every two researchers per year.
- At Sultan Qaboos University of about 50 researchers, weekly seminars are scheduled.

Workshops and conferences are held with full international presence:

Title of activity	Time	Invited speakers	Attendance from outside
First SQU Workshop on Topology and its Applications	29 Dec 04-01 Jan 05	4	30
First workshop on Algebra and its applications	2 Dec 2006	8	8
International conference on Numerical Analysis and Optimization	6-8 April 2008	12	40
Second workshop on Algebra and its applications	14 Dec 08	8	8
International conference on mathematical modeling	23-26 Feb 2009	8	34
International Conference on Analysis and Applications	24 - 26 Jan 2010	14	110

Future conference activity:

Title of activity	Time	Planned invited speakers
Second International conference on Numerical Analysis and Optimization	3-6 January , 2011	12
International Conference on Radical Theory	January 2012	5
International Conference on Difference equations and Applications	2013	10
Second International conference on Mathematical Analysis & Applications	2014	14
Annual mathematics Day*	January	5

Recognition
- Membership of TWAS
- (Foreign) Membership of the Royal Astronomical Society of London
- TWAS mathematics prize for 1995
- COMSTECH (OIC) mathematics prize for 2007

- Young Affiliate of TWAS for 2009

Conclusion
- Need for infrastructure to support mathematics activity
- Associate membership will have a dramatic effect on promoting science activity in Oman.
- We want your support

☐ **Southeast Asian Mathematical Society (SEAMS)**, Fidel Nemenzo

Application from the floor (online application)
of the Southeast Asian Mathematical Society (SEAMS)
for IMU Affiliate Membership

The Southeast Asian Mathematical Society (SEAMS) would like to apply for affiliate membership in the International Mathematical Union.

SEAMS was founded in 1972, to facilitate mathematical exchange among mathematicians and mathematics educators in our region, and has since then contributed immensely to the development of mathematics in the countries of Southeast Asia, including the establishment of mathematical societies in some of these. Regional workshops and conferences organized by SEAMS have strengthened linkages and collaboration. Among the conference series initiated by SEAMS was the SEACME (Southeast Asian Conference on Mathematics Education), which ran for 9 conferences, until it merged with and metamorphosed into the EARCOME (East Asia Regional Conference on Mathematics Education). The 5th EARCOME will be held this week 18-22 August in Tokyo.

The main activity of SEAMS is the Asian Mathematical Conference (AMC), held every 4-5 years. SEAMS is the currently the only regional mathematical network in the Asian region, and thus was in a good position to launch this regional conference, which draws participation from all countries of Asia, as well as from other continents. The 6th AMC will be held in 2013 in Busan, Korea. This is the first time the AMC will be held outside Southeast Asia, part of our efforts to reach out to our counterparts in other Asian countries, with which our member societies have also established strong mathematical links.

SEAMS is composed of the members of the mathematical societies of Cambodia, Hongkong, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. It is in the process of contacting and inviting in other mathematical societies in the region.

The official journal of SEAMS is the Southeast Asian Bulletin of Mathematics <http://seams-bull-math.scnu.edu.cn>.
The homepage of SEAMS is <http://www.seams-math.org>.

I hope the IMU considers SEAMS' application for affiliate membership favorably.

16.4. Membership applications balloting

The IMU Executive Committee has reviewed the applications of Cambodia, Moldova, Montenegro, Nepal, and Oman and recommended to accept the applications.

The General Assembly voted on the list of 5 membership applications and approved the applications of Cambodia, Moldova, Montenegro, Nepal, and Oman. As of September 2010 Montenegro is a full Member and Cambodia, Moldova, Nepal, and Oman are Associate Members of the International Mathematical Union.

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

The IMU Executive Committee has reviewed the application of SEAMS and was in favor of the application. The probable foundation of an Asian Mathematical Society was no obstacle for considering SEAMS to be an Affiliate Member of IMU. Once an Asian Mathematical Society is established IMU would encourage it to also join the IMU as an Affiliate Member.

The General Assembly approved the application of SEAMS. As of September 2010 the Southeast Asian Mathematical Society is an Affiliate Member of the International Mathematical Union.

VOTE (by show of hands): IN FAVOR = 117, AGAINST = 2, ABSTENTIONS = 16

17. Miscellaneous

Jacob Palis announced on behalf of the Brazilian delegation, the Brazilian Mathematical Society with full support of IMPA and all the main scientific institutions that perform good mathematical research that Brazil will present an application to host for the first time the ICM 2018.

Ari Laptev, current president of the European Mathematical Society (EMS), gave a short presentation of the EMS and announced the 6th European Congress of Mathematics to be held in Kraków, Poland, July 2-7, 2012 (www.6ecm.pl). Stefan Jackowski, President of the Polish Mathematical Society, gave more details on the EMS congress in Kraków. Marta Sanz-Solé, EMS President-elect expressed the invitation for input from other international societies in order to extend their network of cooperation by reciprocity agreements.

18. Any other item with the permission of the President

No request was put forward.

The President thanked G.Misra for the excellent organization of the meeting. G.Misra briefly addressed the audience and thanked his colleagues of the organizing committee for their cooperation. The President also thanked the colleagues who made the presentations and those who worked behind these presentations, the yet unknown members of the Program Committee, the members of CDC, ICMI, the prize committees, the CEIC, the members of the EC. The President thanked the Assembly for their work and patience. John Ball on behalf of the EC thanked the President for his dedicated work for IMU. The President declared the 16th General Assembly closed.

3. International Congress of Mathematicians 2010

3.1. Opening Ceremony

Hyderabad International Convention Centre, August 19, 2010.

3.1.1. Adresses to the assembly (1)

M. S. Raghunathan, Chairman of the Executive Organizing Committee

Respected Rashtrapatiji, Honourable Governor of Andhra Pradesh, Honourable Chief Minister of Andhra Pradesh, delegates to the Congress, ladies and gentlemen,

It gives me great pleasure to extend to you all a warm welcome to this inaugural function. We are grateful to the honourable President of India for kindly agreeing to be the Chief Guest and to inaugurate this function today. We are also greatly honoured by the presence of the Honourable Governor, Shri E. S. L. Narasimhan and the Honourable Chief Minister, Shri K. Rosaiah on this occasion. I extend them all a warm welcome.

The International Congress of Mathematicians has more than a hundred year old history and it is, by far, the most important, prestigious and biggest international gathering of mathematicians, which takes place once every four years. It is for the first time that India is hosting this event. It is, thus, a really historic landmark in the annals of Indian mathematics. On behalf of the Indian mathematical community, I would like to thank the International Mathematical Union for giving us this opportunity to hold this Congress and welcome mathematicians from all over the world to India, and to Hyderabad, the venue of the Congress. This is really a great opportunity for the Indian community to interact with the finest mathematical minds from all over the world, an opportunity which we are very grateful for.

The Programme Committee, chaired by Professor H. W. Lenstra, is offering us a veritable mathematical feast. I am sure the delegates will have a very fruitful and enjoyable time during the Congress. I extend a special welcome to the invited speakers and the prize winners and also offer my congratulations to them. Thank you.

László Lovász, President of the International Mathematical Union

Madam President, Honourable Governor, Honourable Chief Minister, ladies and gentlemen,

The International Congress of Mathematicians is a very old tradition, more than a century old. And it has been the lynchpin holding together the community of mathematicians internationally. It gives us a chance to award our main prizes. It gives us a possibility to survey recent developments in all fields of mathematics. It also gives the forum for discussions of important issues in mathematical life.

There is, usually, quite a competition for the right to organize this Congress which takes place every fourth year. This time, India has won the competition and this is, indeed, justified because India has a very long tradition in mathematics. Without going into details, I can mention Bhaskara, the development of our number system, Ramanujan, whose work is still an inspiration in a large number of branches of mathematics, and our colleagues in India and of

Indian origin all over the world who are doing outstanding research in mathematics and also in related fields like computer science.

This event should contribute to further development of mathematical research and mathematical education not only in India but also, indeed, all over the world. I wish you an inspiring, pleasant and fruitful stay in Hyderabad and I hope that you will go home with a feeling that you have taken part in something which is a unique event – it happens every fourth year, it happened for the first time in India; and that this event will give you inspiration for the next four years. Thank you.

The Chief Minister of Andhra Pradesh, Shri Konijeti Rosaiah

I am happy to be here at the inauguration of this important mathematical event. I extend a warm welcome to all the delegates to Hyderabad. It is a cosmopolitan city steeped in history and has a composite culture drawing from diverse traditions. It is a striking contrast between the old and the new.

Hyderabad hosts many educational and research institutions. The University of Hyderabad is among the top universities in the country. It has been rated as number 1 in India by Scopus based on the impact factor of its publications. There are eleven other universities in the city, Osmania being the oldest with a history of over a hundred years. The Centre for Cellular and Molecular Biology, The National Geophysical Research Institute and the Centre for DNA Fingerprinting and Diagnostics are among the leading institutes for scientific research in the country. The city offers stiff competition to Bangalore as a hub for the IT industry. This conference is located in an area of the city which is popularly known as Cyberabad.

In Andhra we have always had a great regard for mathematicians. There is a famous Telugu proverb which says:

Lakke lunna varu nijamaina managaadu

meaning

One who is good at calculations is a great man.

Amaravati in our state was an ancient seat of learning particularly famous for Buddhist studies. The study of logic was very much a part of Buddhist philosophical studies and was connected intimately with foundational issues in mathematics. In recent years many mathematicians from Andhra Pradesh have distinguished themselves. Professor C. R. Rao ranks among the leading international figures in Statistics. Professor S. Minakshisundaram's contributions to the study of the Heat Equation are well known to the mathematical community. Professor K. Chandrasekharan was the architect of the School of Mathematics of the Tata Institute of Fundamental Research in Mumbai. Professor K. G. Ramanathan, who helped Chandrasekharan build that school, taught at Osmania University. We are indeed proud of the contributions of these outstanding mathematicians from Andhra Pradesh.

We recognise the importance of mathematics as a discipline as well as a tool in science and technology, and in many other practical matters. The Congress will focus public attention on mathematics even if your deliberations are beyond ordinary people. Raising awareness of mathematics among people is important and the Congress will do that. I find that the organisers have arranged two talks aimed at high school and college students in the city. I am happy to see this initiative in the midst of a busy programme concerned with high level research.

We are happy that Hyderabad was chosen to host the Congress by the Indian organisers and their bid was accepted by the International Mathematical Union. My government has always encouraged the promotion of top level academic interaction between scientists. We have given unstinted support to the Congress. I wish the delegates a very fruitful conference. I urge you to take this opportunity to explore the diverse touristic attractions that the state of Andhra Pradesh, in general, and this great city, in particular, have to offer. You will not be disappointed.

3.1.2. Presentation of Medals and Prizes

Presentation of the Fields Medals

Martin Grötschel, Secretary of the International Mathematical Union

Honourable President of India, ladies and gentlemen, dear fellow mathematicians,

I have the great honor and particular pleasure to announce this year's Fields Medalists. As you have already heard, the Fields Medals carry the highest prestige of all awards in mathematics. This prestige does not derive from the value of the cash award, but from the superb mathematical qualities of the previous Fields Medal awardees. They all have become monuments of mathematics and are recorded in our history books. The work of the Fields Medalists 2010 belongs to this category. The medals will be handed out by the honorable President of India, IMU President László Lovász will present the cash awards and diplomas, and the Medalist citations will be read by me.

The Fields Medal Committee was chaired by László Lovász, President of IMU, as is the tradition. The committee members were Corrado de Concini, Yakov Eliashberg, Peter Hall, Timothy Gowers, Ngaiming Mok, Stefan Müller, Peter Sarnak, and Karen Uhlenbeck. The work of this committee is very hard because contributions of mathematicians aged below 40 have to be judged, which are not necessarily well-known yet across all of mathematics.

The Fields Medals were first awarded in 1936 and recognize outstanding mathematical achievement for existing work and for the promise in future. The medals themselves are about 6 cm in diameter and are made of 14-carat gold. You will rarely have the occasion to touch them, so you can see photos of both sides of the medal on the screen.

The first medalist, in alphabetic order, is Elon Lindenstrauss of Hebrew University, Jerusalem, Israel and Princeton University, Princeton, NJ, USA. The brief citation reads: *"For his results on measure rigidity in ergodic theory, and their applications to number theory."* You will hear more about Elon's work and the work of the three other medalists this afternoon.

The second Fields Medalist, in alphabetic order, is Ngô Bảo Châu, from the Université Paris-Sud, Orsay, France, but as you can infer from his name, Ngô Bảo Châu was born and raised in Vietnam. The short citation is: *"For his proof of the Fundamental Lemma in the theory of automorphic forms through the* introduction *of new algebro-geometric methods."*

The third winner of the Fields Medal is Stanislav Smirnov. He is at the Université de Genève in Switzerland, but Stanislav Smirnov is of Russian origin, as you can guess from his name. The brief citation that the Fields Medal Committee phrased is: *"For the proof of conformal invariance of percolation and* the *planar Ising model in statistical physics."*

The fourth Fields Medalist is Cédric Villani. Cédric is from the Institut Henry Poincaré, Paris, France. His citation reads: *"For his proofs of nonlinear Landau damping and convergence to equilibrium for the Boltzmann equation."*

Presentation of the Nevanlinna Prize

Ravindran Kannan, Chairman of the Rolf Nevanlinna Prize Committee

Honourable President,

These are the members of the committee and I want to thank them for all the hard work they put in – Stanley Osher, Olivier Pironneau, Madhu Sudan and Emo Welzl. And now, we are ready to announce the winner of the Nevanlinna Prize. First, we will show you the medal (screen display). As Martin said, may be you will not get to hold it but you can see it. The candidate must be forty or under to get this prize.

And now, I am ready to announce the winner of the Nevanlinna Prize, and the winner is Daniel Spielman. And the brief citation reads: *"For smooth analysis of linear programming algorithms and algorithms for graph based codes, applications of graph theory to numerical computing."*

Presentation of the Gauss Prize

Wolfgang Dahmen, Chairman of the Carl Friedrich Gauss Prize Committee

Honourable President, dear colleagues,

As the chairman of the Gauss Prize committee, I have the pleasure now to announce the Gauss Prize. Let me briefly introduce the committee. The members were Rolf Jeltsch, Servet Martinez Aguilera, and William R. Pulleybank.

A brief word on the Gauss Prize itself. As you know, the name Gauss stands for a unique fusion between fundamental contributions in mathematics in so many areas and concrete applications. The back side of the medal shows one such example, namely, the little circle you see there is the small asteroid Ceres. Gauss had developed a new method to predict its re-appearance, and as a by-product, he developed the least squares method which you could view as the father of all statistical estimators symbolised by the little square in the medal that you see. In that very spirit, the award is for outstanding mathematical contributions with a significant and lasting impact on applications, in particular, outside mathematics.

The person to be awarded has been, in the true sense of the word, in fact, in a double sense in this case, in the centre of some activities nicely indicated by this picture (screen display) from a conference that had taken place in 1992 in Oberwolfach. It is now my great pleasure to reveal the identity of this person: the prize is going to be awarded to Professor Yves Meyer. The brief citation is: *"IMU and DMV (Deutsche Mathematiker Vereinigung) jointly awarded this prize for his fundamental contributions to those results at the interface between harmonic analysis, number theory and operator theory that finally culminated in the new paradigm referred to as multi-resolution analysis with wavelet bases as the focal point."* This paradigm really revolutionized modern methodologies in signal processing but had also strong impact

far beyond on other application areas such as non-parametric statistical estimation, and even to pre-conditioning systems of equations that appear in large scale numerical simulation. He really created a new way of multi-resolution thinking which convinced the Gauss committee that Professor Meyer is an outstanding candidate in the very spirit of the award."

Presentation of the Chern Medal

Robert Bryant, Chern Medal Committee

It is my honour and pleasure to be invited to announce the award of the first Chern Prize. As a member of the committee, I should say just a word about the committee members. Our chair was Professor Phillip Griffiths; the members consisted of myself, Gerd Faltings, Fanghua Lin, and Wendelin Werner.

The Chern Medal is named for and is in honour of Professor Shiing-Shen Chern who devoted his life to mathematics, both in active research and education and in nurturing the field whenever the opportunity arose. He obtained fundamental results in the area of differential geometry and introduced many students to mathematical research. The medal is to be awarded to an individual whose lifelong outstanding achievements in the field of mathematics warrant the highest level of recognition. It is our pleasure to announce the recipient of this award, Professor Louis Nirenberg. Professor Nirenberg is the principal founder of the modern field of nonlinear elliptic equations, which occupies a central role across mathematics. Professor Nirenberg's broad and fundamental contributions to our field exemplify the qualities recognized by the Chern Medal.

The award will now be presented. I should say, since it is a new award, many people may not realize – the award is made possible by the generosity of the Simons Foundation and the Chern Foundation. It consists of two parts: 250,000 dollars that go to the recipient and 250,000 dollars to be donated to mathematical causes that the recipient chooses.

3.1.3. Address by the President of India

The President of India, Shrimati Pratibha Devisingh Patil

Ladies and Gentlemen,

It gives me great pleasure to inaugurate the International Congress of Mathematicians, which has a history of over a hundred years, in this beautiful city of Hyderabad. This Conference convened every four years, under the aegis of the International Mathematical Union, is an opportunity for mathematicians from all over the world to discuss developments and advances in this discipline.

First of all, I would like to congratulate the Prize winners. I wish the young Fields Medalists and the Nevanlinna Prize Winner many more years of high mathematical achievement. Those who have been conferred the Gauss Prize and the Chern Prize deserve, apart from our congratulations, our deep appreciation for the service they have rendered to human progress through their profound mathematical work.

To be here, in the midst of outstanding mathematical scholars, is an exhilarating experience. Though I must confess that I am no mathematician, but belonging to a country that has a rich mathematical heritage, and where it has been accorded a primary position among intellectual pursuits, I feel proud that this Conference is being held here. India's engagement with mathematics goes back some three thousand years. An ancient Sanskrit verse states

यथा शिखा मयूराणां नागानां मणयो यथा।
तद्वद् वेदांगशास्त्राणं गणितं मूर्ध्नि संस्थितम्॥

which means:

Like the crest of the peacock and the jewel of the serpent
Mathematics stands at the helm of all sciences.

Mathematics appears to have acquired an independent identity as an intellectual discipline early in human history. India has been at the forefront in contributing to innovations in arithmetic, algebra and geometry at different periods. The Pythagoras Theorem finds a place in Baudhayana *Sulva Sutra*, a work dating back to 8th century BC. The concept of zero or *shunya* originated from India. Pierre Simon Laplace, a French mathematician, said in the 19th century that, "it is India that gave us the ingenious method of expressing all numbers by the means of ten symbols, each symbol receiving a value of position, as well as an absolute value; a profound and important idea." The contributions of Aryabhata and Brahmagupta to the development of algebra and astronomy in the 6th and 7th centuries are well recognised. In the 12th century there was Bhaskaracharya. His work 'Leelavati' was the main source in medieval India for learning algebra and arithmetic. The book formulates mathematical problems in verse form addressed to Leelavati, Bhaskara's daughter. It was through scholars from the Middle East that renaissance Europe became acquainted with these Indian developments. However, until the twentieth century, the West seems to have been unaware of Madhava, a mathematician of the 15th century who anticipated the essentials of Calculus. It is only in recent years that the work of the 'Kerala School' has attracted considerable attention from historians of mathematics.

After a somewhat dormant period of almost half a millennium, revival of mathematical activity in India was triggered by the advent of the extraordinary figure of Srinivasa Ramanujan in the early 20th century. Ramanujan's achievements were a source of inspiration for succeeding generations. I hope that, in the midst of your busy schedule, you get an opportunity to see the play titled "A Disappearing Number", being staged during the course of this Conference. It has, I am informed, references to the relationship between Ramanujan and G.H. Hardy.

Ever since our independence, India has recognised the importance of science as a vehicle for human progress. Mathematics, the language of science and its advancement, is an integral part of India's science policy. Mathematics is a science, but nevertheless stands a little apart from other sciences. Yet, it is mathematical intervention that decisively confers the label 'science' to any intellectual discipline. Mathematics, hence, permeates all sciences. Mathematics has had a big role in the development of Computer Science and Information Technology. There are myriad applications of mathematics in technology; and the mathematics used there is reaching higher and higher levels of sophistication. It is hard, for example, to conceive of any aircraft, any robot, or any future technology, to be produced without a high level of mathematical precision. In recent years, the influence of mathematics in other fields has also grown enormously. Economics and social sciences, once impervious to mathematics, are coming increasingly under its influence. The need for understanding mathematics is necessary for people in all walks of life – whether engineers or scientists, or those working in the world of industry, finance or social sciences. Its role in other human endeavours apart, we also

recognise the profound cultural dimension that the study of mathematics has. There is an aesthetic component to its pursuit, and it inculcates the habit of rational thought and promotes what our first visionary Prime Minister Jawaharlal Nehru called “scientific temper”. It is important that study of mathematics is promoted amongst the young generation.

The International Mathematical Union, under whose auspices the Mathematical Congress is being held for the last 50 years has, I am told, initiated many programmes for the promotion of mathematics in developing countries. I wish them great success in such initiatives. I am also happy that mathematicians from India have been contributing to the work of the IMU and are hosting this Conference.

I congratulate all those who have extended support to the Conference. The Department of Atomic Energy and the Department of Science and Technology of the Government of India, in particular, have made this event – the ICM – possible. I understand that many individuals and corporate entities have also extended generous support. My congratulations go also to the University of Hyderabad, its Vice Chancellor and its Mathematics Faculty in particular, for their role in the organisation of this event.

I extend a warm welcome to all the delegates who have assembled here. To the foreign delegates who have come here, I extend a cordial welcome to India. Many of you, I hope, will find time to savour the rich cultural heritage of our country. The organisers have planned some programmes that would give you glimpses of our country’s rich culture. One interesting event is where Viswanathan Anand, the current World Chess Champion is going to play simultaneously against 40 mathematicians. Chess is a game of moves and strategy. It will now be facing the combined calculated moves of mathematics. I wish you all good luck in this challenge!

In conclusion, I wish you all a very fruitful meeting. This is a great opportunity for the mathematical community to interact. I once again wish the Congress great success.

Thank You. Jai Hind!

3.1.4. Adresses to the assembly (2)

Rajat Tandon, Secretary of the Executive Organizing Committee

Honourable President of India, Honourable Governor of Andhra Pradesh, Honourable Chief Minister of Andhra Pradesh, Vice Chancellor of the University of Hyderabad, dignitaries in the audience and fellow mathematicians,

We are grateful to you, Madam President, for sparing your time to grace this occasion. We are aware that you must be pressed for time, with much more important affairs of state, and we are grateful that you could find the time to come all the way from Delhi to be among us for this function.

I thank our honourable Governor too, for being here. He is the Rector of my university and we know he takes a keen interest in matters academic. Thank you Sir, for the interest that you have shown in our Congress. Thanks are due to our honourable Chief Minister for the unstinted support that his government has given the organizers. Without the support of his government, the conduct of this event would just not have been possible. We particularly thank the police department for their co-operation.

One of the most enthusiastic supporters of this International Congress has been our Vice Chancellor, Dr Hasnain. The number of ways he has helped our Congress is countless. It would perhaps not be an exaggeration to say that the entire university was put at the disposal of the conference organizers. I thank you Sir, for your infectious enthusiasm and support.

I would like to thank the Department of Atomic Energy for providing funds for the Congress as well as the Department of Science and Technology for supporting many of the delegates who are present here today. Thanks are due to the International Mathematical Union for supporting our bid to hold the Congress and for constantly helping us in the organization of the Congress. The Prime Minister's office has helped us in many ways and deserves thanks too. I would like to thank the Press for their continuous coverage of events leading up to the Congress, particularly The Hindu, which has provided coverage of not only the Congress but mathematics in general.

I would like to thank all the private donors to our Congress. Special mention must be made of Mr R. Thyagarajan, Chairman of the Sriram Group of Companies, and Infosys Technologies Limited and its Chairman Mr N. R. Narayana Murthy, for their extraordinary generosity. We thank also Microsoft, Reliance Capital, and Dr Anji Reddy for their support.

I would like to thank the London based theatre group Complicite for timing their visit to India with that of ICM, so that the play would be available for viewing of the delegates. Thanks are also due to the two artists who will be performing before all of you assembled here, Professor C. V. Chandrasekhar and his troupe and Ustad Rashid Khan. I must also make a mention of Grand Master Viswanathan Anand, who has found time for us in between two of his tournaments.

I profusely thank all the plenary and invited speakers and special speakers who have given their time and effort to speak at this Congress. I thank all the delegates for choosing to come to India and to attend this Congress, and I hope they find their time in India most enjoyable. All our volunteers deserve special thanks for working tirelessly night and day.

Lastly, on a more personal note, I thank my colleagues in the Organizing Committee, my colleagues in my department and my office staff. They have worked relentlessly for the last two years. The organization of a conference of this kind is an incredible team effort. There are a large number of workers whose contribution is crucial to the running of the Congress. I would not be able to thank them all. For this, I beg their forgiveness. However, they can rest assured that in spite of this, we are truly grateful to them. Thank you.

László Lovász

Ladies and gentlemen,

The inaugural function in the presence of the Indian President has now finished, but we have some traditional functions to perform. And so, I would like to ask you to bear with me a little bit. There are some things we have to do.

One of these traditions is that we commemorate those of our colleagues worldwide who passed away during the last four years. In this case, there are three losses which are particularly severe. During the last four years, Henri Cartan, great mathematician who was the President of the IMU from 1967 to 1970, passed away. Vladimir Arnold, who was the Vice President of IMU from 1999 to 2002, passed away. And Kiyosi Itô who was the winner of the Gauss Prize just four years ago, passed away. I propose that we stand up for a minute in their memory, and also of all of our colleagues worldwide who died.

Another important step is to reveal our Program Committee. The ICM program has been put together by a committee chaired by Hendrik Lenstra. And all, except the name of the committee chair, has not been made public until this moment in order to protect the committee from undue influence. The members of the Program Committee were Louis Chen, Dusa McDuff, Etienne Ghys, Ta-Tsien Li, José Antonio de la Peña, Alfio Quarteroni, S. Ramanan, Terence Tao, Eva Tardos and Anatoly Vershik. I think that among the many very hard tasks connected with organizing the Congress, the Program Committee has one of the hardest and perhaps, one of the most important. We see the result of their work. We have a list of invited speakers – I personally think that it is a great list. We are looking forward to a very high level and very interesting mathematical program. And this is due to the fantastic work of this Program Committee. So, let us give them applause.

Another step that I would like to propose is, that as is the tradition, we elect a President of the Congress. The President of the Congress is elected by acclamation. I propose that we elect Professor M. S. Raghunathan for this function.

As you all know, the General Assembly of the IMU has had its session just before the Congress. And, during that session, a lot of important decisions have been made. The tradition is that these decisions are discussed in detail at the Closing Ceremony. Nevertheless, I think that there are three of these which, perhaps, are best announced now. First of all, we have a new President, Ingrid Daubechies. She will start her term next January, and I am very glad that she accepted this job, and that she is present here. She is the first woman to be President of the International Mathematical Union. The General Assembly decided that the site of the next ICM will be in Seoul, South Korea, and again, at the Closing Ceremony, you will have much more to hear about this. One of the most important decisions of the General Assembly was to decide that the IMU should have a permanent office. The permanent office will be in Berlin. You will learn more about this. Congratulations, and thanks to all colleagues who made this possible.

For obvious reasons we have left vague some points in this afternoon's program. There will be laudations for the prize winners, for the Fields medalists and the Nevanlinna Prize winner. Harry Furstenberg will be the laudator for Elon Lindenstrauss, Jim Arthur will speak about the work of Ngô Bảo Châu, Harry Kesten will speak about Stanislav Smirnov, Horng-Tzer Yau will speak about Cédric Villani, and Gil Kalai will speak about Daniel Spielman. Tomorrow, we have a special occasion; because the Chern Prize is new, we also inaugurate this new prize. The winner, Louis Nirenberg, has received the prize but laudation on his work by Yan Yan Li will happen tomorrow. Ingrid Daubechies will speak about the work of Yves Meyer, the Gauss Prize winner.

Let me call your attention to the fact that you will find more about the prize winners on the home page of the ICM after 12:30 today. Also, talks by the Fields medalists and by the Nevanlinna prize winner are scheduled for the period 13:45 to 14:45 on the next five working days of the Congress.

While these are the announcements you have been waiting for with excitement, there are other prizes that are connected to the IMU or to this ICM. There is the Leelavati Prize, which is a new prize. At the moment, it is a one-time prize by the Indian government for popularization of mathematics, and it is named after a twelfth century Indian mathematical text. It will be awarded at the Closing Ceremony. I want to mention the other prize which is given by the Abel Foundation, but the IMU nominates members to the prize committee. Here are the winners of the last four Abel Prizes – Srinivasa Varadhan in 2007, John Thompson and Jacques Tits in 2008, Mikhail Gromov in 2009 and John Tate in 2010. There is an Abel Prize Lecture by Srinivasa Varadhan scheduled for this afternoon. I propose that we congratulate the prize winners.

There is one more prize which is especially important for us this is the Ramanujan Prize. It is given by the ICTP and is financed by the Abel Foundation. The IMU appoints members to the prize committee, and we cooperate with the ICTP in many other respects connected with this prize. This year's prize has not yet been announced. In 2006 Ramdorai Sujatha, in 2007 Jorge Lauret, in 2008 Enrique Pujals and in 2009 Ernesto Luperico received this prize. Again, let us congratulate them.

And finally, I would like to inaugurate the *Hyderabad Intelligencer*, edited by S. G. Dani, and I hope that you enjoy reading this publication. Now I ask Martin Grötschel to make some other presentations about the IMU.

Martin Grötschel

From what you have heard before, it may look like IMU is only awarding prizes and electing officers. No, IMU does much more. The IMU Executive Committee and the other IMU commissions and committees are working hard on many aspects of mathematics. It is not possible to present here all of ICMI's work for mathematical education, such as the ICMI studies, or the CDE/DCSG activities for mathematics in the developing world, like the report on Mathematics in Africa: Challenges and Opportunities, and so on.

I take this occasion to point to only a few topical items and I do hope that they are of interest for you. The work I will mention is mainly due to CEIC, IMU's Committee on Electronic Information and Communication.

This committee has produced a number of reports that can be downloaded from IMU's homepage. CEIC has written various recommendations on information and communication for mathematical authors, librarians and publishers. Valuable sources of information are the reports on *Best Practices for Retrodigitization* and the *Vision for the Future of Digital Mathematics Libraries*.

I want to invite you to read the document Citation Statistics that deals with impact factors and the like and analyzes the use and misuse of citation data in the assessment of scientific research. Many universities around the world, especially the administrators, are trying to rate the work of mathematicians by the impact factor or variants thereof. The Citation Statistics report reveals that the impact factor does not suit as a proper measure to rate the scientific quality of an individual person or department, not even a journal. And it shows how one can manipulate these bibliometric data which are claimed to be "simple and objective". But this judgment is unfounded. Douglas N. Arnold and Kristine K. Fowler have recently written the paper Nefarious Numbers in which they report, among other things, on some spectacular cases of misuse. In fact, impact factors and the like can now be viewed not as a matter of statistics, but of game theory. You play against the statistics and try to improve your rating. IMU is making an attempt to provide you with arguments against those administrators who believe that they can rank you and your work and compare your achievements with colleagues in other fields by computing some citation statistics.

At the meeting of the IMU General Assembly two days ago in Bangalore, the GA delegates endorsed a document called *Best Current Practices for Journals* that discusses journal related issues such as quality control, dissemination, archiving, transparency of the editing process, integrity of the persons involved, and professionalism. This document will be uploaded today on IMU's Web page. It will help you make decisions about buying or subscribing to mathematical journals, about submitting papers to journals, or about getting involved as editors of journals.

Some words concerning ICM issues. You know that the series of our International Congresses started in 1897. Two members of the current IMU Executive Committee, Salah Baouendi and Ragni Piene, did very careful and exhaustive work to collect the names of all persons who have ever spoken at an ICM as a plenary or invited speaker or in a particular function. Now, this collection of speakers is available and searchable on the IMU Web page.

My last activity on this stage today is to inaugurate a new Web page, which is the page where the digital versions of all ICM Proceedings of all time can be found. It contains all articles published in these proceedings in various formats. The whole collection is searchable in several ways. I now try to make a live search. I type “Hilbert”, a name you probably all have heard of, into the search field. Let's see what happens: Yes, this is live, more than 20 entries appear, among them five papers by Hilbert himself. And now I click on the Hilbert paper in the second line entitled *Sur les problèmes futurs des Mathématiques*. It is downloaded from the IMU server in Berlin, and here it is.

The paper I just downloaded is probably the most famous paper ever published in the Proceedings, one of the most important mathematical articles of all time. It is the paper in which David Hilbert outlined the 23 problems he considered of highest importance in the year 1900. This open problems collection influenced the development of mathematics very significantly throughout the last century.

Of course, putting together such a collection with all its functionalities is a major piece of work which usually is not done automatically and for free. That the use of this collection is completely free of charge for everyone is due to the fact that all publishing houses involved have granted IMU the right to digitize these books and that IMU engaged two volunteers, R. Keith Dennis of Cornell University, Ithaca, USA and Ulf Rehmann, Universität Bielefeld, Germany, who did all the digitization for love of mathematics. Thank you Keith and Ulf, and please give them a really big applause.

This finishes my brief presentation about what IMU is doing. IMU does a lot more, but there is not enough time to report about that here today.

Thank you very much.

M. S. Raghunathan

I welcome you all again in my new capacity as President of the ICM. I do not know how it is different from being the Chairman of the Organizing Committee but anyway, let me extend you a welcome. I hope you will find the Congress very fruitful, and all organization satisfactory. Thank you.

3.2. Closing Ceremony

Hyderabad International Convention Centre, August 27, 2010.

3.2.1. Adresses to the assembly (1)

M. S. Raghunathan

Professor Hasnain, delegates to the Congress, ladies and gentlemen,

I am very happy to welcome you all to this closing function of the ICM 2010. It has been a great experience organizing this. As you all know, it is a collaborative effort of the International Mathematical Union and the Local Organizing Committee. I must add to that the University of Hyderabad, whose Vice Chancellor is present here today. The University of Hyderabad has extended every possible help to us. Many of their staff have worked hard for this Congress. As I said, the IMU and the Local Organizing Committee are partners in this effort, and I have had a very enjoyable collaboration with the IMU Executive Committee. Despite the fact that I am a somewhat laid-back person and the Secretary personifies all thoroughness and efficiency, we did work together very well. And I am very thankful to the EC for their support.

I would also like to take this opportunity to congratulate the prize winners who will be felicitated today and awarded their prizes today: Professor R. C. Gupta for his work on history of mathematics, and Dr. Simon Singh for his work on public outreach for mathematics.

My congratulations to Professor Ingrid Daubechies for taking over as the next President of the IMU, and to Professor Hyungju Park for having won the bid to hold the next Congress – I wish him every success.

The last item on the agenda of the meeting today is the vote of thanks. This is a somewhat quaint business. You hear the person who does the most work for the Congress thank everybody else, and he does not get thanked himself. I would like to extend my thanks to Professor Rajat Tandon for all the immense work he has put in for the Congress.

3.2.2. Presentation of Prizes

Presentation of the Leelavati Prize

Dinesh Singh, University of Delhi

The Executive Organizing Committee of the ICM was seized of the importance of mathematics reaching out to the public. Towards this end, it has instituted a one-time international prize of one million Indian rupees for outstanding contribution to public outreach for mathematics by an individual. The prize is named the Leelavati Prize. Leelavati is a twelfth century mathematical treatise by the Indian mathematician Bhaskaracharya. In the book, the author poses a series of mathematics problems as challenges to one Leelavati and follows them up with indications of solutions. The problems are in verse form, but not the solutions. This work was the main source for learning mathematics in medieval India. The work was also translated into Persian and was influential in the Middle East.

The Leelavati Prize has been awarded to Dr Simon Singh and it is my pleasant duty on this occasion to read the formal citation: on the occasion of the International Congress of Mathematicians 2010, the Department of Atomic Energy of the Government of India and the Executive Organizing Committee for ICM 2010 are pleased to confer on Dr Simon Singh the Leelavati Prize for outstanding contributions to public outreach for mathematics. Dr Singh has been recognized for his outstanding contributions to the public understanding of

mathematics and science and in their promotion in schools, and in building links between universities and schools. His efforts to reach out to the public, both through print and television, have been enormously successful. His book entitled *Fermat's Last Theorem* was a best-seller for several months and was televised to make a hugely popular documentary. Dr Singh has also written *The Code Book*, describing the impact of cryptography on history. This also was converted to a popular five-part serial as a television documentary. More recently, Dr Singh has produced for radio and television *A further five numbers* dealing with five specific numbers of scientific or historical interest. No other author in recent times has caught the public imagination in painstakingly and accurately explaining recent developments in mathematics to them. The Executive Organizing Committee is honoured to confer the Leelavati Prize on Dr Simon Singh.

Simon Singh

Thank you very much. It is a genuine honour to be receiving this award, the first prize of its kind. I just want to say a few very brief things. One is that the most exciting moments I have had at the Conference have been people come up to me and say that when they read my book as a teenager, it helped inspire their interest in mathematics. And that is a real buzz for me because that is part of the reason that I write my books. Secondly, I think that it is worth mentioning that Martin Gardner passed away earlier this year, and I know many people in this room have been inspired by Martin's writing, and I myself was very much inspired by his writing.

Two other points I just make very briefly – one is that my parents emigrated from India in 1950, and I think one of the reasons they went to England was to try and benefit my education, and I learnt a great deal in English schools and became fascinated by mathematics and by science and benefitted from Britain's long tradition of excellent education. But having come back to India recently in the last ten years, it is very clear that Indian education is inspiring a new generation of young mathematicians and that is very exciting for me. Sadly, I think English education at the highest level is falling back. So, though I am very proud of the fact that India was moving forward rapidly in this area, it is a shame that in Britain and perhaps in Europe and in America, our schools are not pushing the best and brightest students as far as they possibly could.

Finally, it is an interesting point that my background is really in physics and I write about science and I write about mathematics. Though my first love, was physics when I was a student, now I love mathematics very much too, and I write as much about mathematics as I do about anything else.

Presentation of the Kenneth O. May Prize[3]

Kim Plofker, International Commission on the History of Mathematics

On behalf of the International Commission on the History of Mathematics of the IMU, I am very happy and greatly honoured to present the 2009 Kenneth O. May Prize to Professor R. C. Gupta. The May Prize is regarded as the highest honour in the field of History of Mathematics, and has been awarded to an eminent senior scholar every four years since its establishment in 1989. This occasion represents the first time it has been bestowed on an

[3] For the year 2009, this prize has been awarded jointly to Ivor Grattan-Guinness and R. C. Gupta. R. C. Gupta could not receive the prize at Budapest at the ICHM in 2009.

Indian historian, or a historian of Indian mathematics, among whom one of the most distinguished examples is Professor R. C. Gupta.

Radha Charan Gupta was born in Jhansi in 1935, and received his B. Sc. from Lucknow University in 1955. He was the first place medalist in the M. Sc. Mathematics examination in Lucknow in 1957, and earned a Ph. D. in the history of mathematics from Ranchi University in 1971. He did his dissertation work at Ranchi with the renowned historian of Indian mathematics T. A. Saraswathi Amma, author of *Geometry in Ancient and Medieval India*, in honour of whom he later endowed the annual memorial lecture of the Kerala Mathematical Association. After serving as a lecturer at Lucknow Christian College in 1957-58, he joined the Faculty of Mathematics of Birla Institute of Technology in Ranchi. He became a professor at BIT in 1982 and emeritus professor at the mandatory retirement age of 60 in 1995. He currently conducts his extensive and varied research and service activities under the aegis of the *Ganita Bharati* Institute, Jhansi.

Since the late 1960s, Professor Gupta's research work has focussed on the history of mathematics in India, particularly the development of trigonometry including interpolation rules and infinite series for trigonometric functions. Among his ground-breaking works in this field are his analysis of Parameswara's third order series approximation for the sine function in the fifteenth century and his examination of the eighth century methods of Govindaswami for interpolating sine tables. Professor Gupta's recent publications, the whole corpus of which now totals over five hundred items, include chapters on historiography of mathematics in India, area of a bow figure in India, and a little known nineteenth century study of *Ganitasarasangraha*. Besides skillfully analyzing many hitherto unknown ingenious mathematical formulas in elliptical Sanskrit verses, Professor Gupta has published several key papers on the remarkable mathematical discoveries of the Jaina tradition, many of which had been almost inaccessible to anyone except specialists in the Jaina cannon in Prakrit.

This bridge building approach has characterized Professor Gupta's research in general, whether explaining Sanskrit algorithms for a modern mathematical audience, surveying the twentieth century Indian doctoral research on history of mathematics, tracing the influence of Indian mathematical discoveries in foreign traditions, or expounding Jaina, Buddhist or Hindu cosmological theories in the context of early Indian work on transfinite quantities. He has combined scrupulous textual scholarship and expert mathematical exegesis with clear and comprehensive exposition, serving the needs of general audience and specialist researcher alike. No scholar in the twentieth century has done more to advance widespread understanding of the development of Indian mathematics.

Professor Gupta has added to his research and teaching, a long record of professional service, expanding awareness of the history of mathematics in general and of Indian mathematics in particular. In 1991, he was elected a Fellow of the National Academy of Sciences, India and in 1994, he became President of the Association of Mathematics Teachers of India. He became a Corresponding Member of the International Academy of History of Science in February 1995 and was more recently elected *Effective Member*. In 1979, he began his decades long service as Founding Editor of the journal Ganita Bharati meaning 'Indian mathematics', in which he has published scores of articles and reviews under his own name and the pen name *Ganitanand*, the joy of mathematics. His pedagogical publications and lectures in English and Hindi, as well as his sponsorship of numerous endowed lectures have greatly increased the prominence of history of mathematics in Indian mathematics education and scholarship. Today, we are very pleased and honoured to recognize Radha Charan Gupta with the Kenneth O. May Prize and Medal, awarded for lifetime scholarly achievement and commitment to the field.

Radha Charan Gupta

Dear colleagues,

I am really very happy at this occasion to receive this prize, not only because it has ultimately recognized my work but also because it is associated with the memory of late Professor Kenneth O. May with whom I had contact as early as 1968. When he founded the International Commission on History of Mathematics, he took me as a member to represent South Asia. In 1974, when he started the international journal *Historia Mathematica*, I played a role in spreading the message of that journal and did its work in India.

When I became the Editor of the *Ganita Bharati* I played a double role. I brought a world perspective on history of mathematics to Indian scholars and, on the other hand, I facilitated publications on history of Indian mathematics for world scholars. I am happy to see that things have worked.

I hope that this prize, which has come for the first time to India, will encourage Indian scholars to do more work. Thank you.

3.2.3. Adresses to the assembly (2)

Seyed E. Hasnain, Vice Chancellor of the University of Hyderabad

Distinguished mathematicians, members of the Press, dear friends,

I remember about three years ago, our Mathematics Department head came to me saying that they would like to host the ICM in India, they will get support from the Government of India, and they want the University of Hyderabad to host it. They asked me to agree and I agreed right away. And today, three years down the road, we see a runaway success. I have been in this hall many times. I have never seen a Congress – a prolonged meeting of nine days, in which the hall is full on the last day. This is a tribute to mathematicians. I salute all of you. Three thousand delegates, eighty five countries, the whole mandate of this ICM was to promote interaction, and I must say the ICM Secretariat must be very happy. It indeed must have fostered lot of interactions, lot of collaborations. I am sure there would be future Fields medallists who would be inspired, who would have been inspired by this meeting.

This meeting was also very unique in having several firsts. It is the first time, of course, it was held in India. It was the first time that a world chess champion, Grand Master Viswanathan Anand, played forty simultaneous matches and he could defeat everybody but had to draw with one small boy, an Indian boy.

We also had Dr Simon Singh receive the Leelavati award instituted by the Government of India, and we will make all efforts to ensure that this award joins the ranks of other prestigious awards and is awarded every four years.

I understand a lot of cultural programmes were organized by groups from my university. The Essence School of Performing Arts had some programmes here. And a newsletter *Reflexions* reported everyday about happenings in the conference. That just goes to show how much involved the entire University of Hyderabad family was in the ICM 2010.

Let me conclude by congratulating all the award winners and thanking the IMU for holding the meeting here in India, in Hyderabad, and requesting the University of Hyderabad to be the

host for this meeting. I would also like to thank all my colleagues at the University of Hyderabad, particularly the Secretary EOC, Rajat Tandon.

László Lovász

Ladies and gentlemen,

As President of the IMU, I have two more functions to perform here. Let me start with the first one. I have to report, in a bit more detail, about the main decisions taken by the General Assembly in Bangalore right before this Congress. Let me start with the new Executive Committee which will begin to function next January. Ingrid Daubechies is already introduced to you at the opening ceremony as the new President, Martin Grötschel will stay on as Secretary. Two new Vice Presidents have been elected – Christiane Rousseau and Marcelo Viana. Manuel de León, Yiming Long, Cheryl Praeger, Vasudevan Srinivas, John Francis Toland and Wendelin Werner will be members-at-large. I will have the privilege to stay for four more years *ex-officio* as the past President and I am happy to have this chance to work. I wish the new President and the new Executive Committee a successful term.

A new Commission for Developing Countries was elected by the General Assembly. José Antonio de la Peña will be the President, Herbert Clemens will be Secretary of Policy, Srinivasan Kesavan will be Secretary for Grants, Hoang Xuan Phu will represent Asia, Wandera Ogana will represent Africa and Carlos Cabrelli will represent Latin America in this Commissison. Again, congratulations to them and I wish them successful work.

The General Assembly also elected two persons to be delegated to the International Commission on the History of Mathematics – they are Jesper Lützen and Kim Plofker. Congratulations.

I would like to express my thanks at this point to the retiring Executive Committee, even though we still have a hard four months in front of us with all the work around the stable office, to which I will come in a minute. I would like to extend my thanks to those members who are retiring – Zhi-Ming Ma and Claudio Procesi as Vice Presidents, Salah Baouendi, Ragni Piene and Victor Vassiliev as members-at-large. It was great to work with them and I really feel that this Executive Committee was a great team and I wish the next one also has such a spirit. I especially thank John Ball, the Past President, for his help throughout. Without that this Committee could not have functioned. He was always tireless and ever ready to take on any kind of job. Thank you John, and thanks to all the other members.

In connection with the new Commission for Developing Countries, there were two committees which have ceased to exist. They were merged and their functions were combined. One of them was the Commission on Development and Exchanges, whose President was Shrikrishna Dani and Secretary-Treasurer was Gérard Gonzalez-Sprinberg. Graciela Boente, Paulo Cordaro, Jean-Pierre Gossez, Mary Teuw Niane, Marta Sanz-Solé and Jiping Zhang were members. I thank them all for their work over the last term. And we also had a Developing Countries Strategy Group, which was chaired by Herbert Clemens, and consisted of Jill Adler, Hajer Bahouri, John Ball, Shrikrishna Dani, Jean-Pierre Gossez, Andreas Griewank, Jacob Palis, Lê Dung Trang, Peter Pang Yu Hin, Michel Jambu, Sheung Tsun Tsou. I thank all members of this group for doing outstanding work.

This was my first task, and now I would like to ask Ingrid Daubechies to say a few words.

Ingrid Daubechies, President elect of the International Mathematical Union

As was said at the start of the ceremony how things must end. This is the end of this ICM which I enjoyed hugely, and as you can see (pointing to her new Indian costume) I enjoyed not only the mathematics!

As you have heard from Laci, IMU not only organizes ICMs although that is one of its very important functions, but it also stands for helping developing countries build viable mathematical communities, and for strengthening links between mathematicians who devote their lives to teaching mathematics to younger generations and research mathematicians. I would encourage those of you who are curious about these other roles of the IMU, or curious about how an ICM gets organized, to visit the website of IMU. And if you would like to get involved, if you would like to contribute, contact the delegates of your country or write to the Executive Committee. We prefer constructive comments to hate mail. But of course, one of IMU's major functions is to organize the next ICM. As I said I enjoyed this one hugely, I have learnt, I have met many new people and I will be working hard on making the next one equally enjoyable.

Hyungju Park, Chair of the Seoul ICM 2014 Organizing Committee

I will start by showing the invitation from the President of the Republic of Korea. The President's office in Korea was involved in this endeavour, in our bidding efforts, from the very beginning and has been very supportive. Not many of you have been to Korea and may not know about it. So I will start by telling you what Korea is like. By the way, you may know the expression 'the land of the morning calms' – this expression was used in a poem. It was a poem written by a well-known Indian poet named Tagore. In this poem he described Korea as the land of morning calm, apparently he meant Korea was a quiet hidden country. And so, that was then.

Now Korea is considered a leader in the information age. So we have come a long way. And one thing I want to emphasize here is that scholarship is valued very highly in Korea. Illiteracy rate in Korea is close to zero, virtually zero, and often education is the highest priority in any Korean family. And I think that was the principal reason for any progress that we might have made. A few years ago, Korea was the eleventh largest economy in the world. Starting from the ashes of Korean Civil War, that was quite a progress that we made. Unfortunately because of some Asian financial problems, we are now, I think, down to thirteenth probably, in terms of size of the economy. But still we are there, we are vibrant.

And Korea is very accessible. Of course, some people joke that everybody seems to place their country in the centre of the world, well I did! So, Seoul is not far. It takes about twelve hours from Los Angeles, twelve hours from Paris, twelve hours from Rome, and it takes about nine hours from here. So, it is not too far. And we have 'no visa' agreements with one hundred and sixty countries. So, many of you will be able to come to Korea without having to worry about visas. And we wanted to make sure that everybody, every registered participant of ICM, could come visit us in Korea. So, we talked to the Ministry of Foreign Affairs and they wrote that they will do this.

Of course, I have to tell you about the mathematics in Korea. And the expression that I used was 'a long journey'. We have 192 four-year universities and colleges in Korea and 42 of them have Ph.D. programmes in mathematics and mathematics education. The Korean Mathematical Society has about 2700 individual members, of which about 1200 are professors of mathematics. We joined the IMU in 1981 and now we are a Group IV member.

Rapid growth is observed over a broad spectrum. On one end, highest level of mathematical research; on the other end, popularization of mathematics and education. Korea ranked eleventh in terms of number of publications in 2008. Not only quantity of course, but quality research is being carried out and is highly valued and respected in Korea. For example, we have five invited speakers in ICMs, two this time.

In 1981, the number of research papers published by mathematicians based in Korea was three. So we came from three to where we are in less than thirty years. And I think that took a lot of effort from our side and also a lot of support and help from the international community. And this is something we want to remember for long, and want to actually show the world that we have done this and we now want to make another jump.

And as I said rapid growth is observed over a broad spectrum, not only just in research but also in terms of popularization of mathematics and public outreach. For example, that includes the public's growing interest in mathematics. In IMO, International Mathematical Olympiad, Korea has been ranking third or fourth consistently, implying that young students in Korea are genuinely interested in mathematics. And by the way, about 60 to 70 percent of these IMO medalists do choose mathematics as their college major. And many of them do even end up getting Ph.D. in mathematics. I think this is a singular phenomenon in the world. And also, there are many mathematical research institutes in Korea, and the government is supporting it. We have two main research institutes – KIAS and NIMS, and we have several institutes located at universities. And numerous meetings are being hosted, the most recent one being a joint meeting with the American Mathematical Society.

There is a pledge that we made during our bidding efforts. We offered to invite one thousand mathematicians from developing countries to Korea, all expenses paid. The morale, the rationale, is simple. We came to where we are by the support of the international mathematical community, and we believe that we can return the favour. And we wish to acknowledge the gracious and friendly support from the international mathematical community. I have heard from my own teachers, my college teachers, their experience about being a single Korean participant in ICM, and that was made possible by an IMU travel grant. The professors came back with all the stories to tell, and that excited me and my fellow students. And I am hoping that the same thing can happen in many other countries. This Seoul ICM travel fellowship programme will be prepared in consultation with IMU, especially the newly created Commission for Developing Countries.

I most cordially invite all of you to Seoul.

Jürgen Sprekels, Director of the Weierstrass Institute[4]

Mr. President,
Dear Colleagues from all over the world,

the Stable IMU Office in Berlin will be hosted by the Weierstrass Institute for Applied Analysis and Stochastics (WIAS). As the director of WIAS, I must say that we are very proud indeed to have been entrusted with this all-important task, and we will try to do our very best to serve you and to meet your expectations.

Let me say a few words about the Weierstrass Institute. Until 1989, it was the Institute of Mathematics of the former GDR's Academy of Sciences. Then, in 1989, the "Wind of Change" came, the Berlin Wall fell, and the two German states reunited. In 1992, the WIAS

[4] host of the permanent IMU Secretariat

became a non-university research institute for applied mathematics. Today, it is a member institute of the European Research Centers on Mathematics (ERCOM) and of the International Mathematical Sciences Institutes (IMSI), and the seat of the German Mathematical Society (DMV). We have approximately 150 employees in total, of whom 120 are scientists. The total budget in 2009 was 10.2 Million Euros, of which 7.5 Million Euros came from governmental sources.

The location is perfect: Central Europe, easily accessible from everywhere in the world, in the very heart of the German capital, and in closest vicinity to governmental buildings, scientific organizations, and funding agencies.

The office will be located in Markgrafenstrasse, just a few meters away from the WIAS main building, and adjacent to the famous historical Gendarmenmarkt. Within the office, whose size is approximately 370 square meters, there will be five office rooms, fully equipped with up-to-date IT facilities, a meeting and a reading room, and a room for the IMU Archive.

The staff will consist of three full-time and two half-time positions, for which WIAS guarantees full back-up. The office will be headed by Professor Alexander Mielke, the Deputy Director of WIAS, who could also serve as IMU Treasurer if the IMU so decides.

The core funding of the office comes at equal parts from the German Federal Ministry of Education and Research and from the Senate of the City of Berlin. Additional funding and further support will come from a number of German funding agencies such as the German Science Foundation, the Alexander von Humboldt Foundation, the Einstein Foundation Berlin, and others.

There is a very strong support of mathematics within the German government. We can count on the support of the Federal Minister of Education and Research, Professor Annette Schavan, who patronized the highly successful “Year of Mathematics 2008” in Germany.

The German Chancellor, Dr. Angela Merkel, a physicist by education, even has sort of a “mathematical career”: she was among the winners of a regional Mathematical Olympics in Teterow, North-East Germany, nearly forty years ago.

Ladies and Gentlemen, dear Colleagues,

the Weierstrass Institute, and the entire mathematical community of Berlin, we are looking forward to hosting the IMU Office in Berlin and to serving you. From now on, we will work hard to try to meet your expectations, and all we can do is to promise to do our very best.

So, be welcomed to the WIAS, and feel at home among the mathematical institutions of Berlin.

Thank you very much for your attention!

Rajat Tandon

Professor Hasnain, Professor Lovász, Professor Raghunathan, Professor Daubechies, Professor Park and fellow mathematicians,

A project started four years ago is about to come to an end. I would like to take this opportunity to acknowledge the person who first mooted the idea of bringing the Congress to India: Mr R. M. Puri of the Indian Convention Promotion Board.

Let me begin by thanking our Vice-Chancellor, Professor Seyed Hasnain. In him we found our most ardent supporter. He always backed us to the hilt. I thank the Finance Department of

the University of Hyderabad for their support in making the financial processes work as smoothly as possible; the Public Relations Department and our PRO for their help in handling the local media.

Thanks are due to the Executive Committee of the IMU, for constantly supporting us and advising us. A particular word of thanks to Professor Lenstra and the entire Program Committee for providing us with an academic program of the highest standards and widest interest. I thank the invited speakers for their contribution to the Congress.

A word of gratitude for the state and central government departments, and the Prime Minister's Office for helping us when matters came to a crunch. A special word of gratitude for Mr R. Thyagarajan and Mr N. R. Narayana Murthy for their generous support to the Congress.

The cultural items were a great success. I would like to thank Professor J. Anuradha and the students of the Dance Department at the University of Hyderabad. I am thankful to Professor Sunil Mukhi for two excellent lectures on the appreciation of Hindustani classical music. The London based theatre group Compliate came all the way to Hyderabad, and gave us a wonderful play. I thank the producer Judith Dimant, the director Simon McBurney, their manager Cathy Binks and the Prithvi Theatre of Mumbai. I am grateful to grandmaster Viswanathan Anand for the match he played with forty participants. The participants themselves were thrilled, and chess lovers were rewarded with a matchless performance.

The two public lectures were a great success. Both Professors Bill Barton and Günter Ziegler who gave the lectures were inundated by questions and mobbed like film stars. I was frankly jealous. Profuse thanks to both the speakers.

I would like to take this opportunity to thank my colleagues. Our chairman, Professor Raghunathan, held us all together – his contribution was invaluable. My colleague Professor Amaranath and I were like brothers for the last four years.

Let me not forget to thank the entire HICC team for their support, and the team of KW Conferences for being the second face of the Organizing Committee. My own department staff, Chandrasekhar and Gangaji in particular, have burnt the midnight oil on several occasions. I salute them. FinalIy I thank all the volunteers who have worked tirelessly for the last ten days.

Fellow delegates, I realize that there were many glitches along the way, that there were problems in logistics, and that sometimes the arrangements were not perfect. To those who have been inconvenienced in any way I offer a sincere word of apology.

Thank you once again for coming to Hyderabad, and making this Congress a great success.

Thank you.

4. ICM 2010 Travel Grants Report

The Travel Grants Committee consisted of Professors Anatoly Vershik (Russian Federation), Wilfrid Gangbo (U.S.A.), Marcelo Viana (Brazil), Zhi-Ming Ma (China), and S. G. Dani (India).

An online application system was developed at the servers of the Ohio State University. A total of 770 applications were received from the developing countries. Among these 360 mathematicians were of age 35 or younger (these are referred to as "Young Mathematicians"). The remaining 410 applications came from the "Senior Mathematicians" from these countries.

Applications were grouped according to the region of the applicant. There were five regions and each region was assigned a review committee as follows:

Region	**Chair of the review committee**	**No. of Senior Mathematician applications**	**No. of Young Mathematician applications**
Africa	W. Gangbo	95	66
Asia	Z. Ma	42	48
Eastern Europe	A. Vershik	110	43
Indian Subcontinent	S.G. Dani	38	89
Latin America	M. Viana	125	114

A total of 120 awards were available and during a teleconference among the reviewers in February 2010, region wise award distribution was decided. The following table shows the distribution of the grants:

Region	**Senior Mathematicians**	**Young Mathematicians**	**Total**
Africa	12	13	25
Asia	10	10	20
Eastern Europe	15	10	25
Indian Subcontinent	8	12	20
Latin America	12	18	30

The selection process was done remotely using online database of applications with assistance of 3 or more reviewers from each region.

53 of the 63 Young Mathematicians and 53 of the 57 Senior Mathematicians (together 106) who were offered a grant travelled to Hyderabad, India.

Total Spending for ICM 2010 travel grants:

Travel Grants Given Out	**Bank Charges**	**Total Amount**
US$164,238.43	US$3,927.75	US$168,166.18

For all 106 mathematicians who attended the ICM 2010, the Local Organizing Committee of the International Congress of Mathematicians 2010 covered the registration fee and also provided board and lodging, for which IMU is most grateful.

The list of grant awardees is appended below.

The funds for these grants were given by:

2007	
American Mathematical Society	US$ 16,506.20
London Mathematical Society	US$ 5,000.00
Total	*US$ 21,506.20*

2008	
American Mathematical Society	US$ 20,428.85
London Mathematical Society	US$ 5,000.00
Total	*US$ 25,428.85*

2009	
American Mathematical Society	EUR 15,324.93
London Mathematical Society	EUR 3,562.00
Unione Matematica Italiana	EUR 2,928.85
Deutsche Mathematiker-Vereinigung	EUR 2,500.00
Total	*EUR 24,314.88 (~ US$ 34,279.12)*

2010	
Mathematical Society of Japan	EUR 17,607.19
American Mathematical Society	EUR 14,388.58
London Mathematical Society	EUR 4,073.65
Total	*EUR 36,069.42 (~US$ 44,667.85)*
Total funds received 2007-2010:	**US$ 125,882.02**

On behalf of IMU, the Executive Committee expresses its deep gratitude for these donations.

Finally, IMU is very grateful to the Local Organizing Committee for printing and distributing the VLP brochures. The Local Organizing Committee provided excellent accommodation and addressed the needs of IMU awardees promptly.

List of ICM 2010 Travel Grant awardees:

Grants to Young Mathematicians			
Surname	**Given name(s)**	**Region**	**Country**
Adrega de Moura	Adriano	Latin America	Brazil
Ahanjideh	Neda	Indian Subcontinent	Iran
Andrada	Adrian Marcelo	Latin America	Argentina
Araujo	Carolina	Latin America	Brazil
Arbieto Mendoza	Alexander Eduardo	Latin America	Brazil
Balderrama	Cristina	Latin America	Venezuela
Bernatska	Julia	Eastern Europe	Ukraine
Cavalcante	Marcos	Latin America	Brazil
Celeste	Richell	Asia	Philippines

Coda Santos Marques	Fernando	Latin America	Brazil
Dai	Lixia	Asia	China
De Los Reyes	Juan Carlos	Latin America	Ecuador
Dinar	Yassir	Africa	Sudan
El-Guindy	Ahmad	Africa	Egypt
Fang	Jin-Hui	Asia	China
Farah Dias	Luiz Gustavo	Latin America	Brazil
Garcia Ramos	Yboon Victoria	Latin America	Peru
Glibichuk	Alexey	Eastern Europe	Russia
Hoang le	Truong	Indian Subcontinent	Vietnam
Jaiyeola	Temitope	Africa	Nigeria
Kisisel	Ali Ulas Ozgur	Asia	Turkey
Kocsard	Alejandro	Latin America	Brazil
Koropecki	Andres	Latin America	Brazil
Kryzhevich	Sergey	Eastern Europe	Russia
Maingi	Damian	Africa	Kenya
Mansour	Zeinab	Africa	Egypt
Mariano	Rochelleo	Asia	Philippines
Marques Alves	Maicon	Latin America	Brazil
Mironov	Andrey	Eastern Europe	Russia
Molati	Motlatsi	Africa	Lesotho
Mombelli	Juan Martin	Latin America	Argentina
Morris	Robert	Latin America	Brazil
Namoco-Agdeppa	Rhoda	Asia	Philippines
Navas	Andres	Latin America	Chile
Nguyen	Du Vi Nhan	Indian Subcontinent	Vietnam
Nguyen	An Khuong	Indian Subcontinent	Vietnam
Onshuus	Alf	Latin America	Colombia
Pacini	Marco	Latin America	Brazil
Rabarison	Patrick	Africa	Madagascar
Sahraoui	Fatiha	Africa	Algeria
Shaveisi	Farzad	Indian Subcontinent	Iran
Shchukin	Mikhail	Eastern Europe	Belarus
Shramov	Konstantin	Eastern Europe	Russia
Skopenkov	Mikhail	Eastern Europe	Russia
Soydan	Gokhan	Asia	Turkey
Suarez-Serrato	Pablo	Latin America	Mexico
Traore	Aboubakari	Africa	Ivory Coast
Tumarkin	Pavel	Eastern Europe	Russia
Vyugin	Ilya	Eastern Europe	Russia
wang	bin	Asia	China
Xiang	Shuhuang	Asia	China
Zelenyuk	Yuliya	Africa	South Africa
Zhou	Haigang	Asia	China

Grants to Senior Mathematicians			
Surname	**Given name(s)**	**Region**	**Country**
Abdollahi	Alireza	Indian Subcontinent	Iran
Adegbie	Kolawole Sunday	Africa	Nigeria
Aleksandrov	Aleksandr	Eastern Europe	Russia
Amirali	Gabil	Asia	Turkey
Baskoro	Edy Tri	Indian Subcontinent	Indonesia
Brambila-Paz	Gloria Leticia	Latin America	Mexico
Cendra	Hernan	Latin America	Argentina
Darafsheh	Mohammad Reza	Indian Subcontinent	Iran
Darwish	Mohamed	Africa	Egypt
de Melo	Welington	Latin America	Brazil
Degla	Guy Aymard	Africa	Benin
Diaz Camacho	Rafael	Latin America	Colombia
Dickenstein	Alicia	Latin America	Argentina
Djoric	Mirjana	Eastern Europe	Serbia
Essel	Emmanuel Kwame	Africa	Ghana
Ferrer	Santos	Latin America	Uruguay
Flores	Fabian	Latin America	Chile
Guo	Xuejun	Asia	China
Huang	Zhaoyong	Asia	China
Khimshiashvili	Giorgi	Eastern Europe	Georgia
Khosravi	Behrooz	Indian Subcontinent	Iran
Le	Tuan Hoa	Indian Subcontinent	Vietnam
Leitao	Antonio	Latin America	Brazil
Luca	Florian	Latin America	Mexico
Manuilov	Vladimir	Eastern Europe	Russia
Miatello	Roberto Jorge	Latin America	Argentina
Moakher	Maher	Africa	Tunisia
Mukhamedov	Farrukh	Indian Subcontinent	Malaysia
Nemenzo	Fidel	Asia	Philippines
Ngo	Viet Trung	Indian Subcontinent	Vietnam
Obukhovskiy	Valery	Eastern Europe	Russia
Oguntuase	James Adedayo	Africa	Nigeria
Olanrewaju	Philip Oladapo	Africa	Nigeria
Petrogradsky	Victor	Eastern Europe	Russia
Piccione	Paolo	Latin America	Brazil
Qin	Hourong	Asia	China
Rakic	Zoran	Eastern Europe	Serbia
Rappoport	Yury	Eastern Europe	Russia
Rentsen	Enkhbat	Asia	Mongolia
Sal Moslehian	Mohammad	Indian Subcontinent	Iran
Sergeichuk	Vladimir	Eastern Europe	Ukraine

Sharma	Bibhya	Asia	Fiji Islands
Shen	Zifei	Asia	China
Shepelskiy	Dmytro	Eastern Europe	Ukraine
Skopina	Maria	Eastern Europe	Russia
Soto Andrade	Jorge	Latin America	Chile
Sy	Polly	Asia	Philippines
Terzic	Svjetlana	Eastern Europe	Montenegro
Tikhonov	Sergey	Eastern Europe	Belarus
Troitskiy	Evgeny	Eastern Europe	Russia
Wang	Lanyu	Asia	China
Yanchevskii	Vyacheslav	Eastern Europe	Belarus
Yengui	Ihsen	Africa	Tunisia

5. Support and benefits given by the Local Organizing Committee

1. The Indian organizing committee offered total support to foreign nationals from neighboring countries (travel, visa fees and local hospitality). Finally only 40 delegates availed of this support.
2. The Indian organizing committee offered local hospitality (local transport, board and lodging) to over 200 registered delegates. Finally 140 delegates availed of this support.
3. The Indian organizing committee offered full travel and local hospitality to 1030 delegates of which 760 availed of the support.