

IMU



**BULLETIN OF THE
INTERNATIONAL MATHEMATICAL UNION**

No.73

December 2021

Secretariat:

*International Mathematical Union
Secretariat
Hausvogteiplatz, 11a
D-10117 Berlin, Germany*

<https://www.mathunion.org/>

List of Abbreviations

AO	Adhering Organization
CDC	Commission for Developing Countries
CEIC	Committee on Electronic Information and Communication
CoD	Ad hoc Committee on Diversity
CoP	Ad hoc Committee on Permissions
CWM	Committee for Women in Mathematics
EC	Executive Committee
FIMU	Friends of the International Mathematical Union
GA	General Assembly
ICHM	International Commission on the History of Mathematics
ICM	International Congress of Mathematicians
ICMI	International Commission on Mathematical Instruction
IDM	International Day of Mathematics
IMU	International Mathematical Union
ISC	International Science Council

Dear Members of the International Mathematical Union

The introduction for the 2020 Bulletin ended with the following statement:

The pandemic has yet to be conquered. It is impossible to tell now what the long-term consequences of this dramatic event will be. But it is clear that it will also be the focus of the 2021 Bulletin.

At the time of writing this, we are most likely approaching the tail end of the pandemic. But the impact of the COVID-19 pandemic in 2021 continued to have deep and far-reaching consequences for the IMU and the international mathematical community. We were not yet able to return to direct, in-person conferences and collaboration on a broad scale, which are so conducive and vital to the nature of scientific work. We have on the other hand become accustomed to holding video meetings and attending virtual conferences, with giving and listening to virtual lectures becoming rather standard. However, while technologically sophisticated, we also see the limitations of this technology, and we all realize how much real human interaction means and matters.

Unaware of what lay ahead of us, the preparations for the planned ICM 2022 in Saint Petersburg continued in 2021. Speakers were invited, schedules were made, proceedings produced, and satellite events planned. It is a gigantic undertaking to organize an ICM, and we are grateful to our colleagues for the voluntary and extensive work they were doing to make ICM 2022 a high-caliber and successful event. Political developments in Russia during 2021 did give us some cause for concern, and the IMU issued two public statements regarding this, see Circular Letters 3/2021 and 21/2021. On top of that, the uncertainty about the development of the pandemic – both in Russia and globally – and the consequences for the participants of the ICM, made detailed planning difficult, as conditions and restrictions could change rapidly with dramatic consequences.

Our conference "Mathematics without Borders", celebrating the centennial of the IMU's initial creation in 1920, had to be postponed in 2020 due to the pandemic. Fortunately, we were able to celebrate the centennial belatedly in 2021 in Strasbourg as an in-person event. However, some of the lectures had to be given remotely due to the pandemic. The conference was a big success, and for many it was the first in-person event since the beginning of the pandemic. We are particularly grateful to our partners and the Université de Strasbourg for their engagement in organizing this celebration.

While celebrating the history of the IMU, the Union also became involved in new ventures and activities in 2021. The International Union of Pure and Applied Physics (IUPAP) took the initiative to establish an international year of basic sciences related to sustainable development. On 2 December 2021 the United Nations proclaimed 2022 as the International Year of Basic Sciences for Sustainable Development (IYBSSD 2022, see iybssd2022.org). The IMU is proud to be a founding union of IYBSSD 2022.

Another new activity developed in 2021 concerns the issue of open access resources. The IMU Executive Committee – on the advice of the IMU Committee on Electronic Information and Communication (CEIC) – created an ad hoc Committee on Permissions (CoP) to advise the IMU on a negotiating strategy regarding the window for open access. Specifically, the task of the CoP is to report to the IMU Executive Committee regarding the following:

- A recommendation for IMU policy on the time frame for making papers freely available after publication, together with technical details such as licenses.
- A concrete proposal for how to implement this recommendation, for example by outreach to publishers, with the particular goal of negotiating access to existing back issues.
- Any additional considerations that may affect the availability of past papers, such as the demise of publishing companies or issues with archiving.

We look forward to providing updates on the progress of CoP's work in future Bulletins.

Membership in the Union remains as always a matter of utmost importance. On this note, we welcomed two new Members in 2021, with Belarus joining as a regular Member and Mongolia as an Associate Member. There was also a membership upgrade in 2021, with Indonesia progressing to Group II. Conversely, the beginning of 2021 saw the end of the second term as an Associate Member for Cambodia, Madagascar, and Nepal. The next stage would be an application for regular membership, which we hope will be forthcoming in due course.

The deadline for making bids for ICM 2026 expired in 2021, and we received a very solid bid from the US Adhering Organization with Philadelphia as the venue for the ICM and New York City for the General Assembly. The decision about the site for the next ICM will be taken by the General Assembly in 2022.

Finally, as we are all aware, the war in Ukraine has made it impossible to carry out the General Assembly and the ICM as scheduled in Saint Petersburg. The ICM will be converted into a fully virtual event, and the General Assembly will take place as an in-person event outside Russia. A full report on these events will follow in next year's Bulletin.

With best wishes

Helge Holden
Secretary General of the International Mathematical Union

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1. IMU Leadership and Membership Information

1.1. Executive Committee 2019-2022

INTERNATIONAL MATHEMATICAL UNION

Executive Committee

January 1, 2019 – December 31, 2022

President:	Carlos E. Kenig	(USA)
Vice-Presidents:	Nalini Joshi Loyiso G. Nongxa	(Australia) (South Africa)
Secretary General:	Helge Holden	(Norway)
Members-at-Large:	Luigi Ambrosio Andrei Okounkov Paolo Piccione R. T. Ramadas Gang Tian Günter M. Ziegler	(Italy) (Russia) (Brazil) (India) (China) (Germany)
Ex-officio Member (Past President)	Shigefumi Mori	(Japan)

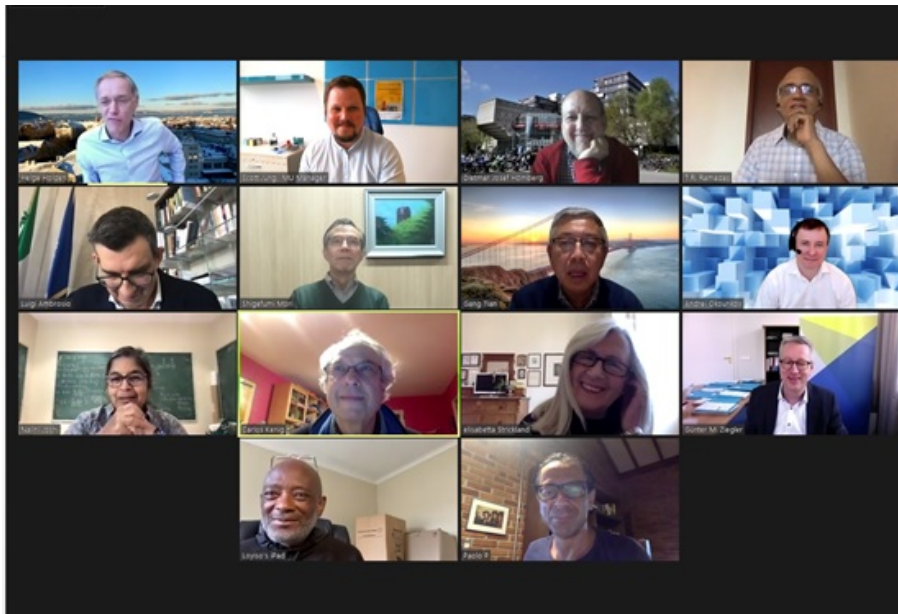


Image: IMU 2021 EC Virtual Meeting (Screenshot/Zoom)

Meetings of the Executive Committee in 2021:

93rd EC Meeting, Virtual, March 19-21, 2021

1.2. IMU Leadership 2019-2022

IMU Executive Committee (EC) 2019 – 2022

Carlos E. Kenig	IMU President	USA
Helge Holden	IMU Secretary General	Norway
Nalini Joshi	IMU Vice President	Australia
Loyiso G. Nongxa	IMU Vice President	South Africa
Luigi Ambrosio	IMU EC Member-at-Large	Italy
Andrei Okounkov	IMU EC Member-at-Large	Russia
Paolo Piccione	IMU EC Member-at-Large	Brazil
R. T. Ramadas	IMU EC Member-at-Large	India
Gang Tian	IMU EC Member-at-Large	China
Günter M. Ziegler	IMU EC Member-at-Large	Germany
Shigefumi Mori	IMU EC Ex-officio Member (Past President)	Japan

Commission for Developing Countries (CDC) 2019 – 2022

Dipendra Prasad	CDC President	India
Olga Gil Medrano	CDC Secretary Policy	Spain
Alf Onshuus	CDC Secretary Grants	Colombia
Mama Foupouagnigni	CDC, African Member	Cameroon
José Maria Balmaceda	CDC, Asian Member	Philippines
Andrea Solotar	CDC, Latin American Member	Argentina
Galina Rusu	CDC Member appointed by IMU EC	Moldova
Michel Waldschmidt	CDC Member appointed by IMU EC	France
Anjum Halai	CDC Member appointed by ICMI EC	Pakistan
Carlos E. Kenig	CDC Ex-officio Member (IMU President)	USA

International Commission on the History of Mathematics (ICHM) 2019 – 2022

Isobel Falconer	ICHM	UK
Catherine Goldstein	ICHM	France

International Commission on Mathematical Instruction (ICMI) 2021 – 2024

Frederick K. S. Leung	ICMI President	SAR, China
Jean-Luc Dorier	ICMI Secretary-General	Switzerland
Merrilyn Goos	ICMI Vice President	Australia
Anjum Halai	ICMI Vice President	Pakistan
Marta Civil	ICMI EC Member-at-Large	USA
Patricio Felmer	ICMI EC Member-at-Large	Chile
Mercy Kazima	ICMI EC Member-at-Large	Malawi
Núria Planas	ICMI EC Member-at-Large	Spain
Susanne Prediger	ICMI EC Member-at-Large	Germany
Jill Adler	ICMI EC Ex-officio Member (ICMI President 2017-2020)	South Africa
Carlos E. Kenig	ICMI EC Ex-officio Member (IMU President)	USA
Helge Holden	ICMI EC Ex-officio Member (IMU Secretary General)	Norway

Committee on Electronic Information and Communication (CEIC) 2019 – 2022

(CEIC terms of membership are staggered.)

Henry Cohn	CEIC Chair	2019 – 2022	USA
Jean-Pierre Bourguignon	CEIC Member	2021 – 2023	France
Kevin Buzzard	CEIC Member	2021 – 2024	UK
Marie Farge	CEIC Member	2019 – 2022	France
Patrick Ion	CEIC Member	2015 – 2022	USA
Rajeeva Karandikar	CEIC Member	2019 – 2022	India
Ingrid Rewitzky	CEIC Member	2021 – 2024	South Africa
Mila Runnwerth	CEIC Member	2019 – 2022	Germany
Victoria Stodden	CEIC Member	2015 – 2022	USA

Committee for Women in Mathematics (CWM) 2019 – 2022

Marie-Françoise Roy	CWM Chair	France
Carolina Araujo	CWM Vice-Chair	Brazil
Alejandro Adem	CWM Member-at-Large	Canada
Petra Bonfert-Taylor	CWM Member-at-Large	USA
Tony Ezome	CWM Member-at-Large	Gabon
Josephine Kagunda	CWM Member-at-Large	Kenya
Motoko Kotani	CWM Member-at-Large	Japan
Neela Nataraj	CWM Member-at-Large	India
Ekin Ozman	CWM Member-at-Large	Turkey
Cheryl Praeger	CWM Member-at-Large	Australia

Persons representing IMU in various organizations

Body	Representative/ liaison	Term
Committee on Data of the ISC (CODATA)	Henry Cohn	2019 – 2022
Consultative Committee for Units (CCU)	Helge Holden	2020 – 2022
COSPAR, International Scientific Union Representative	Nalini Joshi	2019 – 2021
Gruber Foundation, Cosmology Prize, Selection Advisory Board	Hans Ringström	2021 – 2023
ISC	Loyiso G. Nongxa	2019 – 2022
UNESCO	Loyiso G. Nongxa	2019 – 2022
Ramanujan Prize	R. T. Ramadas	2019 – 2022
ICMI (IMU EC liaison)	Paolo Piccione	2019 – 2022
CDC (IMU EC liaison)	Luigi Ambrosio	2019 – 2022
ICHM (IMU EC liaison)	Gang Tian	2019 – 2022
CEIC (IMU EC liaison)	Nalini Joshi	2019 – 2022
CWM (IMU EC liaison)	Carlos E. Kenig	2019 – 2022
IMU News Editor	Yoshiharu Kohayakawa	2021 – 2024
IMU News EC correspondent	Andrei Okounkov	2019 – 2022
IDM (IMU EC liaison)	Günter M. Ziegler	2019 – 2022
Curator of the IMU Archive	June Barrow-Green	2021 – 2024

1.3. Members of the Union

The following countries were Members of IMU through December 2021:

Algeria	Hong Kong	Paraguay*
Argentina	Hungary	Peru
Armenia	Iceland	Philippines
Australia	India	Poland
Austria	Indonesia	Portugal
Bangladesh*	Iran	Romania
Belarus	Ireland	Russia
Belgium	Israel	Saudi Arabia
Bosnia & Herzegovina	Italy	Senegal
Brazil	Ivory Coast	Serbia
Bulgaria	Japan	Singapore
Cameroon	Kazakhstan	Slovakia
Canada	Kenya	Slovenia
Chile	Korea, Republic of	South Africa
China	Kyrgyzstan	Spain
Colombia	Latvia	Sweden
Croatia	Lithuania	Switzerland
Cuba	Luxembourg	Thailand
Cyprus	Malaysia	Tunisia
Czech Republic	Mexico	Turkey
Denmark	Mongolia*	Ukraine
Ecuador	Montenegro	United Kingdom
Egypt	Morocco	United States
Estonia	Netherlands	Uruguay
Finland	New Zealand	Uzbekistan*
France	Nigeria	Venezuela
Gabon*	Norway	Vietnam
Georgia	Oman	
Germany	Pakistan	
Greece	Papua New Guinea*	

*Associate Member

The following organizations are Affiliate Members of IMU:

African Mathematical Union (AMU)

European Mathematical Society (EMS)

Mathematical Council of the Americas (MCoFA)

South East Asian Mathematical Society (SEAMS)

Unión Matemática de América Latina y el Caribe (UMALCA)

2. Financial Information

2.1. Approved IMU Membership Dues

For the Period 2019–2022

At the IMU General Assembly meeting 2018 in São Paulo, Brazil, the delegates decided on the dues structure for the years 2019-2022, see schedule below.

Associate and Affiliate IMU members do not pay dues.

Approved membership dues 2019 – 2022				
All amounts in EUR				
Year	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Group I	1,430	1,430	1,430	1,430
Group II	2,860	2,860	2,860	2,860
Group III	5,720	5,720	5,720	5,720
Group IV	11,440	11,440	11,440	11,440
Group V	17,160	17,160	17,160	17,160

2.2. Approved IMU Budget

For the Period 2019–2022

Date: June 27, 2018

International Mathematical Union													
Proposed new Budget for 2019-2022, in Euro (EUR)													
	% of General Income	2019			2020			2021			2022		
		General	Special	Sum	General	Special	Sum	General	Special	Sum	General	Special	Sum
INCOME													
I. General													
I.a Membership Dues		417.560			417.560			417.560			417.560		
Sum General Income		417.560			417.560			417.560			417.560		
II. Special													
II.a Special Development Fund			14.000			14.000			14.000			14.000	
II.b Donations and Grants			80.000			80.000			80.000			80.000	
Sum Special Income from Third Parties			94.000			94.000			94.000			94.000	
II.c Income from IMU bank accounts			100			100			100			100	
II.d Other Income			30.000			30.000			30.000			30.000	
Sum Special Income from Other Sources			30.100			30.100			30.100			30.100	
TOTAL INCOME		417.560	124.100	541.660	417.560	124.100	541.660	417.560	124.100	541.660	417.560	124.100	541.660
EXPENDITURE													
1. Commissions & Committees (C&C)													
1.1 CDC	45,0%	83.512	44.000	127.512	83.512	44.000	127.512	83.512	44.000	127.512	83.512	44.000	127.512
1.2 ICMI	15,0%	62.634			62.634			62.634			62.634		
1.3 CWM	5,0%	20.878	10.000	30.878	20.878	10.000	30.878	20.878	10.000	30.878	20.878	10.000	30.878
1.4 CEIC	4,0%	16.702	4.176	20.878	16.702	4.176	20.878	16.702	4.176	20.878	16.702	4.176	20.878
1.5 Ad hoc committees	1,0%	4.176	4.176	8.352	4.176	4.176	8.352	4.176	4.176	8.352	4.176	4.176	8.352
1.6 Special support	0,0%	0	26.000	26.000	0	26.000	26.000	0	26.000	26.000	0	26.000	26.000
C&C Expenditure		187.902	88.352	276.254	187.902	88.352	276.254	187.902	88.352	276.254	187.902	88.352	276.254
2. ICM													
2.1 Site Committee	1,0%	4.176			4.176			4.176			4.176		
2.2 Program Committee	2,0%	8.351			8.351			8.351			8.351		
2.3 Prize Committees	2,0%	8.351			8.351			8.351			8.351		
2.4 Congress Subvention	5,0%	20.878			20.878			20.878			20.878		
2.5 Travel Grants (Young & Senior)	7,0%	29.229	14.000	43.229	29.229	14.000	43.229	29.229	14.000	43.229	29.229	14.000	43.229
2.6 ICM related admin., outreach	5,0%	20.878			20.878			20.878			20.878		
ICM Expenditure	22,0%	91.863	14.000	105.863	91.863	14.000	105.863	91.863	14.000	105.863	91.863	14.000	105.863
3. Union Administration													
3.1 General Assembly	1,0%	4.176			4.176			4.176			4.176		
3.2 President & Secretary	12,0%	50.107			50.107			50.107			50.107		
3.3 Executive Committee	6,0%	25.054			25.054			25.054			25.054		
3.4 Other	1,0%	4.176			4.176			4.176			4.176		
Union Administration Expenditure		83.512	0	83.512	83.512	0	83.512	83.512	0	83.512	83.512	0	83.512
4. Outreach													
4.1 ICSU Union Member Contribution	2,0%	8.351			8.351			8.351			8.351		
4.2 Awards	1,0%	4.176			4.176			4.176			4.176		
4.3 Website Support, Media Relations	2,0%	8.351	4.176	12.527	8.351	4.176	12.527	8.351	4.176	12.527	8.351	4.176	12.527
4.4 Bulletin	0,0%	0			0			0			0		
4.5 Other	1,0%	4.176	5.600	9.776	4.176	5.600	9.776	4.176	5.600	9.776	4.176	5.600	9.776
4.6 Scientific activity support	0,0%	0	6.972	6.972	0	6.972	6.972	0	6.972	6.972	0	6.972	6.972
Outreach Expenditure		25.054	16.748	41.802	25.054	16.748	41.802	25.054	16.748	41.802	25.054	16.748	41.802
5. Overhead													
5.1 Office Expenses	1,0%	4.176	1.600	5.776	4.176	1.600	5.776	4.176	1.600	5.776	4.176	1.600	5.776
5.2 Bank Charges	1,0%	4.176	1.000	5.176	4.176	1.000	5.176	4.176	1.000	5.176	4.176	1.000	5.176
5.3 Legal Advice, Audit Fees	2,0%	8.351	1.600	9.951	8.351	1.600	9.951	8.351	1.600	9.951	8.351	1.600	9.951
5.4 Other	3,0%	12.527	800	13.327	12.527	800	13.327	12.527	800	13.327	12.527	800	13.327
Overhead Expenditure	7,0%	29.229	5.000	34.229	29.229	5.000	34.229	29.229	5.000	34.229	29.229	5.000	34.229
TOTAL EXPENDITURE				541.660			541.660			541.660			541.660
INCOME LESS EXPENSES				0			0			0			0

2.3. Independent Auditor's Report

Audit Report

Annual Financial Statements as at 31 December 2021

International Mathematical Union
Berlin

Mazars GmbH & Co. KG
Wirtschaftsprüfungsgesellschaft
Steuerberatungsgesellschaft
104232/E

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The tables may contain rounding differences that vary from values derived from mathematical calculations.

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 Special Engagement Terms
 General Engagement Terms

To the International Mathematical Union, Berlin:

A. Audit engagement

We were engaged by the Secretary General of the

International Mathematical Union
Berlin
(hereinafter “IMU” or “Association”)

to audit and report on the annual financial statements for the reporting year ending 31 December 2021.

In performing the audit engagement awarded to us by the Secretary General, we conducted our audit of the annual financial statements as at 31 December 2021 together with the accounting system in accordance with § 317 HGB (German Commercial Code) and the German generally accepted standards for the audit of financial statements.

In addition, we were engaged to provide an economic analysis of the net assets, financial position and results of operations of the Union in this audit report. We have presented this analysis in section D. of this audit report.

In accordance with § 321 (4a) HGB, we confirm our observance of the applicable regulations governing independence during the performance of our audit.

The IMU is an international association. According to German law, the IMU is an “ideal association” (§ 21 German Civil Code (BGB) non-profit association) since it pursues ideal rather than financial purposes. The Union does not have legal capacity in Germany because it is not registered with the German Register of Associations.

The Union is not required by law to have its annual financial statements audited. In accordance with Article 45 of the IMU Statutes, the Executive Committee must have the annual accounts audited at least once every four years and present this audit report to the General Assembly, which takes place every four years. In continuation of current practice, the audit of the annual financial statements is performed annually. The financial statements consist of a statement of assets and liabilities as well as a statement of income and expenditures. According to the size definitions of § 267a German Commercial Code (HGB), the IMU would be classified as a micro entity. However, the audit was performed in conformity with the accounting regulations applicable to small entities.

This report was prepared by us in accordance with the auditing standards of the *Institut der Wirtschaftsprüfer in Deutschland e.V.* IDW PS 450 n.v. “Generally Accepted Standards for the Presentation of Long-form Audit Reports for the Audit of Financial Statements”.

The performance of our engagement and our responsibility, also towards any third parties, are governed by the Special Engagement Terms for Audits and Audit-related Services of Mazars GmbH & Co. KG Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft from 1 June 2019 as well as by the General Engagement Terms for Wirtschaftsprüfer (*German Public Auditors*) and Wirtschaftsprüfungsgesellschaften (*Public Audit Firms*) as amended on 1 January 2017, attached as appendices. Accordingly, our liability is limited in accordance with No. 9 of the General Engagement Terms for Wirtschaftsprüfer. Towards third parties, No. 1 (2) and No. 9 of the General Engagement Terms apply.

This document is a translation of the German report, which is the solely legally binding version.

B. SUBJECT, NATURE AND SCOPE OF THE AUDIT

I. Subject of the audit

The subject of our audit was the annual financial statements (statements of assets and liabilities and income and expenditures) together with the bookkeeping system, prepared in accordance with German accounting principles.

Bookkeeping and the preparation of the annual financial statements are the responsibility of the IMU's Treasurer.

Our responsibility is to provide an opinion on the annual financial statements including the bookkeeping system based on our audit.

As of 1 January 2011, the IMU has kept its Permanent Secretariat in Berlin which is hosted by the *Weierstraß-Institut für Angewandte Analysis und Stochastik (WIAS)*, Berlin. The Federal Republic of Germany and the State of Berlin grant annual financial support for the IMU Secretariat, in particular by assuming personnel and material costs in the amount of approximately k€500 borne directly by the WIAS, which are therefore not recorded in the statement of income and expenditures.

An audit of compliance with other statutory regulations is part of our engagement only to the extent that those regulations typically have an effect on the annual financial statements.

Pursuant to § 317 (4a) HGB the audit does not extend to whether the ability of the International Mathematical Union to continue as a going concern or the effectiveness and efficiency of its management can be assured.

II. Nature and scope of the audit

Our audit was conducted analogous to § 317 HGB taking into account the German generally accepted accounting standards as promulgated by the *Institut der Wirtschaftsprüfer in Deutschland e.V. (IDW)*, in particular observing IDW PS 750 "Audits of Associations".

Those standards require that we plan and perform the audit such that misstatements and violations materially affecting the presentation of the net assets, financial position and results of operations in the annual financial statements in accordance with German principles of proper accounting are detected with reasonable assurance.

The audit included assessing the accounting policies, measurement methods and classification principles applied and significant estimates made by management as well as critically evaluating the overall presentation of the annual financial statements.

Our audit commenced with our unqualified independent auditor's report on the prior year's financial statements for the year ended 31 December 2020. The Statutes do not provide for an adoption of the annual financial statements. Instead, on the basis of every fourth annual financial statement (most recently on 31 December 2017) the preparation of a budget for the following four-year-period is anticipated. The budget for the period from 1 January 2019 to 31 December 2022 was approved by the 18th General Assembly in São Paulo/Brazil on 29 and 30 July 2018.

On the basis of the risk of material misstatements, we prepared a risk profile for disclosures in the accounting. For this purpose we conducted audit procedures for assessing risk and first obtained an understanding of the Union as well as an overview of its economic and legal environment. Based on this understanding, we analysed the objectives and strategies of the Union as well as their implementation in order to determine business risks that could lead to significant errors in accounting.

Based on our professional judgement, we reviewed and assessed the design of the association's internal control system and which measures the Union has taken to particularly ensure the propriety and reliability of the accounting in order to mitigate business risks, however without conducting a detailed system analysis.

We audited the complete and timely recording of business transactions on a test basis and were convinced of the implementation of the four-eye principle as the main instrument of the internal control system.

We refrained from obtaining balance confirmations from debtors since they exclusively involve members of the Union.

We conducted our audit, with interruptions in April and May 2022.

Management provided us with the information and documentation we requested. In the written letter of representation provided to us, the management as the legal representative of the Union assured us that the explanations and evidence were complete. Furthermore, it stated that all business transactions have been recorded and disclosed in the annual financial statements.

C. FINDINGS ON AND EXPLANATIONS OF THE ACCOUNTING

I. Generally accepted accounting principles

1. Accounting records and other documents audited

Our audit verified that the formal and material propriety of the accounting complied with German generally accepted accounting principles and other legal requirements.

The accounting records of the Union were maintained properly. The records were complete. Based on the findings of our audit, the accounting records and other documents audited complied with legal regulations in all material respects. The information extracted from other documents audited was properly reflected in the accounting records and in the annual financial statements in all material respects.

The organization of the accounting, the accounting-related internal control system, data flows and recordkeeping were fundamentally appropriate for ensuring the completeness, the accuracy, the timely and orderly recording and booking of business transactions.

2. Annual financial statements

The annual financial statements we have audited for the financial year from 1 January 2021 to 31 December 2021 have been properly derived from the accounting records and the underlying documents of the Union in all material respects. The enclosed annual financial statements were prepared in analogous application of the regulations of the Third Book of the HGB (§§ 238 *et seq.*) in all material respects, under observance of the supplementary regulations for corporations in the Second Section (§§ 264 *et seq.*).

The opening balances were properly taken over from the prior years' annual financial statements. Statutory regulations on recognition, disclosure and measurement were observed in all material respects.

The Union does not have a legal obligation to prepare notes to the annual financial statements. Accordingly, the IMU has permissibly waived the preparation of notes.

3. Management report

The Union does not have a legal obligation to prepare a management report. Accordingly, the IMU has permissibly waived the preparation of a management report.

The IMU provides its members with an annual accounting of its activities in the Bulletin of the International Mathematical Union. The current Bulletin is No. 72 from December 2020. Printed versions of the Bulletin are provided to members. The electronic documents are available on the homepage of the IMU (<https://www.mathunion.org/membership/imu-bulletins>).

The Bulletin provides, in particular, a description of IMU activities for the promotion of mathematics in the world and the proper use of member contributions and donations.

According to information of the legal representatives and the results of our audit, no events of particular importance occurred after the conclusion of the reporting year.

II. Overall presentation of the annual financial statements

1. Explanations of the overall presentation

The exercise of accounting policy and measurement elective options as well as the use of discretionary judgment correspond to the prior year and do not indicate any tendency with a significant influence on the net assets, financial position and results of operations in the annual financial statements.

Foreign currency receivables and payables are recorded in the bookkeeping in euro at the exchange rate valid on the date of their accrual. Measurement on the balance sheet date is at the lower (for receivables) or higher (for liabilities) exchange rate valid on that date.

2. Findings on the overall presentation of the annual financial statements

On the basis of the audit we performed by executing our professional duties, the annual financial statements correspond in all material respects to the statutory regulations. Because the Association is not required to prepare notes, the annual financial statements do not satisfy the general standard in accordance with § 264 (2) HGB.

D. OTHER CLASSIFICATIONS AND EXPLANATIONS OF THE ANNUAL FINANCIAL STATEMENTS

I. Results of operations

The summarized statements of income and expenditures for the past two financial years show the following structure and changes in the results of operations:

	2021		2020		Change
	k€	%	k€	%	k€
Revenues	576	100,0	502	100,0	74
Expenditures for scientific promotion and scientific activities	-247	-42,9	-136	-27,1	-111
Administrative expenses	-63	-10,9	-92	-18,3	29
Expenses	-310	-53,8	-228	-45,4	-82
Operating result	266	46,2	274	54,6	-8
Interest result	0	0,0	0	0,0	0
Result before taxes on income	266	46,2	274	54,6	-8
Taxes on income	0	0,0	0	0,0	0
Annual surplus	266	46,2	274	54,6	-8
Withdrawal from/Allocation to reserves (net)	-266	-46,2	-274	-54,6	8
Unallocated cash balance	0	0,0	0	0,0	0

The IMU had **revenues** of k€576 in the reporting year, consisting largely of member contributions. In addition, the IMU received donations which usually come from scientific organizations.

Revenues are composed of the following:

	k€
Member contributions	432
Donations - international	106
Other income	<u>38</u>
	<u>576</u>

The composition of **Member contributions** is shown in Appendix 3 to this report.

Donations - international are composed of the following:

	k€
FIMU – IMU Breakout Fellowship	95
Niels Henrik Abel Board, Norway	6
Others	<u>5</u>
	<u>106</u>

Other income (k€38) largely involves profits from currency rate fluctuations (k€35).

Expenditures of k€310 (prior year: k€228) are shown in detail in the statement of income and expenditures (Appendix 2) as well as in the Budget Comparison (Appendix 4). In particular, as a result of no losses from currency fluctuation (prior year: k€29), **administrative expenses** decreased again, whereas **expenditures for scientific promotion and scientific activities** have increased significantly by k€111 after they decreased significantly in the prior year as a result of the worldwide Corona pandemic.

II. Net assets

In order to evaluate the net assets and changes thereto, the statements of assets and liabilities of the last two financial years are compared in condensed form:

	31.12.2021		31.12.2020		Change
	k€	%	k€	%	k€
ASSETS					
Current assets					
Receivables from member contributions	71	2,8	71	3,2	0
Other assets (including Prepaid expenses)	41	1,6	21	0,9	20
Cash and cash equivalents	2.449	95,6	2.160	95,9	289
	<u>2.561</u>	<u>100,0</u>	<u>2.252</u>	<u>100,0</u>	<u>309</u>
LIABILITIES					
Net assets (own funds)	2.133	83,3	1.867	82,9	266
Borrowed capital					
Provisions	37	1,4	24	1,1	13
Liabilities from restricted donations	322	12,6	297	13,2	25
Other liabilities (incl. Deferred income)	69	2,7	64	2,8	5
	<u>428</u>	<u>16,7</u>	<u>385</u>	<u>17,1</u>	<u>43</u>
	<u>2.561</u>	<u>100,0</u>	<u>2.252</u>	<u>100,0</u>	<u>309</u>

Receivables from member contributions are broken down by country as follows:

Country	Year	WD	Amount
		*	€
Algeria	2021		1.430,00
Bosnia & Herzegovina	2021	*	1.430,00
Cameroon	2021	*	1.430,00
Cuba	2021	*	1.430,00
Egypt	2021		2.860,00
Iceland	2021		1.430,00
Indonesia	2021		1.430,00
Iran	2021	*	11.440,00
Kenya	2021		1.430,00
Kyrgyzstan	2021	*	1.430,00
Latvia	2021		1.430,00
Montenegro	2021	*	1.430,00
Oman	2021		1.430,00
Peru	2021	*	1.430,00
Senegal	2021		1.430,00
Tunisia	2021		1.430,00
Ukraine	2021		2.860,00
Venezuela	2021		1.430,00
			38.610,00
Algeria	2020		1.430,00
Bosnia & Herzegovina	2020	*	1.430,00
Cameroon	2020	*	1.430,00
Cuba	2020	*	1.430,00
Iceland	2020		1.430,00
Iran	2020	*	11.440,00
Kenya	2020		1.402,62
Kyrgyzstan	2020	*	1.430,00
Montenegro	2020	*	126,44
Peru	2020	*	1.430,00
Senegal	2020		1.430,00
Tunisia	2020		1.430,00
Venezuela	2020		100,15
			25.939,21
Bosnia & Herzegovina	2019	*	1.430,00
Cameroon	2019	*	1.430,00
Cuba	2019	*	1.430,00
Iran	2019	*	11.440,00
Kyrgyzstan	2019	*	1.430,00
Peru	2019	*	1.430,00
Tunisia	2019		35,00
			18.625,00
Carry forward:			83.174,21

Country	Year	WD	Amount
		*	€
Carry forward:			83.174,21
Bosnia & Herzegovina	2018	*	1.395,00
Cuba	2018	*	1.395,00
Iran	2018	*	11.160,00
Kyrgyzstan	2018	*	581,25
Peru	2018	*	1.395,00
			15.926,25
Bosnia & Herzegovina	2017	*	1.395,00
Cuba	2017	*	1.395,00
Iran	2017	*	3.808,23
Peru	2017	*	423,87
			7.022,10
Cuba	2016	*	1.395,00
			1.395,00
Cuba	2015	*	1.395,00
			1.395,00
Total receivables			108.912,56
Write-down 50 % (marked with a *)			-38.136,06
			70.776,50

At the end of 2021 the outstanding member contributions were k€109. Contributions of the reporting year in the amount of k€30 were still outstanding at the time of our audit. As a result of consistent non-payment of their member contributions, open receivables of the above countries, marked with a star “*”, were directly written down by 50%.

Cash and cash equivalents, parts of which are in foreign currency, are located in accounts with the Deutsche Bank AG and are composed of the following:

	<u>Foreign currency</u>	€
Account in € (5113915 10)		930.084,88
Account in CHF (5113915 01)	CHF 74.372,37	71.816,70
Account in USD (5113915 00)	USD 274.747,30	242.192,00
Account in USD (5113915 06)	USD 226.928,60	200.040,00
Account in € (5113915 00)		385.479,66
Account in € (5113915 05)		246.295,27
Account in € (5113915 04)		334.416,05
Account in € (5113915 11)		38.192,44
Account in € (5113915 01) ITO-Fonds		-0,74
Cash in €		<u>251,74</u>
		<u>2.448.768,00</u>

The conversion of foreign currency into euro occurred at the period-end exchange rate.

Net assets (own funds) at the period-end date are composed of the following:

	k€	k€
Association net assets		307
Reserves		
- Annual surplus 2007 - 2020	1.099	
- Annual surplus 2021	266	
- ICMI and CDC (Commission Fund)	<u>461</u>	<u>1.826</u>
		<u>2.133</u>

The Statutes do not make reference to association net assets.

Of the Net assets of the Association, €307.465,98 originates from the time before moving the domicile of the IMU to Germany as of 1 January 2007. Revenues earned as of 2007 are allocated to reserves in accordance with the recommendations of the IMU Secretary General and of the Treasurer at the end of the reporting year. The General Assembly reaches a resolution every four years on the creation of reserves.

Reserves are allocated as follows:

	k€
Travel support	
– Fields-Medal 2022 and 2026	25
– General Assembly 2022	138
– Project Simons Fellowships	120
ICMI and CDC 2021	515
ICM default reserve	450
Project Breakout Fellowship/FIMU	80
Project CDC/GRAID	46
Support CWM	20
IMU internet site	13
Outreach (IDM 2022 / 100 years IMU)	20
Support Gender GAP-Project	12
Co-financing and support of international projects	25
Unrestricted reserves	<u>362</u>
	<u>1.826</u>

Disclosed under ICMI und CDC (Commission Fund) are funds which the IMU has made available to its ICMI and CDC commissions for their work in the coming year. The restricted reserves for ICMI amount to €177.142,72 and for CDC to €326.775,42.

Provisions involve expenses for the temporary increase in work of an employee of the IMU-Secretariat for preparation of a podium discussion of the CDC at the ICM 2022 (k€15), the centennial celebration (k€10), the audit of the annual accounts and the preparation of the 2021 tax declarations (k€9) as well as the IYBSSD contribution for 2022 (k€2,5).

Liabilities from restricted donations developed as follows:

	€	€
Special Development Fund		
Per 1 Jan 2021		10.175,32
Allocation for ICM 2022		
- London Mathematical Society (USD 5.000)		<u>4.209,14</u>
Per 31 Dec 2021		14.384,46 -----
Simons Foundation Africa Fund		
Per 1 Jan 2021		140.777,60
Travel Fellowship for 6 mathematicians		<u>-20.574,53</u>
Per 31 Dec 2021		120.203,07 -----
Commemorative publication 100 Years IMU		
Per 1 Jan 2021		<u>100.000,00</u>
Per 31 Dec 2021		100.000,00 -----
Springer Nature AG for CDC		
Per 1 Jan 2021		<u>1.000,00</u>
Per 31 Dec 2021		1.000,00 -----
IDM 2021		
Per 1 Jan 2021		9.544,06
Outflows for IDM measures		<u>-9.544,06</u>
Per 31 Dec 2021		0,00 -----
Graduate Assistantships in Developing Countries Program		
Per 1 Jan 2021		12.099,02
Contribution CIPMA		<u>34.040,00</u>
Per 31 Dec 2021		46.139,02 -----
Special Support CDC		
Per 1 Jan 2021		23.954,37
Repayment unused funds		
- Niels Henrik Abel Board, Norway		-17.084,46
Inflows from unused Special-Budget		33.816,96
Per 31 Dec 2021		40.686,87 -----
		<u>322.413,42</u>

The funds shown under **Special Development Fund (SDF)** are for the support of mathematicians from developing countries for travel to International Congresses of Mathematicians (ICM). An international committee decides on the grant applications.

The funds provided by the Simons Foundation are designated as a Travel Fellowship for research stays of mathematicians from developing countries. The **Simons Foundation Africa Fund** is especially reserved for mathematicians from Africa.

The **Graduate Assistantships in Developing Countries Program (GRAID)** supports newly developing research groups in developing countries. With the support of GRAID, research groups can finance the studies (Masters or PhD) of their most gifted students. GRAID is financed by donations of mathematicians and mathematical associations from all over the world.

The IMU's Commission CDC receives the **Special Support CDC** on the basis of an agreement with the Det Norske Videnskaps-Akademi (initially until 2025), in the amount of approximately k€17 annually for the support of programmes in developing countries, above all for conferences (Conference Support Program) and guest lectures from international lecturers (Volunteer Lecturer Program). Additional special donations provide support for general CDC activities and programmes (conferences, research stipends, etc.).

The funds received from the **Klaus Tschira Stiftung (KTS)** are designated for financing a commemorative publication on occasion of the 100th anniversary of the founding of the International Mathematical Union. This is currently in progress, however, it was not yet complete as at 31 December 2021.

Other liabilities largely involve the bank balance held for the International Commission for History in Mathematics (ICHM) in the amount of k€38 as well as funds to be further transferred in conjunction with the Project Gender Gap in Mathematical and Natural Sciences in the amount of k€5.

III. Financial position

The IMU was at all times in a position to meet its payment obligations in a full and timely manner. The cash flow from current activities amounts to k€289 and corresponds to the change in cash between 1 January 2021 (k€2.160) and 31 December 2021 (k€2.449).

E. ATTESTATION OF THE ANNUAL FINANCIAL STATEMENTS

We issue the annual financial statements of the International Mathematical Union, Berlin as at 31 December 2021, in the version enclosed in this report as Appendices 1 to 2, the following unqualified attestation:

Attestation of the Auditor

International Mathematical Union, Berlin

We have audited the annual financial statements of the International Mathematical Union, Berlin, - consisting of the statement of assets and liabilities and the statement of income and expenditures – together with the bookkeeping system, for the financial year from 1 January 2021 to 31 December 2021. The maintenance of the books and records and the preparation of the annual financial statements in accordance with statutory provisions as well as with the supplementary provisions of the Association's Statutes are the responsibility of the legal representatives of the Association. Our responsibility is to express an opinion of the annual financial statements on the basis of the bookkeeping, based on our audit.

We conducted our audit in compliance with the audit standards promulgated by the Institut der Wirtschaftsprüfer in Deutschland (IDW): *Audit of Associations* (IDW PS 750). Those standards require that we plan and perform the audit such that misstatements and violations materially affecting the presentation of the annual financial statements are detected with reasonable assurance. Knowledge of the business activities and the economic and legal environment of the Association and expectations of possible misstatements are taken into account. The effectiveness of the accounting-related internal control system and the evidence supporting the disclosures in the books and records and in the annual financial statements are examined primarily on a test basis with the framework of the audit. The audit includes assessing the accounting principles used and significant estimates made by management as well as evaluating the overall presentation of the annual financial statements. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, based on our audit, the books and records along with the statement of assets and liabilities and the statement of income and expenditures of the Association comply with the principles of proper accounting and the legal requirements of an association.

F. FINAL REMARKS

Publication or reproduction of the annual financial statements of the International Mathematical Union, Berlin, for the financial year from 1 January 2021 to 31 December 2021 in a form different from the certified form, which is attached as an Appendix to this report, again requires our consent if our attestation is quoted or if reference is made to our audit. We herein refer to § 328 HGB.

Berlin, 24 May 2022

Mazars GmbH & Co. KG
Wirtschaftsprüfungsgesellschaft
Steuerberatungsgesellschaft

In the original German version signed by:

Ralf Bierent
Wirtschaftsprüfer
(German Public Auditor)

Jacqueline Kotynski
Wirtschaftsprüfer
(German Public Auditor)

STATEMENT OF ASSETS AND LIABILITIES as at 31 December 2021

ASSETS	per 31 Dec 2021	Prior year	LIABILITIES	per 31 Dec 2021	Prior year
	€	€		€	€
A. Current Assets			A. Net Assets		
I. Receivables and other assets			I. Association net assets	307,465.98	307,465.98
1. Receivables from member contributions	70,776.50	71,134.57	II. Reserves	1,825,403.08	1,559,372.46
2. Other assets	40,000.00	20,000.00		2,132,869.06	1,866,838.44
	<u>110,776.50</u>	<u>91,134.57</u>	B. Provisions	36,782.00	24,400.00
II. Cash-in-hand, bank balances*	2,448,768.00	2,159,923.78	C. Liabilities		
			1. Liabilities from restricted donations	322,413.42	297,550.37
B. Prepaid Expenses	1,014.00	1,014.00	2. Other liabilities	46,594.61	53,374.01
				369,008.03	350,924.38
Total Assets	<u>2,560,558.50</u>	<u>2,252,072.35</u>	D. Deferred Income	21,899.41	9,909.53
			Total Liabilities	<u>2,560,558.50</u>	<u>2,252,072.35</u>

* contained therein ICMI € 246,295,27 and CDC € 334,416,05

International Mathematical Union, Berlin

STATEMENT OF INCOME AND EXPENDITURES for 2021

	€	€	€	Prior year €
Revenues			575,738.58	501,722.45
Member contributions	431,502.52			428,046.60
Donations - International	105,888.86			69,243.54
Other Income	<u>38,347.20</u>			4,432.31
Expenses for Scientific Promotion and Scientific Activities		-246,552.43		-135,992.78
Promotion of scientific activities	-228,935.08			-135,992.78
Expenditures ICM	-12.16			0.00
Other	<u>-17,605.19</u>			0.00
Administrative expenses		-63,248.67		-91,762.65
Reimbursement personnel expenses	-23,024.59			-23,000.00
Travel expenses	-76.90			-8,373.35
Consulting expenses	-1,491.80			0.00
Audit fees	-9,602.00			-8,700.00
Member contributions	-8,577.19			-4,275.00
Postage	-404.20			-365.00
Bank fees	-5,096.39			-3,476.26
Other	<u>-14,975.60</u>			-43,573.04
Other Expenditures			-309,801.10	-227,755.43
Interest and Similar Income			<u>93.14</u>	<u>69.98</u>
Interim Result			266,030.62	274,037.00
Other Taxes			<u>0.00</u>	<u>0.00</u>
Annual Surplus			266,030.62	274,037.00
Withdrawals from Reserves			0.00	0.00
Allocation to Reserves			<u>-266,030.62</u>	<u>-274,037.00</u>
Unallocated Cash Balance			<u><u>0.00</u></u>	<u><u>0.00</u></u>

International Mathematical Union, Berlin

Schedule of Member Contributions 2021

Country	Amount EUR
Algeria	1,430.00
Argentina	5,720.00
Armenia	1,430.00
Australia	11,440.00
Austria	2,860.00
Belgium	5,720.00
Belarus	715.00
Bosnia & Herzegovina	1,430.00
Brazil	17,160.00
Bulgaria	1,430.00
Cameroon	1,430.00
Canada	17,160.00
Chile	5,720.00
China, CMS Beijing	10,296.00
China, TMS Taipei	6,864.00
Colombia	1,430.00
Croatia	1,430.00
Cuba	1,430.00
Cyprus	1,430.00
Czech Republic	5,720.00
Denmark	5,720.00
Ecuador	1,430.00
Egypt	2,860.00
Estonia	1,430.00
Finland	5,720.00
France	17,160.00
Georgia	1,430.00
Germany	17,160.00
Greece	1,430.00
Hong Kong	1,430.00
Hungary	5,720.00
Iceland	1,430.00
India	11,440.00
Indonesia	1,430.00
Indonesia add.	357.52
Iran	11,440.00
Ireland	2,860.00
Israel	17,160.00
Italy	17,160.00
Ivory Coast	1,430.00
Japan	17,160.00
Kazakhstan	1,430.00

International Mathematical Union, Berlin

Schedule of Member Contributions 2021

Country	Amount EUR
Kenya	1,430.00
Korea, Republic of	11,440.00
Kyrgyzstan	1,430.00
Latvia	1,430.00
Lithuania	1,430.00
Luxembourg	1,430.00
Malaysia	1,430.00
Mexico	5,720.00
Montenegro	1,430.00
Morocco	1,430.00
Netherlands	11,440.00
New Zealand	1,430.00
Nigeria	1,430.00
Norway	5,720.00
Oman	1,430.00
Pakistan	1,430.00
Peru	1,430.00
Philippines	1,430.00
Poland	11,440.00
Portugal	5,720.00
Romania	1,430.00
Russia	17,160.00
Saudi Arabia	1,430.00
Senegal	1,430.00
Serbia	1,430.00
Singapore	1,430.00
Slovakia	2,860.00
Slovenia	1,430.00
South Africa	2,860.00
Spain	11,440.00
Sweden	11,440.00
Switzerland	11,440.00
Thailand	1,430.00
Tunisia	1,430.00
Turkey	2,860.00
Ukraine	2,860.00
United Kingdom	17,160.00
Uruguay	1,430.00
USA	17,160.00
Venezuela	1,430.00
Vietnam	1,430.00
Total	431,502.52

INTERNATIONAL MATHEMATICAL UNION

Budget Comparison 2021

	% of General Income	Budget 2021 EUR			Actual 2021 EUR		
		General	Special	Sum	General	Special	Sum
INCOME							
I. General							
I.a Membership Dues		417,560			431,503		
Sum General Income		417,560			431,503		
II. Special							
II.a Special Development Fund			14,000			0	
II.b Donations			80,000			18,168	
II.c Grants						155,578	
Sum Special Income from Third Parties			94,000			173,746	
II.d Income from IMU bank accounts			100			93	
II.e Other Income			35,500			38,347	
Sum Special Income from Other Sources			35,600			38,440	
TOTAL INCOME		417,560	129,600	547,160	431,503	212,186	643,689
EXPENDITURE							
1. Commissions & Committees (C&C)							
	45.00%						
1.1 CDC	20.00%	83,512	44,000	127,512	83,512	10,183	93,695
1.2 ICM	15.00%	62,634			8,302		
1.3 CWM	5.00%	20,878	10,000	30,878	20,878	9,440	30,318
1.4 CEIC	4.00%	16,702	4,176	20,878	0	0	
1.5 ICHM	0.00%	0	5,500	5,500	0	0	
1.6 Ad hoc committees	1.00%	4,176	4,176	8,352	0	0	
1.7 Special support	0.00%	0	26,000	26,000	0	96,620	
C&C Expenditure		187,902	93,852	281,754	112,692	116,243	228,935
2. ICM							
	22%						
2.1 Site Committee	1%	4,176			0		
2.2 Program Committee	2%	8,351			0		
2.3 Prize Committees	2%	8,351			0		
2.4 Congress Subvention	5%	20,878			0		
2.5 Travel Grants (Young & Senior)	7%	29,229	14,000	43,229	0	0	
2.6 ICM related admin., outreach	5%	20,878			12	0	
ICM Expenditure		91,863	14,000	105,863	12	0	12
3. Union Administration							
	20%						
3.1 General Assembly	1%	4,176			0		
3.2 President & Secretary	12%	50,107			23,077		
3.3 Executive Committee	6%	25,054			0		
3.4 Other	1%	4,176			768		
Union Administration Expenditure		83,512	0	83,512	23,845	0	23,845
4. Outreach							
	6%						
4.1 ICSU Union Member Contribution	2%	8,351			8,577		
4.2 Awards	1%	4,176			0		
4.3 Website Support, Media Relations	2%	8,351	4,176	12,527	3,005	0	
4.4 Bulletin	0%	0			0		
4.5 Other	1%	4,176	5,600	9,776	4,176	10,424	
4.6 Scientific activity support	0%	0	6,972	6,972	0	0	
Outreach Expenditure		25,054	16,748	41,802	15,758	10,424	26,182

5. Overhead	7%						
5.1 Office Expenses	1%	4,176	1,600	<u>5,776</u>	2,800	0	<u>2,800</u>
5.2 Bank Charges	1%	4,176	1,000	<u>5,176</u>	4,176	920	
5.3 Legal Advice, Audit Fees	2%	8,351	1,600	<u>9,951</u>	8,351	2,743	
5.4 Other	3%	12,527	800	<u>13,327</u>	11,837	0	
Overhead Expenditure		29,229	5,000	<u>34,229</u>	27,164	3,663	<u>30,827</u>
TOTAL EXPENDITURE				<u>547,160</u>			<u>309,801</u>
Transfer to liabilities from donations not yet spent							-67,857
Interim Result				0			<u>266,031</u>
Draw from Reserves				0			0
Return to Reserves				0			-266,031
Result				<u>0</u>		EUR	<u>0</u>

Legal and Tax Position

1. Legal Position

Association, Legal Domicile

International Mathematical Union, Berlin/Germany

The IMU is an international association. According to German law, the IMU is an “ideal association” (§ 21 German Civil Code (BGB)) since it pursues ideal purposes rather than financial purposes. The Association does not have legal capacity in Germany because it is not registered with the German Register of Associations.

The legal domicile of the IMU was located in Princeton/USA, until 31 December 2006. According to article 29 of the IMU Statutes, as amended in 2010, the legal domicile of the Union shall be located at the offices of the Union.

Since 1 January 2011 the permanent Secretariat of the Union is located in Berlin/Germany.

Place of Management

IMU Secretariat, Hausvogteiplatz 11A, 10117 Berlin/Germany

The IMU Secretariat transacts the entire routine operative business of the IMU. This includes the administrative support of the International Commission on Mathematical Instruction (ICMI) and the Commission for Developing Countries (CDC). In addition, the IMU Secretariat is also responsible for bookkeeping and monetary transactions; it prepares the annual financial statements and operates the IMU archives.

Statutes

The Statutes were amended on 16 and 17 August 2010 in Bangalore/India by the 16th General Assembly. The amendments included article 28 (Treasurer) and article 29 (Legal Domicile). A certified German translation is on file.

Objectives of the Association

According to Article 1 of the Statutes:

- “(a) to promote international cooperation in mathematics;
- (b) to support and assist the International Congress of Mathematicians and other international scientific meetings or conferences;
- (c) to encourage and support other international mathematical activities considered likely to contribute to the development of mathematical science in any of its aspects, pure, applied, or educational.”

Association net assets, Members

The Statutes make no provision for association net assets. Association net assets amounted to k€307 on 1 January 2007, the time when the legal domicile was transferred from Princeton/USA to Berlin/Germany.

According to article 3, a country adheres to the Association through an adhering organization. This may be the principal academy, a mathematical society, its research council or some other institution or association of institutions, or an appropriate agency of its government. At the end of 2021, the IMU had 81 regular members (voting), 6 associate members (non-voting) and 5 affiliate members (non-contributory and non-voting).The

Executive Committee, Representatives

As of 1 January 2019, the members of the Executive Committee are the following persons:

- Carlos E. Kenig, USA (President)
- Helge Holden, Norway (Secretary General)
- Nalini Joshi, Australia (Vice-President)
- Loyiso G. Nongxa, South Africa (Vice-President)
- Luigi Ambrosio, Italy (Member-at-Large)
- Andrei Okounkov, Russia (Member-at-Large)
- Paolo Piccione, Brazil (Member-at-Large)
- R. T. Ramadas, India (Member-at-Large)

- Gang Tian, China (Member-at-Large)
- Günter M. Ziegler, Germany (Member-at-Large)
- Shigefumi Mori, Japan (Member of the Executive Committee ex-officio because he was the President of the IMU in the preceding term of office)

Reporting Year

The reporting year corresponds to the calendar year.

The Bulletins are made available to members via the homepage www.mathunion.org. All members are informed about each new publication via e-mail. A printed version of the Bulletin will be produced and sent upon individual request.

General Assembly

The following was resolved during the last General Assembly in São Paulo/Brazil in July 2018:

- The “Stable Office” of the IMU, established in cooperation between the WIAS and the IMU, should remain permanently in Berlin.
- Adoption of the annual financial statements of 2014 to 2017 and development of financial reserves from the annual surpluses, corresponding to the respective Statement of Income and Expenditures.
- Release from liability of the IMU Executive Committee and IMU Treasurer for the years from 2014 to 2017
- Budget for the time between 2019 and 2022
- Increase in member contributions between 2019 and 2022 to €1,430.00 per unit (unit contribution)
- Appointments to various committees and commissions
- The next General Assembly will take place in 2022 in Helsinki/Finland

2. Tax Information

The Association is registered with the Finanzamt für Körperschaften (tax office for corporations) I, Berlin, under the tax number 27/640/57572.

At the time of the audit, no tax assessment notifications had been issued for the Association, which has had its legal domicile in Germany since 2007.

The Association is non-profit. After common inquiries on 16 April 2007 at the Finanzamt für Körperschaften I, Berlin, the formal requirements for the recognition as a non-profit organization were fulfilled. The final certification of the non-profit status will be made after actual fulfilment of the requirements.

The Finanzamt für Körperschaften I, Berlin, issued a preliminary certification on 4 May 2007. This was done upon the instruction of the Senatsverwaltung für Finanzen, Berlin, before it issued a notice of exemption for 2007 and 2008 on 9 June 2009.

The Finanzamt für Körperschaften I issued its last notice of exemption for 2018 to 2020, in which the current income of the IMU is exempt from corporate and trade tax. In addition, revenue from capital of the IMU is not subject to withholding tax on capital up to 31 December 2025. The IMU is entitled to issue donation confirmations.

**Special Engagement Terms
for audits and audit-related
services**
of
**Mazars GmbH & Co. KG
Wirtschaftsprüfungsgesellschaft
Steuerberatungsgesellschaft**

As of June 1, 2019

Preamble

These Special Engagement Terms of Mazars GmbH & Co. KG Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft ("Mazars KG") complement and clarify the General Engagement Terms for Wirtschaftsprüfer and Wirtschaftsprüfungsgesellschaften [German Public Auditors and Public Audit Firms] issued by the Institut der Wirtschaftsprüfer e. V. [Institute of German Public Auditors, Incorporated Association] in the version enclosed to the engagement letter/proposal and have priority over the General Engagement Terms issued by the Institut der Wirtschaftsprüfer e. V. The Special Engagement Terms apply in a subordinate manner to the engagement letter/proposal. The engagement letter/proposal along with all enclosures form the "Entire Engagement Terms".

A. Supplementary terms for audits of annual financial statements pursuant to § [Article] 317 HGB [German Commercial Code: Handelsgesetzbuch] and comparable audits according to national and international auditing standards

Mazars KG shall perform the audit pursuant to § 317 HGB and with due respect to the German Generally Accepted Auditing Standards ("GAAS") [Grundsätze ordnungsgemäßer Abschlussprüfung] as promulgated by the Institut der Wirtschaftsprüfer e. V. According to these, Mazars KG shall plan and perform the audit in compliance with the German Principles of Proper Professional Conduct [Grundsätze ordnungsgemäßer Berufsausübung] such that misstatements and violations materially affecting the subject of the audit defined by the engagement letter are identified with reasonable assurance.

Mazars KG shall perform all audit procedures which it considers necessary in the circumstances for a proper assessment and examine in which form the audit opinion provided for in § 322 HGB resp. the GAAS can be issued. Mazars KG shall report on the audit of the subject matter to the extent customary in the profession. In order to determine the nature, time and scope of the individual audit procedures in an appropriate manner, Mazars KG shall, where deemed necessary, audit and assess the accounting-related internal control system, in particular as far as it serves to ensure proper accounting. As is customary for the profession, Mazars KG shall perform the audit procedures on the basis of selected samples, so that there remains an unavoidable risk that even material misstatements may not be identified even though the audit has been carried out in accordance with professional standards. Therefore, e.g. acts of misappropriation and other irregularities will not necessarily be identified by the audit. Mazars KG points out that the objective of the audit is not to detect misappropriations or other irregularities that do not affect the compliance of the subject of the audit with the applicable accounting principles. Should Mazars KG, however, identify such facts during the audit, the Engaging Party ("Engaging Party") of Mazars KG shall be informed immediately.

All aforementioned engagement terms regarding objectives and methods of the audit apply to other audits according to national and international auditing standards in analogous manner.

It is the responsibility of the Engaging Party's management to correct material errors in the subject of the audit and to confirm to us in a letter of representation that the impact of any uncorrected errors identified by us during the current engagement are immaterial to the subject of the audit both individually and in the aggregate.

B. Contractual relationship

Under certain circumstances, Mazars KG may be provided, in the context of the engagement and for safeguarding the Engaging Party's economic interests, with documents directly related to the client and having legal relevance. Mazars KG expressly states that it has neither an obligation to provide legal advice or legal review, nor that this engagement includes general legal advice; therefore, the Engaging Party is obliged to submit any sample formulations provided by Mazars KG in connection with the execution of the engagement to its responsible legal advisor for final legal review. The Engaging Party is responsible for all management decisions in connection with the services of Mazars KG as well as for the use of the results of the services and the decision as to whether the services of Mazars KG are suitable for the Engaging Party's own internal purposes.

C. Access to information

It is the responsibility of the Engaging Party's management to grant Mazars KG unlimited access to records, documents and other information required for the engagement. The same applies to the submission of additional information (e.g. annual reports, statements regarding the declaration of compliance pursuant to § 161 AktG [German Stock Corporation Act: Aktiengesetz]) which is published by the Engaging Party together with the financial statements and the associated management report, if any. The Engaging Party shall make this information available in due time before the audit opinion is issued or as soon as it is available. All information made available to Mazars KG by the Engaging Party or on behalf of the Engaging Party must be fully complete ("Engaging Party's Information").

D. Consultation of Mazars members and third parties

Mazars KG shall be entitled to subcontract parts of the services to other members of the worldwide Mazars network ("Mazars members") or to other service providers who may directly contact the Engaging Party. Irrespective of this, Mazars KG will exclusively be held liable for all results of the engagement, the provision of the services and the other obligations towards the Engaging Party resulting from the engagement letter.

The Engaging Party is therefore not entitled to assert contractual claims or initiate proceedings in connection with the services or on the basis of the engagement letter in general against another Mazars member or its subcontractors, members, shareholders, members of the management board, partners or members of staff ("Mazars persons") or Mazars persons of Mazars KG. Consequently, the Engaging Party shall be obliged to assert contractual claims or initiate proceedings exclusively against Mazars KG. Mazars members and Mazars personnel are entitled to refer to this provision.

In accordance with applicable law, Mazars KG shall be entitled for the purpose of

- (a) the provision of the services of Mazars KG,
- (b) compliance with professional standards as well as with regulatory requirements,
- (c) the identification of potential conflicts of interest,
- (d) risk management and quality assurance,
- (e) internal accounting as well as the provision of other administrative or IT support services

(letters (a) – (e) hereinafter referred to as "processing purposes") to disclose the Engaging Party's Information to other Mazars members, Mazars persons and to external service providers of Mazars KG, ("Service Providers") who are allowed to collect, use, transmit, save or process data otherwise (hereinafter referred to as "to process") in the various jurisdictions in which they operate. An overview of the locations of all Mazars members is available at www.mazars.com.

Mazars KG shall be held liable towards the Engaging Party for assuring confidentiality of Engaging Party's Information, irrespective of who processes this information on behalf of Mazars KG.

E. Oral information

If the Engaging Party intends to make a decision or any other economic disposition on the basis of orally given information and/or advice by Mazars KG to the Engaging Party, the Engaging Party is obliged either (a) to inform Mazars KG in a timely manner prior to such a decision and to ask Mazars KG to confirm in writing the Engaging Party's understanding of such information and/or advice or (b) with regard to the above-mentioned risk of such orally given information and/or advice to make the decision at its own discretion and under its sole responsibility.

F. Draft versions of Mazars KG

The draft versions of the working results are only for internal purposes of Mazars KG and/or for the coordination with the Engaging Party and therefore represent only a preliminary stage of the working results and are neither final nor binding and require further review. Mazars KG is not obliged to update the final working result with regard to circumstances which have come to its knowledge or which occur after the time of completion of the work stated in the working result or in absence of such a deadline since the delivery of the working result.

This shall not apply if Mazars KG is obliged to do so due to the nature of the services.

G. Indemnity and liability

The Engaging Party is obliged to indemnify Mazars KG from all claims by third parties (including affiliated companies) as well as from any resulting obligations, damages, costs and expenses (in particular reasonable external lawyer's fees) resulting from the use of the working results by third parties, insofar the working results have been transferred directly or indirectly by the Engaging Party or at its instigation. This obligation does not exist to the extent Mazars KG has expressly agreed in writing that the third party may rely on the working result.

Regarding the liability for the underlying contractual relationship, number 9 of the General Engagement Terms as well as the statutory limitation of liability pursuant to § 323 Abs. 2 [paragraph 2] HGB shall apply. Should claims arise in connection with the contractual relationship from ancillary services relating to the statutory or voluntary audit or other audit services provided by us, our liability for such ancillary services is limited to € 4 million.

H. Electronic data transmission (e-mails)

The parties are allowed to use electronic media for the exchange and transmission of information and this form of communication as such does not constitute a breach of any confidentiality obligations. The parties are aware that the electronic transmission of information (especially via e-mail) involves risks (e.g. unauthorized access by third parties).

Any amendments to the documents transmitted via electronic media by Mazars KG as well as the disclosure of these documents to third parties via electronic media require the written consent of Mazars KG.

The transfer of personal data is subject to the data protection regulations of Mazars, which are available at www.eng.mazars.de/Data-protection. Mazars KG processes personal data in accordance with the applicable law und professional regulations, in particular in compliance with the German Federal Data Protection Act [Bundesdatenschutzgesetz (BDSG)] and the European data protection regulations. Mazars KG obliges data service providers who process personal data on behalf of Mazars KG to also abide by these regulations.

I. Letter of representation

The letter of representation requested by Mazars KG from the Engaging Party's management may also include the confirmation that the impact of uncorrected false information in the subject of the audit, summarized in an appendix to the representation letter, are immaterial both individually and in the aggregate.

J. Scope of application

The regulations contained in the Entire Engagement Terms, including the liability regulation, also apply to all future engagements placed by the Engaging Party accordingly, unless separate agreements have been made or defined in a framework agreement or unless national or foreign statutory or regulatory requirements which are binding for Mazars KG are opposed to individual regulations in favor of the Engaging Party.

For the services provided by Mazars KG the terms of the Entire Engagement Terms apply exclusively; other terms do not become terms of the agreement if the Engaging Party has not agreed these with Mazars KG in detail expressly in writing. General conditions of purchase, to which reference is made in the context of automated orders, shall not apply, even if Mazars KG does not expressly object to them or if Mazars KG starts to provide the services without reservation.

K. Applicable law / Place of jurisdiction

The professional standards developed and adopted by the relevant German professional organisations (Wirtschaftsprüferkammer [Chamber of Public Accountants], Institut der Wirtschaftsprüfer e. V., Steuerberaterkammer [Chamber of Tax Consultants]) are decisive for the performance of the engagement insofar as they are applicable to the engagement in the individual case.

This contractual relationship and all non-contractual issues or obligations resulting from this contractual relationship or from the provision of services agreed therein shall be governed by German law.

The exclusive place of jurisdiction for all legal disputes arising in connection with the engagement or services provided thereunder shall be the respective location of the contracting branch office or, at the discretion of Mazars KG, (i) the court at which the branch office of Mazars KG primarily responsible for providing the services has its registered office or (ii) the courts at the location at which the Engaging Party has its registered office.

L. Data Protection

For the processing purposes listed under letter D, Mazars KG and other Mazars persons or Service Providers are entitled to process the Engaging Party's Information that can be attributed to specific persons ("personal data") in the various jurisdictions in which they operate.

[Translator's notes are in square brackets]

General Engagement Terms

for
Wirtschaftsprüfer und Wirtschaftsprüfungsgesellschaften
[German Public Auditors and Public Audit Firms]
as of January 1, 2017

1. Scope of application

(1) These engagement terms apply to contracts between German Public Auditors (Wirtschaftsprüfer) or German Public Audit Firms (Wirtschaftsprüfungsgesellschaften) – hereinafter collectively referred to as "German Public Auditors" – and their engaging parties for assurance services, tax advisory services, advice on business matters and other engagements except as otherwise agreed in writing or prescribed by a mandatory rule.

(2) Third parties may derive claims from contracts between German Public Auditors and engaging parties only when this is expressly agreed or results from mandatory rules prescribed by law. In relation to such claims, these engagement terms also apply to these third parties.

2. Scope and execution of the engagement

(1) Object of the engagement is the agreed service – not a particular economic result. The engagement will be performed in accordance with the German Principles of Proper Professional Conduct (Grundsätze ordnungsmäßiger Berufsausübung). The German Public Auditor does not assume any management functions in connection with his services. The German Public Auditor is not responsible for the use or implementation of the results of his services. The German Public Auditor is entitled to make use of competent persons to conduct the engagement.

(2) Except for assurance engagements (betriebswirtschaftliche Prüfungen), the consideration of foreign law requires an express written agreement.

(3) If circumstances or the legal situation change subsequent to the release of the final professional statement, the German Public Auditor is not obligated to refer the engaging party to changes or any consequences resulting therefrom.

3. The obligations of the engaging party to cooperate

(1) The engaging party shall ensure that all documents and further information necessary for the performance of the engagement are provided to the German Public Auditor on a timely basis, and that he is informed of all events and circumstances that may be of significance to the performance of the engagement. This also applies to those documents and further information, events and circumstances that first become known during the German Public Auditor's work. The engaging party will also designate suitable persons to provide information.

(2) Upon the request of the German Public Auditor, the engaging party shall confirm the completeness of the documents and further information provided as well as the explanations and statements, in a written statement drafted by the German Public Auditor.

4. Ensuring independence

(1) The engaging party shall refrain from anything that endangers the independence of the German Public Auditor's staff. This applies throughout the term of the engagement, and in particular to offers of employment or to assume an executive or non-executive role, and to offers to accept engagements on their own behalf.

(2) Were the performance of the engagement to impair the independence of the German Public Auditor, of related firms, firms within his network, or such firms associated with him, to which the independence requirements apply in the same way as to the German Public Auditor in other engagement relationships, the German Public Auditor is entitled to terminate the engagement for good cause.

5. Reporting and oral information

To the extent that the German Public Auditor is required to present results in writing as part of the work in executing the engagement, only that written work is authoritative. Drafts are non-binding. Except as otherwise agreed, oral statements and explanations by the German Public Auditor are binding only when they are confirmed in writing. Statements and information of the German Public Auditor outside of the engagement are always non-binding.

6. Distribution of a German Public Auditor's professional statement

(1) The distribution to a third party of professional statements of the German Public Auditor (results of work or extracts of the results of work whether in draft or in a final version) or information about the German Public Auditor acting for the engaging party requires the German Public Auditor's written consent, unless the engaging party is obligated to distribute or inform due to law or a regulatory requirement.

(2) The use by the engaging party for promotional purposes of the German Public Auditor's professional statements and of information about the German Public Auditor acting for the engaging party is prohibited.

7. Deficiency rectification

(1) In case there are any deficiencies, the engaging party is entitled to specific subsequent performance by the German Public Auditor. The engaging party may reduce the fees or cancel the contract for failure of such subsequent performance, for subsequent non-performance or unjustified refusal to perform subsequently, or for unconscionability or impossibility of subsequent performance. If the engagement was not commissioned by a consumer, the engaging party may only cancel the contract due to a deficiency if the service rendered is not relevant to him due to failure of subsequent performance, to subsequent non-performance, to unconscionability or impossibility of subsequent performance. No. 9 applies to the extent that further claims for damages exist.

(2) The engaging party must assert a claim for the rectification of deficiencies in writing (Textform) [Translator's Note: The German term "Textform" means in written form, but without requiring a signature] without delay. Claims pursuant to paragraph 1 not arising from an intentional act expire after one year subsequent to the commencement of the time limit under the statute of limitations.

(3) Apparent deficiencies, such as clerical errors, arithmetical errors and deficiencies associated with technicalities contained in a German Public Auditor's professional statement (long-form reports, expert opinions etc.) may be corrected – also versus third parties – by the German Public Auditor at any time. Misstatements which may call into question the results contained in a German Public Auditor's professional statement entitle the German Public Auditor to withdraw such statement – also versus third parties. In such cases the German Public Auditor should first hear the engaging party, if practicable.

8. Confidentiality towards third parties, and data protection

(1) Pursuant to the law (§ [Article] 323 Abs 1 [paragraph 1] HGB [German Commercial Code: Handelsgesetzbuch], § 43 WPO [German Law regulating the Profession of Wirtschaftsprüfer: Wirtschaftsprüferordnung], § 203 StGB [German Criminal Code: Strafgesetzbuch]) the German Public Auditor is obligated to maintain confidentiality regarding facts and circumstances confided to him or of which he becomes aware in the course of his professional work, unless the engaging party releases him from this confidentiality obligation.

(2) When processing personal data, the German Public Auditor will observe national and European legal provisions on data protection.

9. Liability

(1) For legally required services by German Public Auditors, in particular audits, the respective legal limitations of liability, in particular the limitation of liability pursuant to § 323 Abs. 2 HGB, apply.

(2) Insofar neither a statutory limitation of liability is applicable, nor an individual contractual limitation of liability exists, the liability of the German Public Auditor for claims for damages of any other kind, except for damages resulting from injury to life, body or health as well as for damages that constitute a duty of replacement by a producer pursuant to § 1 ProdHaftG [German Product Liability Act: Produkthaftungsgesetz], for an individual case of damages caused by negligence is limited to € 4 million pursuant to § 54 a Abs. 1 Nr. 2 WPO.

(3) The German Public Auditor is entitled to invoke demurs and defenses based on the contractual relationship with the engaging party also towards third parties.

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(4) When multiple claimants assert a claim for damages arising from an existing contractual relationship with the German Public Auditor due to the German Public Auditor's negligent breach of duty, the maximum amount stipulated in paragraph 2 applies to the respective claims of all claimants collectively.

(5) An individual case of damages within the meaning of paragraph 2 also exists in relation to a uniform damage arising from a number of breaches of duty. The individual case of damages encompasses all consequences from a breach of duty regardless of whether the damages occurred in one year or in a number of successive years. In this case, multiple acts or omissions based on the same source of error or on a source of error of an equivalent nature are deemed to be a single breach of duty if the matters in question are legally or economically connected to one another. In this event the claim against the German Public Auditor is limited to € 5 million. The limitation to the fivefold of the minimum amount insured does not apply to compulsory audits required by law.

(6) A claim for damages expires if a suit is not filed within six months subsequent to the written refusal of acceptance of the indemnity and the engaging party has been informed of this consequence. This does not apply to claims for damages resulting from scienter, a culpable injury to life, body or health as well as for damages that constitute a liability for replacement by a producer pursuant to § 1 ProdHaftG. The right to invoke a plea of the statute of limitations remains unaffected.

10. Supplementary provisions for audit engagements

(1) If the engaging party subsequently amends the financial statements or management report audited by a German Public Auditor and accompanied by an auditor's report, he may no longer use this auditor's report.

If the German Public Auditor has not issued an auditor's report, a reference to the audit conducted by the German Public Auditor in the management report or any other public reference is permitted only with the German Public Auditor's written consent and with a wording authorized by him.

(2) If the German Public Auditor revokes the auditor's report, it may no longer be used. If the engaging party has already made use of the auditor's report, then upon the request of the German Public Auditor he must give notification of the revocation.

(3) The engaging party has a right to five official copies of the report. Additional official copies will be charged separately.

11. Supplementary provisions for assistance in tax matters

(1) When advising on an individual tax issue as well as when providing ongoing tax advice, the German Public Auditor is entitled to use as a correct and complete basis the facts provided by the engaging party – especially numerical disclosures; this also applies to bookkeeping engagements. Nevertheless, he is obligated to indicate to the engaging party any errors he has identified.

(2) The tax advisory engagement does not encompass procedures required to observe deadlines, unless the German Public Auditor has explicitly accepted a corresponding engagement. In this case the engaging party must provide the German Public Auditor with all documents required to observe deadlines – in particular tax assessments – on such a timely basis that the German Public Auditor has an appropriate lead time.

(3) Except as agreed otherwise in writing, ongoing tax advice encompasses the following work during the contract period:

- a) preparation of annual tax returns for income tax, corporate tax and business tax, as well as wealth tax returns, namely on the basis of the annual financial statements, and on other schedules and evidence documents required for the taxation, to be provided by the engaging party
- b) examination of tax assessments in relation to the taxes referred to in (a)
- c) negotiations with tax authorities in connection with the returns and assessments mentioned in (a) and (b)
- d) support in tax audits and evaluation of the results of tax audits with respect to the taxes referred to in (a)
- e) participation in petition or protest and appeal procedures with respect to the taxes mentioned in (a).

In the aforementioned tasks the German Public Auditor takes into account material published legal decisions and administrative interpretations.

(4) If the German Public Auditor receives a fixed fee for ongoing tax advice, the work mentioned under paragraph 3 (d) and (e) is to be remunerated separately, except as agreed otherwise in writing.

(5) Insofar the German Public Auditor is also a German Tax Advisor and the German Tax Advice Remuneration Regulation (Steuerberatungsvergütungsverordnung) is to be applied to calculate the remuneration, a greater or lesser remuneration than the legal default remuneration can be agreed in writing (Textform).

(6) Work relating to special individual issues for income tax, corporate tax, business tax, valuation assessments for property units, wealth tax, as well as all issues in relation to sales tax, payroll tax, other taxes and dues requires a separate engagement. This also applies to:

- a) work on non-recurring tax matters, e.g. in the field of estate tax, capital transactions tax, and real estate sales tax;
- b) support and representation in proceedings before tax and administrative courts and in criminal tax matters;
- c) advisory work and work related to expert opinions in connection with changes in legal form and other re-organizations, capital increases and reductions, insolvency related business reorganizations, admission and retirement of owners, sale of a business, liquidations and the like, and
- d) support in complying with disclosure and documentation obligations.

(7) To the extent that the preparation of the annual sales tax return is undertaken as additional work, this includes neither the review of any special accounting prerequisites nor the issue as to whether all potential sales tax allowances have been identified. No guarantee is given for the complete compilation of documents to claim the input tax credit.

12. Electronic communication

Communication between the German Public Auditor and the engaging party may be via e-mail. In the event that the engaging party does not wish to communicate via e-mail or sets special security requirements, such as the encryption of e-mails, the engaging party will inform the German Public Auditor in writing (Textform) accordingly.

13. Remuneration

(1) In addition to his claims for fees, the German Public Auditor is entitled to claim reimbursement of his expenses; sales tax will be billed additionally. He may claim appropriate advances on remuneration and reimbursement of expenses and may make the delivery of his services dependent upon the complete satisfaction of his claims. Multiple engaging parties are jointly and severally liable.

(2) If the engaging party is not a consumer, then a set-off against the German Public Auditor's claims for remuneration and reimbursement of expenses is admissible only for undisputed claims or claims determined to be legally binding.

14. Dispute settlement

The German Public Auditor is not prepared to participate in dispute settlement procedures before a consumer arbitration board (Verbraucherschlichtungsstelle) within the meaning of § 2 of the German Act on Consumer Dispute Settlements (Verbraucherstreitbelegungsgesetz).

15. Applicable law

The contract, the performance of the services and all claims resulting therefrom are exclusively governed by German law.

2.4. IMU Special Development Fund

Contributions to the IMU Special Development Fund.

2021

London Mathematical Society, UK	4,209.14 EUR
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2.5. Third-Party Donations (monetary contributions)

2021

American Mathematical Society, US	35,124.75 EUR
CIMPA – GRAID	34,040.00 EUR
Crowdfunding Donation UK – CDC	26,296.54 EUR
FIMU, US	60,116.83 EUR
FIMU, US – WDML	3,108.04 EUR
Mathematical Society of Japan, Japan	1,159.61 EUR
Niels Henrik Abel Board, Norway	33,353.66 EUR
Swiss Mathematical Society	488.48 EUR

2.6. IMU Bank Accounts

International Mathematical Union, Hausvogteiplatz 11A, D-10117 Berlin, Germany

Deutsche Bank

Otto-Suhr-Allee 6-16, D-10585 Berlin, Germany

BIC (SWIFT) code: DEUTDEDB110

<u>EUR transfer</u> to account No.:	<u>USD transfer</u> to account No.:	<u>CHF transfer</u> to account No.:
IBAN code:	IBAN code:	IBAN code:
DE85100708480511391500	DE85100708480511391500	DE58100708480511391501

3. Commissions and Committees

3.1. International Commission on Mathematical Instruction (ICMI)

<https://www.mathunion.org/icmi>



**International Commission on
Mathematical Instruction**

Activity and Financial Report 2021

A brief description of the 2021 ICMI activities

Administration and Governance

The ICMI **Executive Committee** (term in office 2021-2024) held its meetings on 4. January, 16 February, 15 April, 31 May, 13 September, and 17 November 2021 (2 hours each, online).

A meeting with the ICMI **Country Representatives** was held online on July 13, 2021.

ICME-14

ICME-14 was held in a hybrid mode (combining online with face-to-face activities) from July 11 to 18, 2021.

ICME-15

The ICMI President and Secretary General met several times with the congress convener and the head of the Local Organizing Committee to discuss the preparations of the congress in the light of global developments. The IPC of ICME-15 has started working.

ICM 2022

The preparations of Section 19 on Mathematical Education and Popularization of Mathematics are in progress (2 base lecture slots + 3 panels).

ICMI Studies

- The writing of ICMI Study 24 volume is in progress (“School Mathematics Curriculum Reforms”) and the manuscript was handed to the language editor in September 2021.
- The writing of ICMI Study 25 volume is in progress and the handing in of the manuscript to Springer is expected to be in March/April of 2022.
- The comprehensive evaluation study of the last ICMI Studies has been concluded and presented at various ICMI EC meetings. The second stage was finalized in May 2021.
- Three ICMI Studies were published for open access.
- ICMI Study 23 is going to be published in Chinese (in 2022).

Outreach to Developing Countries

The five CANPs met during ICME-14 in a discussion group and discussed implications of Covid and the continuation of their projects.

ICMI Awards

A Call for Nominations for the three Awards was distributed.

Klein Project

It was decided to move the Klein Blog to the IMU Server (in 2022).

AMOR (Awardees Multimedia Online Resources Project)

Development of the AMOR Project is ongoing. New sections have been added in 2021.

A detailed description of the 2021 ICMI activities

Administration and Governance

ICMI Executive Committee

The newly elected EC took office on January 1, 2021.

The EC composition is as follows:

Position	Name	Country
President	Frederick K. S. Leung	Hong Kong, SAR, China
Secretary-General	Jean-Luc Dorier	Switzerland
Vice Presidents	Merrilyn Goos	Ireland
	Anjum Halai	Pakistan
Members-at-large	Marta Civil	USA
	Patricio Felmer	Chile
	Mercy Kazima	Malawi
	Núria Planas	Spain
	Susanne Prediger	Germany
Ex-officio members	Jill Adler, immediate past ICMI President	S. Africa
	Carlos Kenig, President of IMU	USA
	Helge Holden, Secretary General of IMU	Norway
IMU Liaison Person	Paolo Piccione	Brazil

Usually ICMI EC meetings are held for consecutive three-days (8h per day). Due to the Covid-19 pandemic, the 2021-2022 ICMI Executive Committee held in 2021 six meetings online. They were arranged as 2 hour meetings, accommodating the different time zones in the home

countries of the members. The committee heard reports, discussed issues, made decisions and established item actions (where needed) on the following: ICMI Studies, ICME-14, ICME-15, the ICMI newsletters, outreach to developing countries and in particular the support of ICME-14 participants from Developing Countries by paying the registration fees for them, the IMU report, the AMOR Project, The Database Project, the UNESCO Math for action project and ICMI country representatives.

ICMI Thematic Affiliated Organizations and Regional Affiliated Organizations

ICMI's organizational outreach includes eleven multi-national regional organizations and international study groups in mathematics education that have obtained affiliation with ICMI. These organizations are independent and self-financed. They collaborate with ICMI on specific activities, such as the [ICMI Studies](#) or CANP. The Affiliate Organizations present activity reports to the [General Assembly of ICMI](#).

The existing two groups of affiliated organizations (societies and international study groups), together with groups emerging from ICMI regional conferences and their respective labels can be confusing since they do not reflect clear distinctions between these, particularly as all the organizations are international (multi-national). Therefore, the EC 2017-2020 agreed in 2020 to rename and reallocate the organizations into two newly named groups: Thematic Affiliated Organizations (such as PME, ICTMA) and Regional Affiliated Organizations (such as EMF, EARCOME).

Awards

The new ICMI Award Committees are led by the following Chairs: Alan H. Schoenfeld (USA) chairs the **ICMI Felix Klein and Hans Freudenthal Awards Committee (2021- 2024)** and Helen Forgasz (Australia) chairs the **ICMI Emma Castelnuovo Award Committee (2021-2024)**. Both **committees** started working in 2021. A call for nominations was distributed to the ICMI community in June 2021.

ICME-14

The 14th International Congress on Mathematical Education (ICME-14) was held in a hybrid mode at East China Normal University in Shanghai from July 11 to 18, 2021. It was the first time that an ICME was held in China since the first ICME was held in Lyon, France, in 1969. The hosts of this Congress were the Chinese Mathematical Society, East China Normal University, and the Shanghai Mathematical Society. The congress chair of ICME-14 was Professor WANG Jianpan from East China Normal University.

Due to COVID-19, ICME-14, originally scheduled for July 2020, was postponed for a year. Conversations about the feasibility of holding ICME-14 (the 14th International Congress on Mathematical Education) in Shanghai, from July 12 to 19, 2020, had started early in 2020 with the first news about the Covid-19 pandemic. After monitoring the situation, in mid-March 2020, ICMI and the ICME organizers decided to postpone the congress to July 2021. Following the global developments throughout the year, it became clear in October 2020 that even July 2021 might be not feasible for a full face-to-face congress. The EC requested from the congress convener to begin exploring how to organize a hybrid conference, so that many people who will not be able or not be willing to travel to Shanghai can attend online. The logistics of such reorganization was complex given the different time zones, the need to reform the registration fees scheme and to update the program components. The latter included issuing new invitations to replace colleagues who resigned from invited roles, as well as a proposal from a sub-committee of the IPC to include new sessions about the role of mathematics and mathematics education communities in pandemic times. The IPC was convened to discuss the reorganization and a well thought out plan was established (details are available at www.icme14.org).

ICME-14 was a unique event. The conference combined online and offline components for the first time. The congress activities were arranged between 2 p.m. and 11 p.m. local time, so as to provide participants in different time zones with the best possible participation time. Under such careful arrangement, the scale of the conference was unaffected compared with previous ones, attracting a total of 3156 participants, including 1663 online participants and 1493 on-site participants. The on-site participants included 662 officially registered participants and 831 special participants (mainly mathematics teachers in primary and secondary schools in Shanghai). Frederick Leung, President of ICMI was able to participate on-site. He was the only EC member though.

Although most participants could not communicate face-to-face, they could still exchange and share their understanding and latest research progress on mathematics and mathematics education via strong technological support.

ICME-14 offered 4 plenary lectures, 3 plenary panels, 4 survey teams, 3 national presentations, more than 60 invited lectures, 13 thematic afternoon activities, 62 topic study groups, 15 discussion groups, 27 workshops, and more than 300 posters.

The congress also presented the recipients of the Felix Klein Award and the Hans Freudenthal Award of 2017 and 2019, and the Emma Castelnuovo Award of 2020. The Award Ceremony was presented by Jill Adler and Frederick Leung, and was conducted in a combined online and offline format, with the 5 awardees also delivering lectures.

The Topic Study Groups (TSG) are worth mentioning. ICME-14 set up a total of 62 TSGs, the greatest number in the history of the congress. The 62 TSGs published a total of 1259 academic reports.

ICME-14 also reflected close cooperation between mathematicians and mathematics educators to jointly promote the development of mathematics education research and practices. Voices and views of mathematicians could be heard frequently in the Congress. For example, the speaker of the first plenary lecture was Cédric Villani, a French mathematician and one of the winners of the 2010 Fields Medal.

ICMI also organized a CANP discussion group panel and two meetings with ICMI Country Representatives and leaders from the ICMI Thematic Affiliated Organizations and Regional Affiliated Organizations.

ICME-15

ICMI EC and ICME-15 organizers decided to hold the first face-to-face IPC meeting in the first week of May 2022. Due to the pandemic this first face-to-face meeting had been delayed, but it was considered crucial to meet in person. The contract between ICMI and the ICME organizers was adjusted to the new situation due to the global situation. A first stage agreement will be signed in February 2022 and a second agreement will be signed in 2023 in order to monitor required changes in the clauses, as the global situation clears.

ICME-16

As a tradition and according to the ICMI calendar of pre-established activities, a call for intentions to bid for ICME-16 to be held in 2028 was published in the November 2020 issue of the ICMI Newsletter. One expression of intention to host the congress was received. Full bids are expected by the end of 2022.

ICMI Studies

There are **two ongoing ICMI Studies**: ICMI Study 24 on “School Mathematics Curriculum Reforms: Challenges and Changes” and ICMI Study 25 on “Mathematics Teachers Working

and Learning in Collaborative Groups”. Both are in the stage of writing towards production. Online publication of both volumes as open access is expected in 2022 or early 2023.

The ICMI EC decided in its November 2021 meeting to **launch a new study on Geometry (ICMI Study 26)**. The current working title is “Geometry Learning and Teaching”, (the exact title is yet to be worked out). The aim of the study is to review the current landscape of Geometry education and how it has changed in the past decades, especially since the last ICMI Study (Study 9) on "Perspectives on the Teaching of Geometry for the 21st Century". The envisioned study should encompass different research paradigms (e.g., research on spatial reasoning in psychology and neurosciences). It is envisaged that Geometry curricula and teaching approaches at different school levels (including primary school level which was neglected in Study 9) and their variation in different cultural traditions and contexts around the world will be reviewed. The impact of digital technologies on mathematics learning and teaching (e.g., changing conceptions of proof) should be examined, but contexts in which there are no technology resources at all should not be omitted. Essentially, the study addresses the question of what Geometry is, and the role of Geometry in mathematics education for students in the current and future era.

The **launch of ICMI Study 27** covering the topic of Socio-ecological perspectives on mathematics education was also discussed at length and the discussion will continue in 2022.

In 2020, the first stage of the **Review of Past ICMI Studies** was completed and a report was issued and presented to the ICMI EC 2017-2020 in September 2020. The data from questionnaires was analyzed and the results were very encouraging. An in-depth follow up of the first stage, consisting of hour-long interviews with ICMI officials and ICMI Study co-chairs, was approved by the EC and funds were allocated for that purpose. This second stage of the review started in January 2021 and was completed in April 2021, and the results were presented to this EC. Valuable information came out which will be used for future ICMI Studies.

Three ICMI Studies were published for **open access (ICMI Studies 19, 21 and 22)** and it was decided to publish all (or as many as possible) past ICMI Studies for open access. The contract and legal issues to publish the NISS Studies (6-18 and 20) were discussed with Springer, and it is planned to finalize the discussion in 2022 and start making the past ICMI Study available for open access.

The **Chinese translation of ICMI Study 23** on “Building the foundation: Whole numbers in Primary Grades” is going to be published in 2022.

Outreach to Developing Countries

Capacity and Networking Project (CANP)

Since the pandemic the five CANP CEP (Continuation and Expansion Projects) have had disruptions to their proposed activities. In order to react to those challenges, Anjum Halai, Vice President and CANP coordinator in the EC, initiated an ICME-14 CANP Discussion Group/panel which had 37 participants.

The Klein Project

The activities of the Klein Project continued under the leadership of Hans-Georg Weigand (Germany). A workshop by the Klein group was held during ICME-14.

Outreach, Dissemination of Information, Archiving and Reporting

ICMI Newsletter

Similar to previous years, three issues of the ICMI Newsletter were published in 2021 and distributed (March 1, July 1 and November 1). [The Editors are Jean-Luc Dorier, Merrilyn Goos](#)

[and Lena Koch. It was decided to publish as of 2022 four newsletters a year \(March 1, June 15, September 15 and December 15\). Since July 2021 the newsletter is in a new format \(html, using the platform “SendinBlue”\).](#)

ICMI Website

The ICMI website <https://www.mathunion.org/icmi> is hosted by the IMU Secretariat. Occasional “bugs” are being fixed as they emerge during the use of the site. The website receives technical support from the IMU technician Frank Klöppel, and Lena Koch.

ICMI Facebook

The ICMI Facebook page was established in 2011 and has more than 7000 followers. The editors are Jaime Carvalho e Silva (former ICMI Secretary General) and Lena Koch.

See <https://www.facebook.com/icmi.math.edu/>

L'Enseignement Mathématique and the Newsletter of the EMS (European Mathematical Society)

Regular columns on ICMI News were published in the journal L'Enseignement Mathématique (historically connected to ICMI) and the Newsletter of the European Mathematical Society (EMS), which has now become the EMS Magazine. The 2021 editors were ICMI SG Jean-Luc Dorier for l'Enseignement mathématique and ICMI EC member-at-large Susanne Prediger for the EMS Newsletter/Magazine.

ICMI Archive

Preservation of ICMI historical documents is ongoing under the joint coordination of former ICMI Secretary General Bernard Hodgson and IMU archivist Birgit Seeliger. Bernard has a permanent column in the ICMI Newsletter in which he publishes interesting vignettes related to the ICMI history.

Reports

Each year ICMI submits to the IMU EC an activity and financial report on the preceding calendar year (similar to the present one).

ICMI Digitization Program

The ICMI Digital Library Project aims at providing open access to all ICMI publications and thematic studies. Currently proceedings of the symposium organized in the year 2000 on the occasion of the centennial of L'Enseignement Mathématique, the first five ICMI Studies (and the corresponding Discussion Documents), ICMI Bulletins, proceedings of various meetings and conferences, and other relevant documents are available for perusal and free download from

<https://www.mathunion.org/icmi/publications/icmi-digital-library-project>

ICMI Secretary-General Jean-Luc Dorier started in 2021 to investigate how all (or as many as possible) past ICME proceedings and past ICMI Studies can be published on the ICMI website. Discussions are ongoing.

AMOR (Awardees Multimedia Online Resources Project)

This project, led by Jean-Luc Dorier, aims to compile a series of specially developed lectures of the ICMI awardees of the Felix Klein and Hans Freudenthal Medals. Since 2021 the project is supported by EC member at large **Núria Planas** and new units and videos were added (e.g., the unit about Celia Hoyles). The website is accessible at:

<https://www.mathunion.org/icmi/awards/amor>

Financial Summary

ICMI receives an annual grant from the International Mathematical Union (IMU). Another key source of financial support for ICMI activities comes from academic institutions all over the world that support their faculty members to attend ICMI meetings and organize ICMI activities (EC meetings, ICME and related costs, ICMI Studies IPC meetings and conferences, ICMI Regional Conferences, CANPs etc.).

ICMI Administrative Manager and ICMI Secretary General prepare the budget annually and submit it to the ICMI EC for comments and approval. The funds are transferred from the IMU Secretariat in Berlin.

As mentioned above, ICME-14 was held in a hybrid format. Usually ICME years are the most expensive ones since it includes funding for all the extra costs involved with the congress: travel and accommodation for invited guests, hosting a VIP dinner, etc. In addition, an ICME year includes other travel expenses (e.g., the handover meeting). The unused funds to cover these expenses due the hybrid format of ICME (only Chinese participants could participate in Shanghai) resulted in an accumulation of the savings rubric on the one hand, but on the other hand it allowed a reallocation of some of these funds to cover other underfunded ICMI activities or new ones for the future (e.g., external reviewer for ICMI Studies, Open Access of past ICMI Studies and more).

The detailed financial report can be found in the Appendix to this report.

Conclusion

The ICMI EC would like to thank IMU, the IMU Secretariat and its host institution WIAS in Berlin and all institutions who financially and administratively supported ICMI activities in 2021.

The ICMI EC would also like to highlight the work of all individuals who have been actively involved in ICMI activities. Without their support and involvement, ICMI activities and outreach events would not have been possible.

Frederick Leung, ICMI President

Jean-Luc Dorier, ICMI Secretary-General

Lena Koch, ICMI Administrative Manager

January 2022.

ICMI 2021 Income and Expenditure	
INCOME	
IMU Grant (annual)	62.634,00 €
Return ICME-cost paid in 2020	1.459,90
Return ICMI Studies/Springer paid in 2020	6.960,00
Royalties ICMI Studies	62,24
Total:	71.116,14 €
EXPENDITURE	
1. ICMI Administrative Costs	
1.1. EC meeting 2020	0,00 €
1.2. EC meeting 2021	0,00 €

1.3. President and Secretary Admin Cost	0,00 €
1.4. Travel and other cost ICMI EC Members/ICMI Officers to ICMI related activities (excluding EC meetings)	1.078,19 €
1.5. Other Administrative Cost	537,50 €
Total Expenditure ICMI Admin:	1.615,69 €
2. Research and Publication	
2.1. ICMI Studies general Budget	2.000,00 €
2.2. Klein Project	
Total Expenditure Research and Publication	2.000,00 €
3. ICME and GA	
3.1. ICMI GA	0,00 €
3.2. Travel cost EC members (IPC meeting, Solidarity Grant Meeting etc.)	0,00 €
3.3. Awardees and Chairs of Award Committees (travel/accommodation)	4.294,67 €
3.4. Congress Subvention	0,00 €
3.5. Travel Grants for representatives and other ICMI officer	0,00 €
3.6. ICME related admin and additional cost (IT etc.)	0,00 €
3.7. ICMI Dinner	0,00 €
3.8. Awards and Prizes (Medal/Certificate)	0,00 €

Total Expenditure ICME and GA:	4.294,67 €
4. Developing Countries	
4.1. CANP Cambodia	0,00 €
4.2. CANP Tanzania	0,00 €
4.3. CANP Costa Rica	0,00 €
4.4. CANP Peru	0,00 €
4.5. CANP Mali	0,00 €
4.6. Translation CANP MALI for publication	0,00 €
4.7. CANP Publications (Springer) and Open Access	0,00 €
4.8. Reimbursement of the online registration fee for ICME-14 developing countries participants	7797,56€
Total Expenditure Developing Countries:	7797,56€
5. Outreach	
5.1. Public Relations including flyer and poster	0,00 €
5.2. Website, Media, Newsletter	0,00 €
5.3. ICMI publications	0,00 €
5.4. Archive	0,00 €

5.5. Shipment cost ICMI Studies/ICME Proceedings	0,00 €
5.6. Amor	0,00 €
Total Expenditure Outreach:	0,00 €
6. Regional Conferences	
AFRICME ICMI Conference Support Grant	0,00 €
EMF ICMI Conference Support Grant	0,00 €
EARCOME ICMI Conference Support Grant	0,00 €
CIAEM ICMI Conference Support Grant	0,00 €
CIBEM ICMI Conference Support Grant	0,00 €
EMeLP ICMI Conference Support Grant	0,00 €
Total Regional Conference	0,00 €
7. Further Costs	
7.1. Bank Charges	1.815,40 €
7.2. Other unforeseen cost	0,00 €
Further Costs:	1.815,40€
Total Transfers ICMI 2021	17.523,32€

Overview Balances ICMI 2021	
Overview of the Savings, Accruals and Reimbursements	
Savings ICMI bank account from previous year (bank account status as of 1.1.2021)	192.702,45€
Reimbursements in 2021 for items pre-paid in previous year(s) (Springer, Return ICME-cost paid in 2020)	8.419,90€
Income 2021 (IMU Grant plus ICMI Royalties)	62.696,24€
ICMI expenses/transfers 2021	17.523,32€
Closing Balance Sheet/ Status of ICMI Bank account as of 31.12. 2021	246.295,27€

As discussed in the report, the 2021 funds on the ICMI bank account are far greater than expected due to the pandemic. ICMI had budgeted 102.500 Euros for ICME-14 and the ICMI General Assembly but only expensed about 10.000 Euros of that; the EC meetings in 2020 and 2021 and the ICMI GA were done online and therefore with no costs; and the CANP projects did not spend most of the 25.000 Euros allocated for the CANP Consolidation activities. But ICMI will have higher costs in 2022-2024:

2021 Accruals which have to be paid in 2022-2024 from ICMI savings:

ICMI is expecting the following payments:

Item	Amount
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*Reimbursement of the online registration fees for ICME-14 developing countries participants (up to)	40.000€
3D Print Award Medals	1.500€
Photos Award Medals	290€
**CANP Consolidation Grants not yet requested/transferred	23.000€
ICME-15 congress subvention	10.000€
Annual share ICME and GA cost (100000 Euro per ICME year/4years)	25.000€
Open Access past ICMI Studies (up to)	60.000€
Open Access ICMI Study 26	15.000€
Total	174.790€
Expected remaining Savings from 2021	71.505€

*Reimbursement of the online registration fee for ICME-14 developing countries participants: We are expecting an invoice from the LOC of ICME-14 for reimbursement of fees for participants from developing countries.

**The funds for CANP Consolidation activities have not been disbursed since the activities were put on hold.

Further use of the savings will be discussed by the IMU EC in 2022.

3.2. Commission for Developing Countries (CDC)

<https://www.mathunion.org/cdc>

Report on the Activities of the IMU Commission for Developing Countries (CDC) January 1, 2021 –December 31, 2021

The CDC members in the term 2019-2022 are:

- Dipendra Prasad (India) - CDC President
- Olga Gil Medrano (Spain) - CDC Secretary for Policy
- Alf Onshuus (Colombia) - CDC Secretary for Grant Selection
- Mama Foupouagnigni (Cameroon) - African Member
- Jose Maria P. Balmaceda (Philippines) - Asian Member
- Andrea Solotar (Argentina)- Latin American Member
- Galina Rusu (Moldova) - CDC member appointed by the IMU Executive Committee
- Michel Waldschmidt (France)- CDC member appointed by the IMU Executive Committee
- Anjum Halai (Pakistan)- CDC member appointed by the ICMI Executive Committee
- Carlos Kenig (USA) - IMU President (2019-2022) and Ex-officio CDC member,

Luigi Ambrosio (Italy) is the CDC liaison Executive Committee (EC) member.

The applications to the various CDC grant programs are evaluated and selected by CDC and additional committees including members external to CDC.

The CDC and all CDC related activities are supported by staff members from the IMU Secretariat in Berlin, Germany who manage most of the administration of the CDC in addition to the many volunteers who support CDC activities worldwide. The programs IMU Breakout Graduate Fellowships (BGF) and Graduate Research Assistantships in Developing Countries (GRAID) are mainly administrated outside the IMU Secretariat, but receive support by staff members of the IMU Secretariat.

The effects of the Covid-19 Pandemic on CDC activity and CDC response

As in 2020, all the CDC programs have been disturbed since they are mostly addressed to support research mobility and participation in Conferences and Schools. Fortunately, the two programs aimed to support postgraduate research in developing countries escaped from the effect of mobility restriction and lockdown and have been developed completely.

For the rest of CDC programs the policy has been to continue the evaluation of the applications and the communication of the decisions, even if visits and conferences have been postponed. IMU will secure granted funds for the future, up to the end of 2022, to give the grantees the opportunity of rescheduling as soon as the situation permits.

The Commission for Developing Countries in its annual meeting held online in March took stock of its programs during the years 2020 and 2021 in the context of the pandemic and its consequences, and noted the difficulties that are being suffered throughout the world – particularly in countries with fewer resources.

Especially for the programs: Conference Support and Volunteer Lecturer, IMU-CDC decided to allow possible expenses for acquisition of material or the payment of services to hold events in the online format.

CDC Programs

During 2021 the Commission for Developing Countries (CDC) has continued to use the funds it receives from the International Mathematical Union (IMU) and various donors to support mathematics research and advanced mathematical teaching in developing countries, guided by the basic principles incorporated into its original charge:

- I. Work with and support local mathematical leadership in developing countries,
- II. Leverage resources through partnering and networking with other organizations with goals compatible with the CDC mandate,
- III. Set clear norms of quality, transparency and accountability.

Guided by these principles, the CDC allocated its funds in 2020 for the following purposes:

Conferences and Projects

A. Conference Support Program (CSP)

The Conference Support Program gives partial support to conferences organized in developing and economically disadvantaged countries. The maximum amount that is awarded is 4,000 EUR. In case the funds are granted they are usually in the range of 1,500 EUR - 3,500 EUR.

The Program also supports a few major international conferences occurring in developed countries. The support to this category is intended solely for the participation of mathematicians from developing countries. Furthermore, conference organizers are required to demonstrate that they will match the funds being requested from/granted by CDC by an equal amount from other sources also dedicated to the participation of mathematicians from developing countries. In consideration of the Covid-19 pandemic, applications can include expenses for the acquisition of material or payment of services to conduct activities entirely or partially in online format. The CDC Grant Selection Committee (GSC) selects the grant recipients; it is an eight-member committee, chosen and supervised by the CDC and chaired by the CDC Secretary for Grants Selection. Five of its eight members are not CDC members.

B. Project Support Program (PSP)

Under the Project Support Program, the CDC supports capacity building projects and programs in mathematics and mathematics education, be they international, regional or local initiatives in developing countries. The CDC members evaluate and select the grant recipients.

Lecturing and Mentoring

A) Volunteer Lecturer Program (VLP)

The goal of this program is to offer universities in the developing world lecturers for intensive 3-4 week courses in mathematics at the advanced undergraduate or master's level. The maximum amount that is awarded for each visit is EUR 4,400 (USD 5000). In 2021 a “Complementary Funding” grant was added to the VLP program. This grant includes the possibility of buying and shipping books and/or buying "online kits". The VLP complement funding can fund a) up to EUR 1,000 per course and volunteer and or host institution for the Preparation of course material (printing cost, text books, shipment cost) and b) up to EUR 2,000 to cover expenses for the acquisition of material or use of services to conduct lectures entirely or partially in the online format. Possible expenses are technical equipment like a camera, microphones, a one year license for virtual meeting platforms such as zoom, buying a projector and/or monitor.

With supporting “online kits” CDC wants to support activities to take place remotely and most importantly allow developing countries and its institution to stay connected and involved despite the travel restrictions. The VLP program is partially supported by the American Mathematical Society (AMS) and the Niels Henrik Abel Board (Norway). A five-member CDC sub-committee, chaired by the CDC Secretary for Policy, evaluates the applications. In 2021 one additional member was added to the sub-committee.

Individual Research Visits

B) Abel Visiting Scholar Program (AVSP)

The Niels Henrik Abel Board gives an annual grant of USD 15,000 to support mathematicians professionally based in developing countries to visit an international research collaborator for a period of one month. The maximum amount that is awarded for each visit is USD 5,000 and the period is extendable for up to three months in the case of matching support from the host institution. The program is designed for postdoctoral mathematicians in the early stages of their professional careers. It is designed to offer the opportunity for a ‘research sabbatical,’ a necessary complement to teaching and other academic duties for mathematicians desiring to also sustain a viable research program. The Abel Visiting Scholar Program Selection Committee selects the grant recipients. The committee consists of three members: one member chosen by the Abel board (since July 2016 chosen by IMU EC), one member chosen by CDC and one member chosen by the IMU EC.

C. IMU-Simons African Fellowship Program (SAFP)

The program supports research sabbaticals for mathematicians from African developing countries employed in Africa to travel to an internationally known mathematical center of excellence (worldwide) for collaborative research. The program runs for six years until September 2022 and received 50.000 USD per year (2017-2021) from the Simons Foundation, NY (USA). All travel and living expenses of the grantees are covered by the

fellowship up to USD 5.000. The CDC Grant Selection Committee (GSC) described in A) selects the grant recipients.

D. Individual Research Travel Program (IRTP)

This program supports travel costs for research visits (minimum stay is four weeks) by mathematicians based in developing and economically disadvantaged countries. Host institutions are generally responsible for covering the local living expenses. However, due to the current economic situation, requests for partial coverage of living expenses (such as accommodation and boarding) may also be considered during the evaluation in 2021 and 2022. Priority will be given to applicants that receive support from the host institution. The CDC Grant Selection Committee (GSC) selects the grant recipients.

Graduate Support Programs

E. IMU Breakout Graduate Fellowship Program (BGFP)

In 2016 IMU has launched a new Program funded by the generous donations of all the winners of the Breakthrough Prizes in Mathematics. This fellowship program aims to support postgraduate studies, in a developing country, leading to a PhD degree in the mathematical sciences. The IMU Breakout Graduate Fellowships offer a limited number of grants for excellent students from developing countries. The program was developed with the assistance of the Friends of IMU (FIMU). The Breakout Selection Committee, that consists of five members and that is chaired by the CDC Secretary for Policy, evaluates the applications. The program is administered by the London Mathematical Society (LMS), supported by the IMU Secretariat.

F. Graduate Research Assistantships in Developing Countries (GRAID) Program

The Program was launched in 2017 and provides research assistantships to graduate – PhD and Master – students of emerging research groups working in a developing country listed in Priority 1 or 2 of the IMU CDC Definition of Developing Countries. It provides modest support for emerging research groups, making it possible for them to fund their most talented students as graduate research assistants (PhD or Master Students), thereby fostering the growth of a mathematics community. The GRAID Program is funded by voluntary donations from mathematicians or mathematical institutions worldwide. Applications are evaluated and recipients selected by the GRAID Selection Committee that consists of six members, three of them are not CDC members. The Committee is chaired by a CDC member and its Secretary is proposed by the American Mathematical Society (AMS). The program is administrated by the GRAID Selection Committee, supported by the AMS.

Other Activities

G. Library Assistance Scheme

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

H. CDC Website

The CDC website is hosted by WIAS Berlin and maintained by IMU Staff. All updates, programs and information about all CDC programs can be found on the CDC website: www.mathunion.org/cdc

Definition of Developing Countries

The CDC has been commissioned by the EC to make a proposal for the revision of the definition of Developing Countries to be used by IMU during the next 4-year period. The CDC proposal has been endorsed by the IMU Executive Committee in October 2019. The list consists of all the countries classified by the World Bank (WB) in the categories: *Low income* (<USD 1,025), *Lower middle income* (USD 1,026 – 3,995), and *Upper middle income* (USD 3,996 – 12,375) in accordance with the WB Database by July 2019. These are all countries with Gross National Income (GNI) per capita in USD, not exceeding USD 12,375, with the WB data of 2018.

See <https://data.worldbank.org/indicator/NY.GNP.PCAP.CD>

As in the previous term, the following subdivision in priority groups has been established:

Priority 1 (WB *Low income*) - GNI per capita in USD below 1,025

Priority 2 (WB *Lower middle income*) - GNI per capita in USD 1,026 – 3,995

Priority 3 (WB *Upper middle income, A*) - GNI per capita in USD 3,996 – 6,785

Priority 4 (WB *Upper middle income, B*) - GNI per capita in USD 6,786 – 9,575

Priority 5 (WB *Upper middle income, C*) - GNI per capita in USD 9,576 – 12,375

At any moment, IMU member countries can ask the IMU to consider inclusion/exclusion as a Developing Country. The application should be motivated and, on the basis of the evidences presented by the country, CDC would make a recommendation to EC for a case-by-case decision. If a country's World Bank status as a Developing Country has changed between the data used to decide on developing countries and the time of the request, this information should be included as part of the evidence.

The list of Developing Countries, in alphabetical order can be found in: <https://www.mathunion.org/cdc/about-cdc/definition-developing-countries>

CDC Activities 2021 in Detail

Conferences and Projects

A. Conference Support Program

During 2021, 15 conferences and research schools taking place in the following countries were selected by the Grant Selection Committee to receive a conference grant award.

Country	Name/Duration	Amount (Euro)
Senegal	Ecole CIMPA : Calcul formel, algèbres non-associatives et applications. The school was held June 14, 2021 to June 23, 2021 as planned.	3,500.00
Senegal	Women in SAGE in Senegal. Took place 20 to 24 September 2021 as planned.	1,500.00

Senegal	Introduction to Number Theory, Cryptography and related courses. Took place in September 2021.	1,896.20
Egypt	* CIMPA: Algebras, and Category towards coding and computer algebras	2,700.00
Philippines	* CIMPA School Introduction to Galois representations and modular forms and their computational aspects	2,600.00
Brazil	CIMPA School: From Dynamics to Algebra and Representation Theory and back	3,000.00
Bangladesh	* CIMPA Summer Research School in Mathematical Epidemiology/Biology	3,200.00
Pakistan	CIMPA School on Algebraic and Combinatorial Methods in Geometry	4,000.00
Benin	* CIMPA Research School in Algebra, Number Theory and Applications	4,000.00
Cameroon	GIRAGA and Classical Analysis Workshop	4,000.00
Senegal	* CIMPA school "Cryptography, Theoretical and Computational Aspects of Number Theory"	2,000.00
Congo Republic	* CIMPA Summer school for geometry (Ecole de géométrie)	4,000.00
India	CIMPA Research School on "Groups and Geometry"	3,500.00
Costa Rica	* XIX Simposio Latinoamericano de Lógica Matemática	3,500.00
Congo Republic	* 10th PAN African Congress of Mathematicians (PACOM 2021)	5,500.00
Total	15	48,896.20

**Grants not yet disbursed (EURO 27,500)*

Transferred EURO 21,396.20

CDC also approved an additional 10.000 Euro to support large conferences. The amount was not used in 2021.

B. Project Support Program (PSP)

In 2021 five projects were selected for a one-year support.

- **Burkina Faso**
Project: Support of the Master 2 Program at the Université Nazi Boni (UNB)
Target Group: graduate students
- **Ethiopia, Namibia and Senegal**

Project: Mentoring African Research in Mathematics

The project will be an extension of the four MARM partnership grants which were awarded in November 2020. These partnerships are based at the following institutions: Cambridge University, UK (paired with Universite Gaston Berger, Senegal); Bristol University, UK (paired with Universite Felix Houphouet Boigny, Ivory Coast); Politecnico di Torino, Italy (paired with University of Namibia, Namibia); and Brunel University, UK (paired with Adama Science and Technology University, Ethiopia).

- **Indonesia**

Project: Innovative Educational Project 2021 for the Enhancement of Differential Calculus Teaching and Learning Quality in Undergraduate Programme in Indonesia

Target group: junior and senior mathematicians, undergraduate students

- **South Africa**

Project: Development in Academic Statistics, South Africa.

Target group: doctoral students

- **Pakistan**

Project: International Mathematics Master, OMSATS University Islamabad, Lahore Campus, Pakistan

Target group: Students from developing countries studying a Masters degree in Mathematics

C. Volunteer Lecturer Program (VLP) 2021

Three Volunteer Lecturer Courses were conducted in 2021:

- **Benin**

Prof. Calistus Ngonghala (University of Florida, USA) gave a course in "Differential equations, nonlinear dynamical systems and applications to infectious diseases, Case study: COVID-19" at the University of Abomey-Calavi, Benin from January 28, 2021 to February 27, 2021.

Amount transferred support in 2021: 4.736 Euro, the amount of 2.672 Euro was transferred in January 2022.

- **Nigeria and Cameroon**

Prof. Christopher Thron from Texas A&M University-Central Texas lectured at the University of Dschang (Dschang, Cameroon) and at the University of Ilorin (Ilorin, Nigeria) from 17 May-10 June (Dschang) and 14 June—2 July (Ilorin), 2021. In both institutions he gave a course in Finite Elements to master students.

The total including the complimentary budget were transferred in 2021: 4.329,65 Euro.

The following four VLP Courses were approved in 2021 and are planned to happen in 2022:

- **Cameroon**

Prof. Christopher Thron (USA) will give a course at National School of Agro Industrial Sciences (ENSAI) in Cameroon in Numerical Analysis in April 2022. Approved budget: 2.000 Euro plus 1.400 Euro Complimentary funding.

- **Honduras**

Prof. Fabrizio Ruggeri (Italy) will give a course in Statistics at the Universidad Nacional Autónoma de Honduras in 2022. Approved budget: 4.850 EURO plus 1.185 Euro Complimentary funding.

- **Nigeria**

Prof. Christopher Thron (USA) will give a course in Statistics at the Department Of Mathematics, University Of Lagos, Akoka-Yaba, Lagos, Nigeria, West Africa in 2022. Approved budget: 2.355 EURO plus 930 Complimentary funding.

- **Sudan**

Prof. Christopher Thron (USA) will give a course in Linear Algebra at Department of Mathematics, Faculty of Education Alzaiem Alazhari University, Khartoum Sudan in February 2022. Approved budget: 2.285 Euro plus 2.055 Euro Complimentary funding.

Total amount approved: 17.060 Euro.

Travel Programs to support Individual Research Visits

A. Abel Visiting Scholar Program

The funds for the Abel Visiting Scholar Program (USD 15,000 per year) are not included in the general CDC budget, but kept as a separate budget.

In 2021, the Abel Visiting Scholar Grant was awarded to two recipients.

Banasheh Akbari (b. 1985) is an Assistant Professor at Sahand University of Technology, Iran. She was hosted by Professor Constantino Delizia of the Department of Mathematics, University of Salerno, Italy from November 16, 2021 to December 15, 2021.

Ikha Magdalena (b. 1987) is a lecturer in Mathematics Department, Institut Teknologi Bandung, Indonesia. The focus of her research is on the study of mathematical modeling and numerical simulation for investigating water waves phenomena. She will be hosted by Professor Dominic E. Reeve of the Energy Safety Research Institute, University Bay Campus, United Kingdom from February 1, 2022 to March 3, 2022.

Postponed Visit that took place in 2021

Mina Bigdeli (b. 1985) is a Postdoctoral Fellow at the Institute for Research in Fundamental Sciences (IPM) in Teheran, Iran. Due to Covid the visit was postponed and took finally place in 2021. She was hosted by Professor Sara Faridi of the Department of Mathematics and Statistics, Dalhousie University at Halifax, Canada, from October 29, 2021 - December 14, 2021.

B. IMU-Simons African Fellowship Program (duration 2017-2021, extended to 2022)

The funds for the IMU-Simons African Grants (USD 50,000 per year) are not included in the general CDC budget, but kept as a separate budget. Six fellowships were granted in 2021; One visit has been postponed, and five will take place in 2022. Simons Foundation has awarded an extension of its support to CDC until August 2022.

Name, Institution, Country	Host, Host Institution, Country
* Ahmed Elaraby, South Valley University, Egypt	Gennady Alexeevich Ososkov, Joint Institute for Nuclear Research, Moscow, Russia
* Idowu Ademola Osinuga, Federal University of Agriculture, Abeokuta, Nigeria	Predrag Stanimirovic, University of Nis, Serbia
* Tunde Joseph Taiwo, University of Lagos, Nigeria	Francisco Marcellan, University of Carlos III De Madrid, Spain
* Patrice Takam Soh, University of Yaoundé I, Cameroon	Ralf Wunderlich, BTU Cottbus-Senftenberg, Germany
* Narciso Gomes, University of Cape Verde, Cape Verde	Michael Ruzhansky, Ghent University, Belgium
*Aboubacar Nibiranza, University of Burundi, Burundi	Frédéric Faure, Université Grenoble Alpes, France

**grants not yet disbursed*

C. Individual Travel Support Program

Two grants were awarded in 2021; both of which will take place in 2022.

Name, Institution, Country	Host, Host Institution, Country	Grant amount
*Javad Asadollahi, University of Isfahan, Isfahan, Iran	Bernhard Keller, France	Up to 4500
** Mohd Almie Bin Alias, Universiti Kebangsaan Malaysia, Malaysia	Philip Kumar Maini, United Kingdom	Up to 4500

**The first installment of the grant (2000€) was paid in 2021.*

***Grants not yet disbursed (Up to 7,000€)*

Grants approved in 2020

One Researcher who had received the grant in 2020 could travel in 2021.

Name of Grantee, Institution, Country	Host, Host Institution, Country	Visiting Dates planned at time of application	Grant Amount approved by GSC	Grant transferred in 2021

Minoo Kamrani Iran	Erika Hausenblas, Leoben University, Austria	17.07.2021- 18.09.2021.	2,000.00€	2486,25€(higher cost due to Covid 19)
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Graduate Support Programs

A. IMU Breakout Graduate Fellowship Program

The funds for the IMU Breakout Fellowship Program are not included in the general CDC budget, but kept as a separate budget.

The 2021 awardees are:

- **Hang** Nguyen is a Vietnamese PhD student at the Institute of Mathematics of the Vietnam Academy of Science and Technology
- **Hong** Duong Thi is a Vietnamese PhD student at the Thai Nguyen University of Sciences in Vietnam
- Sayooj Aby **Jose** is an Indian PhD student at the Alagappa University in India
- Abd-semii'Oluwatosin-Enitan **Owolabi** is a Nigerian PhD student at the University of Kwazulu-Natal, Durban in South Africa
- Avulundiah Edwin **Phiri** is a Zambian PhD student at the University of Pretoria in South Africa
- Edwiga Kishinda **Renald** is a Tanzanian PhD student at the Nelson Mandela African Institution of Science and Technology in Tanzania
- **Trinh** Tung is a Vietnamese PhD student at Hanoi National University in Vietnam

Updates from Awardees selected in previous years:

Adeolu Taiwo (Nigeria) awarded in 2019 has obtained his PhD degree in Mathematics in May 2021 at the School of Mathematics, Statistics and Computer Science of the University of KwaZulu-Natal, Durban, South Africa

The awardees selected in previous calls have provided satisfactory reports during the year and their fellowship has been renewed.

Donation

[Takuro Mochizuki](#) (Japan) received the 2022 Breakthrough Prize in Mathematics and as previous winners he has donated the amount of USD 100,000 to the IMU Breakout Graduate Fellowship Program.

A. Graduate Research Assistantships in Developing Countries (GRAID) Program

The GRAID funds are not budgeted to the general CDC budget, but kept in the FIMU account and are transferred by the American Mathematical Society to the grantees.

The GRAID Committee has evaluated its 2021 applications and selected the following students for funding:

Round 5 Year 1

The GRAID committee approved support for:

- a group from Nepal with PI Kedar Uprety and IP Naveen Vaidya (USA) supporting two PhD additional students Khagendra Adhikari and Ramesh Gautam
- a group from Cameroon with PI Gideon Ngwa and IP Miranda Teboh-Ewungkem (USA) supporting one additional student PhD student Njongwe James Agheyih
- a group from Congo with PI Basile Bossoto and IP Christian Marie (France) supporting one PhD student Roslan Ibara Ngiza Mfumu
- a group from the Philippines with PI Aurelio de los Reyes and IP Stacey Smith (Canada) supporting one MS student Marvin Jay H. Quiapo
- a group from Ghana with PI Jefferey Ezearn and IP Ihechukwu Chinyere (UK) supporting a MS student Charles Kokoroko and a PhD student Eunice Abena Lettu.

Some of the grants from previous years have been renewed.

Other Activities

A. Library Assistance Scheme

No books were shipped in 2021.

Brief overview of approved grants (in 2019 and 2020) which were affected by the Pandemic

A. Conference Support Program

Grants approved in 2020

In 2020, 27 received a conference grant award. No funds were transferred in 2020 due to the Pandemic. Below is the status what happened in 2021 and/or what is planned for 2022:

- 13 Conferences or schools were cancelled,
- 6 Conferences or schools were held in 2021
- 8 Conferences or schools were postponed to 2022

Conference Grants approved in 2019

During 2019 27 conferences received a conference grant award. Three conferences were cancelled, one took place in 2021 and one was postponed to 2022 due to Covid-19.

Total amount conferences 2019&2020 not yet disbursed 2019+ 2020: Euro 13,000

B. Volunteer Lecturer Program (VLP)

During 2020 three visits were selected and could not be conducted in 2021 due to Covid travel restrictions. The visits are postponed.

Total Amount VLP 2020 not yet disbursed (up to Euro 13,200 Euro+ up to Euro 9,000 Complimentary grant)

Travel Programs to support Individual Research Visits

A. Abel Visiting Scholar Program

Four Researchers have not yet received their which were approved in 2019 and 2020 grant because they have postponed the activity:

Total amount of grants AVSP not yet disbursed (2019+2020): USD\$20,000.00

B. IMU-Simons African Fellowship Program (duration 2017-2021, extended to 2022)

Seven Researchers have not yet received their grant because they have postponed the activity.

Total amount of grants SAFF not yet disbursed (2019+2020): 33,500.00€

C. Individual Travel Support Program

4 Researchers have not yet received their grant because they have postponed the activity

Total amount of grants not yet disbursed: 9,000.00€

Administrative Costs

Administrative costs are kept to less than 10% of the CDC operating budget. The administrative costs for CDC consisted primarily of bank transfer costs.

Most of the administrative work is managed by staff members from the IMU Secretariat. The salaries of the IMU Secretariat staff are covered from the grant the Secretariat receives annually from the City of Berlin and the German Ministry of Education and Research. The IMU Secretariat is hosted by the *Weierstrass Institute for Applied Analysis and Stochastics* (WIAS) in Berlin, Germany. The IMU staff members are employed at WIAS. The costs of the website and technical costs are mainly covered by the IMU Secretariat funds.

The IMU Secretariat has also received from the Simons Foundation USD 5,000 in 2021 to cover basic administrative costs of the IMU-Simons African Fellowship program. The GRAID program is administrated by the GRAID Selection Committee, supported by AMS and FIMU. The Breakout Fellowship Program is administered by LMS (London Mathematical Society), supported by IMU Secretariat. LMS has received in 2021 USD 6,600 from FIMU's support to cover administrative costs.

CDC Income 2021

Many of the CDC programs are funded by the generous donations of individual mathematicians and organizations, as it has been described above. Apart from these donations, CDC's principal source of 'core' income is an annual grant from the International Mathematical Union (IMU). IMU in turn receives its financial support from IMU member countries. The Income part of the Financial Statement attached includes besides the IMU year grants to CDC, the support received during 2021 from Niels Henrik Abel Board, the donations from the American Mathematical Society (AMS), the Japanese Mathematical Society, The Swiss Mathematical Society and the University of Leicester (UK). Additionally 34,040 Euro (30,000 from CIMPA, France) were received in the CDC account as donations to GRAID, to be transferred to FIMU.

The overview below excludes the payments of the following CDC Programs: IMU Simons African Fellowship Program, GRAID, Abel Visiting Scholar Program and Breakout Graduate Fellowships Program.

The Commission for Developing Countries would like to express its profound thanks to all institutions and individuals supporting CDC and its activities. Furthermore CDC would like to extend its gratitude to all volunteers. We are truly appreciative of those individuals who dedicate their time to support all CDC activities: as members of evaluation committees, as Volunteer Lecturers, as donors of mathematical materials and as organizers of CDC activities and who help current and future generations both at home and within the mathematical

community abroad. CDC is looking forward to future collaboration with all its supporters, cooperation partners and volunteers.

More information about CDC and its activities can be found on the website:

<http://www.mathunion.org/CDC>

Olga Gil Medrano, CDC Secretary for Policy

Lena Koch, CDC Administrative Manager, IMU Secretariat

Balances 2021

INCOME		2021	
IMU Budget		83.512,00 €	
Donation from the fundraiser Leicester Univ		26.296,54 €	
Abel Board Grant (excluding Abel Travel Fund)		20.516,56 €	
Donation to GRAID	*To be transferred to FIMU	34.040,00 €	
FIMU Donation to VLP		4.152,37 €	
Japanese Mathematical Society Donation		1.154,11 €	
Swiss Mathematical Society Donation		420,37 €	
Total Income		170.091,95 €	
Expenditure by Category	Details	Payments in 2021	Accruals: grants approved in 2019-2021 to be paid in 2022
Administration (in 2021 only Bank Transfer Costs)		1.975,57 €	
CDC Members participating in meetings		0€	0
Conference Support	Grants approved in 2019 and 2020 to conferences postponed	15.447,37 €	13.000,00 €
	Grants approved in 2021	21.396,20 €	27.500,00€+10.000€
Individual Travel Fellowship	Grants 2020&2021	4.486,25 €	7.000,00€+9000€
Library Assistance Scheme		0	0
VLP		9.065,65 €	41.932 €

GRAID	*To be transferred to FIMU		34.040,00 €
CANP (ICMI)		0	
Project Support 2021		26.324,00 €	
Project Support 2021/2022			50.000€
Refunding unspent Abel Board Funds 2020		11.116,60 €	
Transferred Grants in 2021		89.811,64 €	
Funds on CDC Bank Account as of 1.1. 2021		254.135,74	
Funds on CDC Bank Account as of 31.12.2021		334.416,05	
Total Accruals 2019-2022			158.432€
Available Funds as of January 2022		175.984,05€	

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

<https://www.mathunion.org/ichm>



INTERNATIONAL COMMISSION ON THE
HISTORY OF MATHEMATICS (ICHM)

Report of the ICHM to the IMU 2021

June Barrow-Green (Chair)

1. Commission Organization

a. List of officers and members of governing body, and governance procedures

The Executive Committee of the ICHM consists of the following members:

Chair

June Barrow-Green (School of Mathematics & Statistics, Faculty of STEM, Open University, Milton Keynes, UK) June.Barrow-Green@open.ac.uk

Vice-chair

Clemency Montelle (University of Canterbury, New Zealand)
clemency.montelle@canterbury.ac.nz

Secretary

Sloan Despeaux (Western Carolina University, USA) despeaux@email.wcu.edu

Treasurer

Martina Schneider (University of Mainz, Germany) mschneider@mathematik.uni-mainz.de

Members-at-Large

Michela Malpangotto (France) michela.malpangotto@obspm.fr

S. Mohammad Mozaffari (Iran/China) mozaffari@ustc.edu.cn

Volker Remmert (Germany) remmert@uni-wuppertal.de

Adrian Rice (USA) arice4@rnc.edu

Clara H. Sánchez (Colombia) chsanchezb@unal.edu.co

GUO Shirong (China) guoshirong1959@163.com, gsr@imnu.edu.cn

Galina Sinkevich (Russia) galina.sinkevich@gmail.com

IMU Representatives:

Isobel Falconer (School of Mathematics and Statistics, University of St Andrews, Scotland) ijf3@st-andrews.ac.uk

Catherine Goldstein (Institut de mathématiques de Jussieu-Paris Rive gauche, Paris, France) catherine.goldstein@imj-prg.fr

Ex-Officio

Craig Fraser (University of Toronto, Canada) craig.fraser@utoronto.ca (immediate past chair)

Reinhard Siegmund-Schultze (University of Agder, Norway) reinhard.siegmund-schultze@uia.no (editor *Historia Mathematica*)

Nathan Sidoli (Waseda University, Japan) sidoli@waseda.jp (editor *Historia Mathematica*)

The Executive Committee of the ICHM has two ‘listening’ members: Snezana Lawrence (International Study Group on the Relations between the History and Pedagogy of Mathematics (HPM), an affiliate of the ICMI) and Gang Tian (IMU liaison).

The Executive Committee of the ICHM had four business e-meetings together with email discussion in 2021.

b. Sub-committees and their functions, with brief details of activities

Kenneth O. May Prize Committee (2021)

June Barrow-Green (Chair) (UK)

Tom Archibald (Canada)

Niccolò Guicciardini (Italy)

Clemency Montelle (New Zealand)

The Kenneth O. May Prize is awarded every four years to a historian or historians of mathematics in recognition of distinguished contributions to the history of mathematics. 2021 May Prizes were awarded to Sonja Brentjes (Germany) and Christine Proust (France). For citations, see <https://www.mathunion.org/ichm/prizes/kenneth-o-may-prize-history-mathematics>.

Montucla Prize Committee (2021)

Sloan Despeaux (Chair) (USA)

Antoni Malet (Spain)

Nathan Sidoli (Japan)

Reinhard-Siegmund-Schultze (Norway)

The Montucla Prize is awarded every four years to the author of the best article published in *Historia Mathematica* by an early-career researcher in the four years preceding the International Congress of History of Science and Technology. 2021 Montucla Prizes were awarded to François Lê (France) and Brigitte Stenhouse (UK). For citations, see <https://www.mathunion.org/ichm/report-montucla-prize-2021-Francois-Le> and <https://www.mathunion.org/ichm/report-montucla-prize-2021-brigitte-stenhouse>.

c. Details of membership of the Commission

There are 44 National Members of the ICHM: Algeria, Austria, Belgium, Belorussia, Brazil, Canada, China, Costa Rica, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Guatemala, Iceland, Iran, Israel, Italy, Japan, Kazakhstan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Russia, Saudi Arabia, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Syria, Taiwan, Tunisia, Turkey, United Kingdom, USA.

Individuals are listed at <https://www.mathunion.org/ichm/about-us/members>

d. URL of Commission website

<https://www.mathunion.org/ichm>. It is updated whenever necessary, e.g. to include changes in membership, reports of meetings, etc.

2. Activities

a. Activities undertaken or sponsored by the Commission in the last year

The ICHM held an (online) Open Meeting at the International Congress for the History of Science and Technology (ICHST), 26 July 2021. The four ICHM prize-winners were announced. There was a productive discussion on how the ICHM could best support early-career scholars.

[At the ICHST, one of the members of the ICHM EC, Michaela Malpangotto, was elected to the Council of the Division of Science and Technology (DHST) of the International Union of the History and Philosophy of Science and Technology (IUHPST). The ICHM is an inter-union commission of the DHST.]

Co-sponsorship of the Special Session on History of Mathematics at the (online) Joint Mathematics Meeting, USA. 8-9 January 2021.

<https://www.mathunion.org/ichm/reports/activity-reports>

Co-sponsorship of the 32nd Novembertagung, ‘Mathematics in Times of Crisis’, 18-20 November 2021 (online).

<https://www.mathunion.org/fileadmin/ICHM/Reports/ICHMReport2021.pdf>

[The Novembertagung, which is organised by early career scholars for early career scholars, is held every year in a different country. We consider this to be one of the most important meetings supported by the ICHM as it enables early career scholars to make contact with one another at an international level as well as having the opportunity to present their work in a supportive environment.]

Workshops and Symposia:

Co-sponsorship of five symposia at the joint [BSHM-CSHPM/SCHPM](#) Conference “People, Places, Practices”, St. Andrews, Scotland, UK in July 2021 (postponed from July 2020 due to Covid-19). Each of these symposia is organized by an early career scholar and includes early career scholars among the speakers. The ICHM had provisionally agreed to fund these early-

career scholars to attend the conference but when the conference was postponed and changed from in-person to online, the funding was no longer required.

Sponsorship of three ICHM symposia at the (online) [26th ICHST](#), July 2021.

- *Evolution of Mathematics in China: Major Figures, Anonymous Contributors, and the Giants Among Them* (3 sessions - 12 talks)
- *Constructing interfaces between mathematical and physical conceptions and methods* (1 session - 4 talks)
- *Collaborations and Rivalries in the History of Mathematics* (2 sessions - 8 talks)

b. Publications arising from the work of the Commission in the last year.

Historia Mathematica is the official journal of the ICHM. It appears four times annually and publishes roughly 525 pages of original research in the history of mathematics from all times and cultures. The journal is currently edited by Nathan Sidoli (Waseda University, Tokyo) and Reinhard Siegmund-Schultze (University of Adger, Norway). In January 2022, Antoni Malet (Universitat Pompeu Fabra, Spain) will replace Reinhard Siegmund-Schultze. It is published by Elsevier Science and is available electronically to subscribers of [ScienceDirect](#).

c. Activities supported in the last year

Early Career Scholar Support.

Due to Covid-19, many early career scholars have been denied the opportunity to participate in face-to-face conferences, and helping with funding their attendance at such conferences is usually the main way in which the ICHM offers them support. In October 2020, the ICHM instituted a grant scheme for early-career scholars to fund individual research-related activities with an international dimension. Such activities could include registration fees for online conferences, childcare grants for attendance at online conferences, cost of scans from overseas archives, etc.

<https://www.mathunion.org/ichm/grants-sponsorships/ichm-grants>

d. Changes to the governance or organisation structure of the Commission

None

3. Future plans

Activities planned for 2022

ICHM Co-Sponsored *AMS-MAA Special Sessions on History of Mathematics* (Seattle, January 6-9, 2022). Due to the pandemic, this meeting has been postponed to a virtual meeting to be held April 6-9, 2022. No financial aid was requested.

The ICHM will hold a special session at the ICM 2022 at which the May Prize and Montucla Prize winners will deliver lectures.

Funds will be available to support the Novembertagung 2022. We will also make funds available to support Novembertagung satellite meetings for scholars for whom travel is not viable.

4. Financial report

Expenditure for 2021

Prizes

- Kenneth O May Prizes 2021 – 2556.84€
- Montucla Prizes 2021 – 2596.44€

Note: ICHM Prizes are awarded every four years

Earl-Career Scholar Grants and Conference

- Conference registration fee for Ellen Abrams, AMS/MAA Joint Meeting (online, January 2021), talk: 'Logical Fate' and 'Intellectual Wisdom': Cassius Keyser and the Humanism of Mathematics – 161.62€
- Conference registration fee for David Waszek, History of Science Society Annual Meeting (online, November 2021), talk: Clever Artifice or Signpost to the Hidden Nature of Things? The Circulation of Leibniz's Analogy of Powers and Differences – 174€
- Novembertagung 2021: online workshop and virtual tour – 774€

Conference organizers submit reports on their conferences and these reports are published on the ICHM website. The financial assistance is offered to the conference organizer in the form of a grant.

Income for 2021

Elsevier Honoraria US\$5000.

Note: The DHST suspended its grants for 2021 due to Covid-19. These grants have been reinstated for 2022 and the ICHM has been awarded 1500€ In awarding the grant, the DHST commended the ICHM as “a fine example of an inter-union commission.”

The financial position of the ICHM is currently good.

3.4. Committee on Electronic Information and Communication (CEIC)

<https://www.mathunion.org/ceic>

CEIC Annual Report 2021

CEIC held online meetings throughout 2021 on the last Tuesday of each month, except for December due to the winter holidays. In October we welcomed Jean-Pierre Bourguignon to the committee.

1. DORA

One question CEIC considered this year is whether the IMU should sign the 2012 [San Francisco Declaration on Research Assessment](#), which deals with how scientific research should be evaluated. This declaration has been signed by a number of mathematical organizations, including ICIAM and the AMS, LMS, DMV, SMF, and EMS, but not yet by the IMU. While it's arguably not perfect (no document of this sort is), it is very much aligned with the IMU's principles, and the CEIC strongly recommends that the IMU sign it.

2. Revising CEIC Documents

We completed revising the [Best Current Practices for Journals](#) document and posted it to the CEIC website, while moving all outdated documents to a historical section. After considerable discussion of alternatives, we decided not to revise [Copyright Recommendations](#). The document itself was excellent for its time period, but by 2021 it was twenty years out of date. During that time, the publishing landscape changed dramatically. The original document never mentioned the arXiv, Creative Commons licenses, or open access; instead, it focused on print publishing, while acknowledging electronic distribution or publishing as an emerging area. Much of the discussion, while not technically wrong, is of limited importance in 2021.

Because of the evolving landscape, it was not feasible to update [Copyright Recommendations](#) through modest edits or additions. Instead, an up to date document would have to be written from scratch, and the key question was what would be most useful to convey. Basic information about copyright and its relevance to scholarly publishing is much more easily accessible today than it was twenty years ago. Instead, what's really needed is concrete recommendations for what mathematicians publishing papers, journal editors, and publishers should do.

However, the committee found it difficult to reach consensus on these issues. There are many uncontroversial issues; for example, every mathematician publishing a paper should retain the right to post it to the arXiv. However, this battle seems to have been won already, and we are not aware of any mathematical publishers that object to use of the arXiv. What remains are much more subtle issues, such as:

- What are the minimal professional expectations of mathematicians publishing papers? For example, if someone chooses to publish in a closed-access journal, are they exercising their freedom to disseminate their work as they see fit, or are they harming the mathematical community? What if someone chooses not to make a preprint freely available, because they prefer for attention to go to the definitive, published version of record? Is there anything we can state every mathematician should do? If we don't, are we implicitly saying there is no professional obligation to do anything at all about access to the mathematical literature? If we do suggest a minimum, are we also indicating it's enough?
- What about editors? To what extent should they take responsibility for ensuring that the publisher's policies and business model serve the research community well? Or is this simply above their pay grade?
- Are certain business models unethical? For example, consider open access publishing based on article processing charges. Is this a perfectly reasonable approach, provided that editorial decisions are independent of the ability to pay and subsidies are available for those who cannot pay? Or is it an intrinsically flawed model? And, if so, is it better or worse than a model in which publishing is free but reading is expensive?
- What about the risk of predatory publishers that use low standards to collect as many fees as possible? Is this a disaster or merely an unfortunate side effect?
- Do we really understand which models are scalable and sustainable? For example, are diamond open access journals (no fees for anyone to publish or read) based on volunteer labor an altogether superior solution, or is skilled volunteer labor itself too limited a resource? Will article processing charges distort how publishing works? What about "subscribe to open" models? Will they save learned society journals, or eventually collapse?

It's valuable for CEIC to discuss and debate these issues, but for many of them it seems to be too early to reach a conclusion. Recommendations from CEIC are most useful when they reflect a strong consensus among a representative group of those with expertise in this area. That's the case with [Best Current Practices for Journals](#), but there was considerable disagreement about what sorts of copyright recommendations are necessary or desirable. There are a number of overviews and proposals from other groups available on the web, and adding to them did not seem likely to help settle these issues. Instead, they will require further discussion and experience over time.

3. The Global Digital Mathematical Library

The biggest CEIC-related challenge facing the mathematical community is creating a Global Digital Mathematical Library (GDML). This idea has been endorsed by the IMU since 2006, but progress has been slower than was hoped at the time.

As explained in the document *zbMATH as GDML0* (by Patrick D. F. Ion and Mila Runnwerth), CEIC proposes looking at the GDML as a combination of several contributions:

- We need an initial interface and index, which one might call GDML0.
- We need as many papers as possible to be freely available (as discussed in the next section).
- We need to build tools and interfaces on top of GDML0. For example, how should search work? Can it handle formulas and changes of notation or terminology? These sorts of questions are far more subtle and complex, but solutions can evolve over time once the foundation is in place.

3.1. **zbMATH Open**

The best currently existing foundation for GDML0 is [zbMATH Open](#), which is the online version of Zentralblatt and is now freely available worldwide. Its transition to an open access database was explicitly motivated by the IMU's GDML vision, as acknowledged on their website:

“After a concerted effort by zbMATH stakeholders, the Joint Science Conference (Gemeinsame Wissenschaftskonferenz) agreed in the first week of December 2019 that the Federal and State Governments of Germany would support FIZ Karlsruhe to transform zbMATH into an open platform. As a result zbMATH Open has become a freely accessible research tool for the mathematical community worldwide since January 2021.

This step was inspired by the International Mathematical Union's 2014 vision of a Global Digital Mathematics Library: ‘to provide a coherent and sustainable open platform in which all mathematics-relevant information and data can be brought together, comprehensively accessed and used free of charge under a uniform interface’.”

Currently, [zbMATH Open](#) contains approximately 4.2 million database entries for mathematical papers and books. All of the data compiled or created by zbMATH itself is available under a Creative Commons BY-SA license (an open access license allowing reuse with attribution, provided that the results are also made available under the same terms), while some bibliographic data supplied by publishers is more restrictively licensed.

Among freely available databases,¹ [zbMATH Open](#) has by far the best and most accurate coverage of mathematics, and it would be an ideal portal to the GDML. Many mathematicians access the literature through tools such as [Google Scholar](#). These tools are useful, but they suffer from several disadvantages: they produce automated results of mixed quality, and they are under the control of for-profit companies (whose interests may not always align with the mathematical community's interests in the future). Now that [zbMATH Open](#) is freely available, we expect that it will become an increasingly important tool for mathematicians, as well as the foundation for the GDML.

¹ Its primary competitor, [MathSciNet](#), is not freely available.

3.2. OpenAlex

[OpenAlex](#) (named after the Library of Alexandria) is an intriguing database that was founded in 2021 to replace Microsoft Academic Graph (Microsoft’s competitor to Google Scholar, which was discontinued at the end of 2021). It remains to be seen how important [OpenAlex](#) will be for mathematics, but it is well funded and ambitious, and it has the potential to be of considerable use, particularly for the interface between mathematics and its applications. Its primary competitor, MathSciNet, is not freely available.

This is an area that both [zbMATH Open](#) and [MathSciNet](#) struggle with, since identifying and indexing mathematics across a huge range of journals in adjacent fields is even more challenging than dealing with mathematics journals per se. In the long run, the GDML may end up combining a core database such as [zbMATH Open](#) with supplementary data and references from broader indexes such as [OpenAlex](#).

3.3. Sophize Project

The Sophize Foundation, founded by Abhishek Chugh, is another noteworthy attempt to address this issue. [Sophize](#) is a software development effort aimed at creating something like a GDML. Specifically, Chugh proposes the following as the goals of the [Sophize Project](#):

“Develop an open state-of-the-art academic platform with the following capability to:

- Aggregate knowledge from Mathematics resources including encyclopedias, research papers, mathematical reference books, mathematical databases, and formal systems to make it easier to search and explore Mathematical content.
- Formalize the largely unexplored network of information that connects mathematical objects to create rich research experiences. These deep connections will also be used to connect other significant efforts such as FABstracts, DLMF, Lean, MMT, Flexiformal Mathematics etc.
- Allow researchers to easily run Mathematics-related computations online in languages like Python (Sage), Java, R, Mathematica.
- Facilitate knowledge-based group discussions and academic collaborations.”

This is an ambitious and well-informed software development effort, which we hope will contribute to a future GDML. The IMU had \$3,689.45 left over from a Sloan Foundation grant aimed at GDML-related activities. We gave this money to the Sophize Foundation to fund the creation of a prototype Online Structured Content Extraction Tool, which is now available as the [Structured Data Extractor](#). Both the [code](#) and a [project report](#) are available online. While this tool is only a small part of a full GDML, it’s a valuable step forwards.

4. Permissions Committee

In 2020 CEIC proposed the creation of an IMU permissions committee in the document *Making near-term progress on the Global Digital Mathematics Library via an ad hoc IMU Permissions Committee* (by Henry Cohn and Patrick D. F. Ion). While the Executive Committee had some interest in the idea, it asked for a more detailed plan. This year, we submitted a revised and more detailed version of *Making near-term progress on the Global Digital Mathematics Library via an ad hoc IMU Permissions Committee*, along with a companion document *Additional comments on proposed Permissions Committee addressing questions that came up during the discussion of the proposal*. This proposal was accepted in 2021, and the Committee on Permissions came into existence in October. Its goal is to investigate how to achieve free

access to back issues of mathematical journals. Now that this committee exists, we will defer to their report for further discussion of this important topic.

5. Planning for ICM 2022

We developed a brief *proposal ICM 2022 Panel Proposal: Present & Future of Mathematical Publishing*, based largely on work by a subcommittee consisting of Marie Farge and Mila Runnwerth and devoted to producing more detailed plans inspired by discussions at CEIC meetings. We are still considering making a proposal on formalization of mathematics, if time permits to complete a proposal sufficiently far in advance of the ICM.

We've noticed that at past ICMS, CEIC panels varied in popularity, and so these topics were chosen because they seem likely to inspire interest among ICM attendees. A sparsely attended panel may nevertheless be of great interest to attendees, but we hope to reach as broader audience of mathematicians, beyond those who already consider themselves interested in or well-informed about CEIC topics.

3.5. Committee for Women in Mathematics (CWM)

<https://www.mathunion.org/cwm>

Report of the International Mathematical Union Committee for Women in Mathematics in 2021

Committee Members

The composition of CWM 2019-2022 is as follows

- Marie-Françoise Roy (MFR), Université de Rennes 1, France, Chair
- Carolina Araujo (CA), IMPA, Rio de Janeiro, Brazil, Vice Chair
- Alejandro Adem (AA), University of British Columbia, Canada
- Petra Bonfert-Taylor, (PBT) Dartmouth College, USA
- Tony Ezome (TE), USTM, Franceville, Gabon
- Josephine Kagunda Wairimu (JK), University of Nairobi, Kenya
- Neela Nataraj (NN), IIT Bombay, India (grant management)
- Mokoto Kotani (MK), Tohoku University, Japan
- Ekin Ozman (EO), Bogazici University, Turkey (CWM Newsletter management)
- Cheryl Praeger (CP), University of Western Australia, Australia (reports management)
- The liaison person between CWM and IMU EC is IMU president Carlos Kenig (CK), University of Chicago, USA
- CWM has moreover three special contacts:
 - Betül Tanbay (BT), Bogazici University, Turkey (link to International Day of Mathematics (IDM)).
 - Julia Pevtsova (JP), University of Washington (link with ICM 2022 local organizing committee)

- Sandra Kingan (SK), Brooklyn College (CWM twitter account)

Better proportion of women lecturers at ICM 2022

CWM is happy to report that the proportion of women (plenary and sectional) lecturers has reached a little more than 20%. For the previous ICMs (Rio 2018, Seoul 2014, Hyderabad 2010) the proportion had stabilized around 15 %, after a period of growth starting in the 1990s.

(WM)² World Meeting for Women in Mathematics

A bilingual English-Russian website has been created for (WM)² 2022, the second (WM)² taking place in St Petersburg on July 5, 2022, the day between the IMU General Assembly and the opening of the ICM. A permanent website has been designed for future (WM)² editions and the website of (WM)² 2018 in Rio has been integrated on this permanent website.

The Organizing Committee (OC) of (WM)² has decided that there will be two options to participate in (WM)² 2022

- in person in Saint-Petersbourg,
- remotely online.

The whole program of the meeting will be available in the two modes. The OC is working on the details of the implementation of the decision.

The program features four plenary lectures by distinguished female mathematicians from Russia and nearby countries, by Mina Aganagic, Eugenia Malinnikova, Natalia Vladimirovna Maslova and Maryna Sergiivna Viazovska. All of them have accepted to attend physically if the meeting is maintained and to have their talks broadcasted and recorded for the virtual public.

The rest of the program is not finalized yet, it will include at least:

- the exhibition “МАТЕМАТИКА, through a land of mathematics,”
- a poster session
- group discussions
- a round table

People applying to Chebyshev and Kovalevskaia grants have been asked to indicate their interest in participating in (WM)². Chebyshev and Kovalevskaia awardees have been informed that, in case they are approved by (WM)² OC, they will receive an extra night of accommodation.

The categories and amount of fees have been decided and the preregistration is open.

<https://worldwomeninmaths.org/>

<https://2022.worldwomeninmaths.org/>

CWM Ambassadors

CWM has created a list of more than 150 so-called CWM Ambassadors belonging to 99 different countries. Each of them has the job of disseminating information such as CWM funding calls in her geographical or mathematical neighbourhood, and equally of keeping CWM informed about relevant activities or initiatives. The list is posted on the CWM website.

Virtual meetings of CWM ambassadors by continent were organized in 2021, and a global gathering is taking place on February 11 2022. The aim of these meetings is to organize CWM ambassadors as a network, facilitate discussion of their initiatives to reduce the gender gap in mathematics, and encourage the exchange of experience and good practice. Virtual meetings

took place in Europe jointly organized with EWM (European Women in Mathematics), in Africa jointly organized by AWMA (African Women in Mathematics Association), in Asia in combination with the creation of the Asian and Oceanian Women in Mathematics platform, in America with a Latin American meeting jointly organized with GCD-UMALCA (PLEASE SPELL THIS OUT) and a Panamerican meeting with participation from AWM (Association for Women in Mathematics) and GCD-UMALCA.

For the current list of CWM Ambassadors, see [Annex A](#)

Activities supported by CWM in 2020 and 2021

In 2020, CWM approved the support of 8 projects. Due to the COVID crisis, only three projects took place in 2020, and had to be partially redesigned (see CWM 2020 report). Of the five remaining projects, one was canceled in Colombia, two became virtual, in India and Latin America, and two took place in 2021, in Sénégal, and Turkey.

In 2021, CWM approved the support of 6 projects. A project of several regional women in mathematics associations organising jointly the May 12 initiative to upgrade the reporting mechanism of the [website](#), as well as the second phase of the exhibition project, “МАТЕМАТИКА, through a land of mathematics,” to be premiered at (WM)² in Saint Petersburg and ICM 2022 worked as planned. The project of Indian Women in Mathematics and two thematic mathematical activities in Latin America and Pakistan also took place. Two extra activities were also supported by CWM in 2021: the film project "Words of women in mathematics in the time of Corona" and a GCD-UMALCA workshop in the scope of the Latin American meeting of CWM ambassadors.

AWMA’s proposal for a special day for women in mathematics at the Pan African Congress of Mathematicians PACOM 2021 was postponed to 2022 since the whole PACOM was postponed.

<https://www.mathunion.org/cwm/events/cwm-sponsored-events/2020>

<https://www.mathunion.org/cwm/events/cwm-sponsored-events/2021>

CWM call in 2022

The CWM 2022 call invited applications aimed at either:

- a) Establishing or supporting networks for women in mathematics, preferably at the continental or regional level, and with priority given to networks in developing or emerging countries.
- b) Organizing research workshops geared towards establishing research networks for women by fostering research collaborations during the event.
- c) Other ideas for researching and/or addressing issues encountered by women in mathematics.

The call received 31 applications, of which CWM decided to support 10. CWM is supporting the creation of the website of the AOWM (Asian and Oceanian Women in Mathematics) platform and the update of the website of AWMA (African Women in Mathematics Association). Three regional meetings, the third Central Asian Women in Mathematics in Tadjikistan, the second Women in Sage in Africa meeting in Nigeria and the Latin American and Caribbean Workshop on Mathematics and Gender in Oaxaca (Mexico) are also selected. The other five supported proposals are national events to create networks in Gabon, Ghana, and Oman, Indian Women in Mathematics activities and the II Brazilian Meeting for Women in Mathematics.

Gender Gap in Science Project (GGSP)

a) How to keep the tools of GGSP alive ?

All union and organization representatives in the GGSP wished the project results and its associated tools to remain available well beyond the end of the 2017-2019 period during which it received funding from the International Science Council (ISC). For this purpose, (virtual) GGSP coordination meetings are taking place twice a year. Activities in 2021 aimed at the following goals:

- to provide access to the data collected through the Global Survey of Scientists to all participating unions and partners of the project, while protecting the privacy of the respondents to the survey. This was possible using current technology (“data suppression technique”), thanks to an internship project on the gender gap in math/applied math and the gender gap in science in Africa. The internship was jointly funded by the IMU and the International Council for Industrial and Applied Mathematics (ICIAM) and took place from March to August 2021. Similar studies have been launched for chemistry, physics, astronomy and Latin-America.
- to improve the long-term availability and maintenance of the tools of the project for the analysis of Publication Patterns and the Data Base of Good Practice. A Ph D student is maintaining and improving the tools for Publication Patterns <https://gender-publication-gap.f4.htw-berlin.de/>.

The Data Base of Good Practice is hosted by IMU, its final presentation is being finalised.

<https://www.mathunion.org/cwm/gender-gap-in-science-database>

b) Dissemination and implementation of the recommendations of the GGSP, inside IMU.

The recommendations in the report were kept short and direct on purpose. They have been distributed to the Adhering Organizations of IMU for their information.

The following questions remain: Is there a mechanism for the recommendations concerning international unions to be discussed inside IMU and (hopefully) transformed into official recommendations of IMU? And, more generally, what can be done by IMU to help implement also the first two parts of the recommendations (for parents and educators, and for scientific organizations)?

Standing Committee for Gender Equality in Science (SCGES)

The SCGES was created with 9 founding members, including IMU, who approved a MoU. The IMU representatives in SCGES are MFR and CA. Currently, SCGES has 18 member organizations.

The SCGES Webinar Series is a monthly event organized by its Partner Institutions and coordinated by SCGES. The aim of the Webinar Series is to create exchanges and interactions related to issues around Gender Equality in Science among various scientific communities, taking advantage of the global and interdisciplinary structure of the Committee. The initiative was launched in 2022. The first session, which will take place on February 16, is organized jointly by IMU and ICIAM on the topic of Gender Equality in Mathematics. As we write (two weeks before the event) there are already 300 registered participants.

<https://gender-equality-in-science.org/scges-webinar-series/>

The first annual report of SCGES is available here

<https://gender-equality-in-science.org/2021/09/25/first-scges-annual-report/>

SCGES website: <https://gender-equality-in-science.org/>

Remember Maryam Mirzakhani

As a tribute to Maryam Mirzakhani, CWM created the Remember Maryam Mirzakhani Memorial Exhibition with 18 original A0 posters portraying Maryam Mirzakhani. The exhibition was created by Thaís Jordão (curator) and Rafael Meireles Barroso (designer). It was inaugurated at the (WM)² 2018 in Rio de Janeiro and remained open during the ICM 2018.

Rules for further displays of the exhibition have been agreed (see <https://www.mathunion.org/fileadmin/CWM/Initiatives/HostingRememberMaryamMirzakhani.pdf>)

A poster and flyer describing the exhibition are available in English and other languages (French, Persian and Turkish).

Due to the Covid crisis, classical exhibitions have not been possible in 2021.

However, CWM had an agreement with the Australian Research Council Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS), at Queensland University of Technology (QUT), which displayed the exhibition at "The Cube" in Brisbane, using the multiple high resolution screens offered by The Cube. On May 12 2021, the exhibition was opened for the general public to view throughout the day. It was promoted using the official ACEMS and Centre for Data Science (CDS) twitter accounts. This event was supported by CDS, which ran a parallel event: a Wikipedia edit-a-thon to promote women in mathematics, from within The Cube.

May 12, Celebrating Women in Mathematics in 2021

The idea of celebrating women in mathematics on Maryam Mirzakhani's birthday, May 12, was proposed by the Women's Committee of the Iranian Mathematical Society at the World Meeting for Women in Mathematics (WM)² in 2018, and approved by the participants. The "May 12 Initiative", rose to a global and inclusive call to action, uniting several national and continental women-in-mathematics organizations worldwide (European Women in Mathematics, Association for Women in Mathematics, African Women in Mathematics Association, Colectivo de Mujeres Matemáticas en Chile, Women's Committee of the Iranian Mathematics Society, Indian Women in Mathematics).

At the beginning of 2021, the reporting mechanism on the "May 12" website was improved, to make more visible the range of activities. This was made possible by funding from IMU and CWM.

Screening of the film *Secrets of the surface* (about the life and work of Maryam Mirzakhani) for May 12 in 2020 was so successful that the initiative group for May12 in 2021 launched a collaboration with Rocco Films for screening their film *Picture a scientist*. The documentary film *Picture a scientist* is a ninety-minute essay about hardships and difficulties faced specifically by women in academia. It was first released in 2020.

Individual screenings were offered through the May 12 website. Applicants received a link to screen the film for 3 days around 12 May 2021, and were asked not to disseminate it. Versions with subtitles in English, French, Spanish and Portuguese were provided. More than 2 800 requests were received and the corresponding links were sent, in 108 different countries all over the world.

There were also a total of 123 events registered on the May 12 website, on top of the 2800 people from 108 countries from whom we received individual screening requests for *Picture a Scientist*. See <https://may12.womeninmaths.org/2021-list>

Several CWM members were active members in the coordination group for the May 12 initiative (MFR, CA) serving as individuals rather than CWM representatives.

CWM Newsletter

The CWM Newsletter is sent electronically to CWM ambassadors who distribute it through their mailing lists, posted on the CWM website and advertised in IMU-Net. Moreover, it is sent to various mathematical centers (MSRI, MFO, CIRM, etc) which are encouraged to make it available. A new page on the CWM website makes it possible to subscribe to the CWM Newsletter and the publication process of the CWM Newsletter has been fully integrated into the IMU website.

The CWM Newsletter is issued every six months and started in May 2019.

- Fifth issue on May 2021.

<https://www.mathunion.org/fileadmin/CWM/Initiatives/CWMNewsletter5.pdf>

Content: Editorial, Interview with a CWM member (MK), News from CWM, Other News and Announcements, International Day of Women and Girls in Science on 11 February 2021: Activities around the world reported by the CWM Ambassadors, and the article “AWM at 50 and Beyond”, written by Georgia Benkart, Kristin Lauter, and Sylvia Wiegand on the occasion of the 50th anniversary of the Association for Women in Mathematics.

- Sixth issue on November 2021.

<https://www.mathunion.org/fileadmin/CWM/Initiatives/CWMNewsletter6.pdf>

Content: Editorial, Interview with a CWM member (JK), News from CWM, Other News and Announcements, and “Initiatives for women in math in Japan”, an article written by Makiko Sasada.

CWM website and publicity

The CWM website <http://www.mathunion.org/cwm/> has been reorganized by MFR and updated on a regular basis, by MFR, NGC and PBT, with input from CWM members and ambassadors. In particular details of relevant events are posted.

We note the increasing number of countries which now have some form of organization for female mathematicians, see www.mathunion.org/organizations/by-country/

CWM is the only organization gathering such information internationally.

Given the workload required by the CWM website, and the little time that MFR and PBT have available for this, Birgit Seeliger, the IMU archivist, has worked for CWM website for approximately six hours a week starting in January 2021. CWM is very grateful for Birgit’s assistance and it has led to a very important improvement for the CWM website and for CWM in general.

CWM meeting

There was no CWM meeting in 2021. In order to make a collective decision about the activities to be funded in the 2022 call, CWM held a virtual meeting on 11 and 12 January 2022.

CWM operation mode and Liaison with EC

Most of CWM’s work has been done by email. Skype and phone calls have also been used. The liaison with the IMU Executive Committee through CK has been regular and very positive. We would like to thank the members of the IMU office staff who have consistently been very helpful.

CWM Expenditure 2021

<i>left from 2020</i>	<i>13 964,62</i>	
<i>Budget from IMU 2021</i>	<i>20 878,00</i>	
expenses for (WM) ² website		8 360,71
Cal 2020 Indonesia		1 726,55 €
Cal 2020 Career development workshop in Chile		2 036,55 €
Cal 2020 women in Sage in Africa		3 036,55 €
Call 2020 meeting at Nesin Village		2 000,00 €
Call 2021 May 12 reporting system		2 340,00 €
Call 2021 МАТЕМАТИКА		3 000,00 €
Call 2021 Indian Women in Mathematics		2 036,55 €
Call 2021 math network in Latin America		1 500,00 €
Call 2021 virtual lectures Pakistan		1 500,00 €
GCD UMALCA activity		636,55 €
Film Women in math and Covid		1 800,00 €
Design poster in Farsi for Museum in Iran		186,55 €
Support book project Katherine Johnson		55,00 €
Catalogue exhibition women in math in Europe		28,24 €
Total expenses 2021		30 243,25 €
left from 2021	4 599,37	
Call 2021 Women in math in PACOM (postponed)		3 000,00 €

Report by Marie-Françoise Roy and Carolina Araujo, Chair and Vice Chair of CWM

4. Circular Letters of the IMU Secretary General to the Adhering Organizations

IMU AO Circular Letter 1/2021

International Mathematical Union



January 5, 2021

IMU AO Circular Letter 1/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Call for nominations as President and Secretary General of the IMU

Dear colleagues,

We are hereby inviting the Adhering Organizations (AOs) of the IMU and the respective Committees for Mathematics to nominate candidates for President and Secretary General of the IMU for the term 2023–2026.

The procedure is as follows:

Nominations will be considered by the Nominating Committee (NC) of the IMU. See [Circular Letter 26/2020](#) for its composition. The procedure is described in the [guidelines](#).

The NC is required to present slates of nominations to the AOs in preparation for the elections of the IMU Executive Committee, the Commission for Developing Countries, and the IMU representatives on the International Commission on the History of Mathematics at the General Assembly on 3–4 July 2022 in St Petersburg, Russia, where the election will take place.

The call for nominations will take place in two steps:

1. We now ask for nominations for the offices of President and Secretary General of IMU.
2. The call for nominations for all other positions will be made by 1 September 2021.

Submissions must include a candidate's statement of willingness to serve if elected and a CV. CVs exceeding two pages in length will not be considered. Only electronic submissions are accepted.

Please send your nominations by **15 March 2021** to Wendelin Werner chair@nc22.mathunion.org using the official email address of your Adhering Organization or Committee for Mathematics.

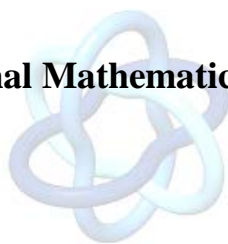
Sincerely yours

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 2/2021

International Mathematical Union



January 17, 2021

IMU AO Circular Letter 2/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Updated Contact Information

Dear colleagues,

Contact information

I will shortly send out individual emails to all IMU members regarding your country's contact information for the IMU.

The most recent contact information regarding the IMU members can be found [here](#).

We will send you the email addresses that we use when we contact your country. Please take time to check if you want us to update them.

Please reply to me with Cc to manager@mathunion.org

- Confirming that the information above is correct, or
- Sending corrected/updated information.

Advice re email addresses

In order to establish and maintain reliable and sustainable connections with the IMU, the following steps are recommended:

1. Create generic addresses like "president@mathsociety.country", which will remain unchanged. Emails to a generic address can be forwarded to the person(s) holding the office.
2. Emails sent from the IMU should be received by at least two different recipients. I frequently receive automatic replies saying "I am away from my email", often covering long time periods of absence.
3. Give us at least two different email addresses, preferably using different mail servers. If we have only one email address for a country, and that address ceases to work, we will be unable to discover that you did not receive our email, and, thus, we will lose contact with your country.
4. Please try to maintain the email addresses you give us and send us updates if necessary. We reserve the right to remove addresses that constantly bounce.
5. Please create a stable URL for your Adhering Organization.

Fraud alerts

The IMU is regularly exposed to attempted frauds, usually in the form of emails requesting immediate transfer of money due to some emergency. The emails appear to be sent in the name of the IMU President or other IMU representatives. The perpetrators reveal some knowledge of the IMU and their emails can appear somewhat authentic, but closer scrutiny of the email reveals that the IMU is not the sender. I would like to take this opportunity to reiterate that the IMU never requests money on an individual basis. Please do not respond to these emails and beware of sending money. Please report all such communications to me.

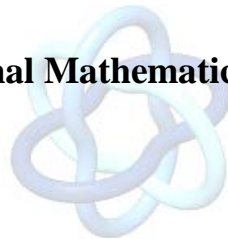
Sincerely

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 3/2021

International Mathematical Union



March 3, 2021

IMU AO Circular Letter 3/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

A public statement from the IMU regarding recent events in Russia

Dear colleagues,

The IMU has been approached by several groups and individuals regarding recent events in Russia, events that are of considerable concern to the IMU. As you know, the International Congress of Mathematicians will take place in St Petersburg 6–14 July 2022.

We have discussed the matter with several international organizations, including the International Science Council.

The Executive Committee of the IMU has decided to issue the attached public statement regarding the situation.

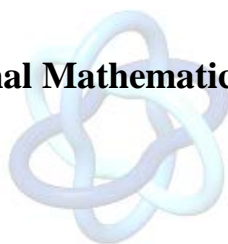
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 4/2021

International Mathematical Union



March 9, 2021

IMU AO Circular Letter 4/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

The International Day of Mathematics on March 14, 2021

Dear colleagues,

On March 14, 2021, we will celebrate the second [International Day of Mathematics](#) (IDM). The chosen theme for 2021 is [Mathematics for a Better World](#).

In view of the pandemic, many celebrations will take place online or be limited to classrooms.

The Mathematics for a Better World Poster Challenge generated 2100 proposals, please visit the [gallery](#).

[The 2021 Global Online Celebration](#)

The celebration will start as March 14 begins in Oceania and end 48 hours later at the end of March 14. It will consist in liveblogging pictures and videos from IDM events worldwide, posters, announcements and more. Posting can be done on Facebook, Twitter, and Instagram, using the hashtag #idm314.

The main event will be a series of short online talks for a general audience on mathematics and how it can make the world better. There will be three sessions in three different languages:

English, French, and Spanish. The talks will be streamed live through the IDM [website](#) completely free and without any need to sign up. It will take place from 14:00 UTC to 18:05 UTC.

[Program of the main event](#)

It is still possible to post IDM celebrations, including classroom celebrations on the IDM [website](#).

Many thanks for spreading the word in your community and helping to make IDM 2021 a big success!

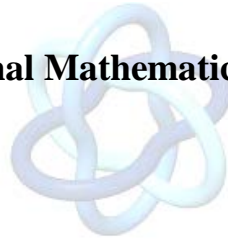
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 5/2021

International Mathematical Union



March 11, 2021
IMU AO Circular Letter 5/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Travel grants for ICM 2022

Dear colleagues,

It has been a longstanding tradition that the organizers of the ICM offer support in order that mathematicians from developing countries can participate at the ICM.

For the ICM 2022 in Saint Petersburg, Russia, the organizers have generously announced two different grant programs:

The Chebyshev Grants

The Chebyshev Grants program provides full support (including airfare and local expenses in Saint Petersburg) to 1000 participants from developing countries.

Priority will be given to applications received by

31 March 2021

The Kovalevskaya Grants

The Kovalevskaya Grants program provides local support for up to 1000 Early Career participants from developed countries. Interest in applying for a Kovalevskaya grant can be indicated in your ICM account after registration.

Further information can be found on the website

<https://icm2022.org/grants>

Please help us in disseminating this information to your colleagues and students.

We look forward to seeing you at the ICM 2022!

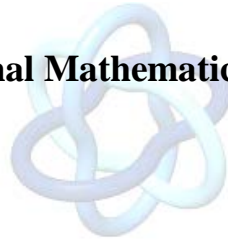
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 6/2021

International Mathematical Union



March 26, 2021

IMU AO Circular Letter 6/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Further information regarding travel grants for ICM 2022

Dear colleagues,

I refer to CL 5/2021 regarding travel grants for the ICM 2022. I am writing to provide additional information regarding the Kovalevskaya Grants, which constitute a novel type of grant.

The **Kovalevskaya Grants** will cover the congress fee and local expenses for up to 1,000 early career mathematicians from developed countries, on the condition that their home country undertakes the selection of recipients and covers their travel. Specifically, the grants cover the registration fee, accommodation, and meals for the duration of the congress. Several mathematical societies have already confirmed their participation. We encourage you as Adhering Organizations to contact the local organizers at funding@icm2022.org about organizing this in your country.

Finally, please note that the organizers have extended the deadline for applications for the **Chebyshev Grants** (targeted for developing countries) to 31 May 2021, with applications received before this date being given priority.

Please refer to the website <https://icm2022.org/grants> where the latest information will appear regarding the procedure for all grants available for the ICM 2022.

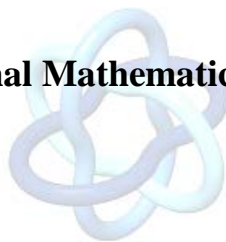
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 7/2021

International Mathematical Union



April 13, 2021
IMU AO Circular Letter 7/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Postal ballot on application from Belarus

Dear colleagues,

Belarus has applied for full membership in group I of the IMU. The Executive Committee of the IMU unanimously recommends the application. The enclosed document, which was submitted by the Institute of Mathematics of the National Academy of Sciences of Belarus, reports about the state of mathematics in Belarus.

Important change in procedure: In addition to postal or fax ballots, we will also accept ballots returned by email under the following conditions. For an email ballot to be valid, it has to be sent from an address associated with your AO. If you are in doubt, please check the email I sent in mid-January of 2021 to each AO. If you are still in doubt, please contact me. If we receive conflicting votes from the same AO, we will notify you. If the issue cannot be resolved, the ballot will be deemed invalid. Postal ballots take preference.

A ballot form is attached to this email, and it will *not* be sent out by regular mail.

Please vote on the application from Belarus using the attached ballot, and return it by mail, email or fax by

15 June 2021

to the address indicated on the ballot form.

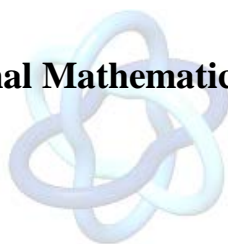
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 8/2021

International Mathematical Union



April 27, 2021

IMU AO Circular Letter 8/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Call for themes for the International Day of Mathematics 2022

Dear colleagues,

Despite the pandemic, the second [International Day of Mathematics](#) (IDM) on March 14, aroused worldwide enthusiasm with more than 700 celebrations announced in at least 95 countries. The 48 hours live coverage of the IDM attracted 17,000 unique users on March 14, 2021. A [Global Virtual Live Celebration](#) on the theme Mathematics for a Better World also took place with sessions in English, French, and German attracting 3300, 1300, and 2700 views, respectively.

It is now time to decide the theme for IDM 2022. Please send your proposal for the theme of IDM 2022, including a short justification, by email to idm@mathunion.org. The deadline for submissions is

15 June 2021.

Let me remind you that the IDM 2020 and 2021 themes were *Mathematics is Everywhere* and

Mathematics for a Better World.

We would like to inform you that IMU is one of the founding partners of the [International Year of Basic Sciences for Sustainable Development 2022](#) (IYBSSD 2022), which has been adopted by UNESCO and has a high probability of being approved by the General Assembly of the United Nations next fall. Hence a theme related to IYBSSD 2022 would be welcome.

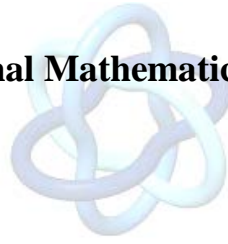
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 9/2021

International Mathematical Union



May 11, 2021

IMU AO Circular Letter 9/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

The nominees for President and Secretary General for IMU for 2023–2026

Dear colleagues,

This is a follow-up to [Circular Letter 1/2021](#) inviting your nominations for President and Secretary General of the IMU for the next term 2023–2026.

The Nominating Committee ([CL 26/2020](#)), chaired by Wendelin Werner, unanimously proposes

IMU President: Hiraku Nakajima, Japan

IMU Secretary General: Christoph Sorger, France

Short CVs are attached. Both nominees have stated that they are willing to serve if elected.

Any comments on these proposals should be sent by 15 July 2021, to me at secretary@mathunion.org, using the official email address of your Adhering Organization or Committee for Mathematics.

If there are no objections, both nominees will be invited to attend the EC meetings in 2022 as observers.

The election will take place at the 19th IMU General Assembly on 3–4 July 2022 in Saint Petersburg, Russia.

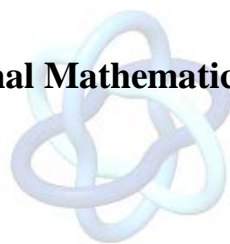
Sincerely yours

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 10/2021

International Mathematical Union



May 11, 2021
IMU AO Circular Letter 10/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Member ballot on application from Mongolia

Dear colleagues,

Mongolia has applied for associate membership of the IMU. The Executive Committee of the IMU unanimously recommends the application. The enclosed document, which was submitted by the Mongolian Mathematical Society, reports about the state of mathematics in Mongolia.

Important change in procedure: In addition to postal or fax ballots, we will also accept ballots returned by email to office@mathunion.org under the following conditions. For an email ballot to be valid, it has to be sent from an address associated with your AO. If you are in doubt, please check the email I sent in mid-January of 2021 to each AO. If you are still in doubt, please contact me.

If we receive conflicting votes from the same AO, we will notify you. If the issue cannot be resolved, the ballot will be deemed invalid. Postal ballots take preference.

A ballot form is attached to this email, and it will *not* be sent out by regular mail.

Please vote on the application from Mongolia using the attached ballot, and return it by mail, email or fax by

15 July 2021

to the address indicated on the ballot form.

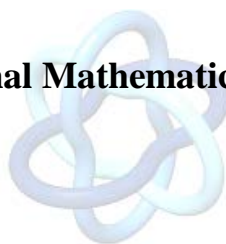
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 11/2021

International Mathematical Union



June 16, 2021

IMU AO Circular Letter 11/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Result on application for membership from Belarus

Dear colleagues,

I am happy to report about the outcome of the member ballot on the application for membership of Belarus, see [IMU AO Circular Letter 7/2021](#).

The vote on Belarus' application yielded a positive result. As of July 2021, Belarus is a Member in Group I of the IMU.

Thank you for your contribution.

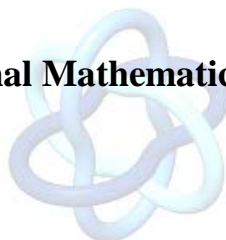
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 12/2021

International Mathematical Union



June 21, 2021

IMU AO Circular Letter 12/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

The IMU centennial conference "Mathematics without Borders"

Dear colleagues,

I refer to Circular Letters [01/20](#), [06/20](#), and [17/20](#) regarding the conference

Mathematics without Borders

The Centennial of the International Mathematical Union

Strasbourg, 27–28 September 2021

All speakers have confirmed in-person participation if regulations allow for that. Thus we plan for a regular in-person conference.

Registration is now open at the conference website

<https://imucentennial.math.unistra.fr>

Prepayment for refreshments and lunches is necessary to complete the registration. When you complete your registration, you will receive an email with information about accommodation.

Please note that there is a limit to the number of participants, and registration will be available on a first come, first served basis.

Deadline for registration is **20 August 2021**.

We also intend to stream the lectures live on YouTube.

Please help distribute the information about the conference in your community. We hope to see many of you in Strasbourg to celebrate our centennial!

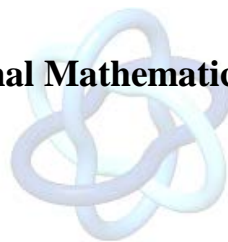
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 13/2021

International Mathematical Union



June 24, 2021

IMU AO Circular Letter 13/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Application for change of group of adherence of Indonesia

Dear colleagues,

Indonesia has requested a change of group of adherence from Group I to Group II. The Executive Committee of the IMU unanimously recommends this change. Enclosed is the application from Indonesia.

Important change in procedure: In addition to postal or fax ballots, we will also accept ballots returned by email to office@mathunion.org under the following conditions. For an email ballot to be valid, it has to be sent from an address associated with your AO. If you are in doubt, please check the email I sent in mid-January of 2021 to each AO. If you are still in doubt, please contact me. If we receive conflicting votes from the same AO, we will notify you. If the issue cannot be resolved, the ballot will be deemed invalid. Postal ballots take preference.

A ballot form is attached to this email, and it will *not* be sent out by regular mail.

Please vote on the application from Indonesia using the attached ballot, and return it by mail, email or fax by

31 August 2021

to the address indicated on the ballot form.

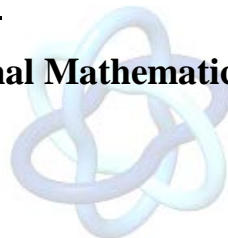
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 14/2021

International Mathematical Union



July 7, 2021

IMU AO Circular Letter 14/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

IMU Bulletin No. 72 (2020)

Dear colleagues,

The IMU Bulletin No. 72, reporting about the IMU activities in 2020, is available on the [IMU Web server](#).

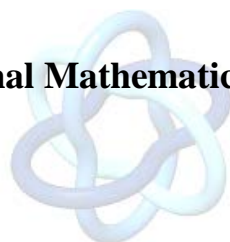
We do not intend to send out printed versions. However, printed versions will be sent out on request.

Regards

Helge Holden
Secretary General of the International Mathematical Union

IMU AO Circular Letter 15/2021

International Mathematical Union



July 16, 2021
IMU AO Circular Letter 15/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Update: The President-nominee and Secretary General-nominee for IMU for 2023–2026

Dear colleagues,

This letter refers to the [IMU AO Circular Letter 9/2021](#).

No objections were received regarding the following nominations for the term 2023–2026:

IMU President – Hiraku Nakajima, Japan

IMU Secretary General – Christoph Sorger, France.

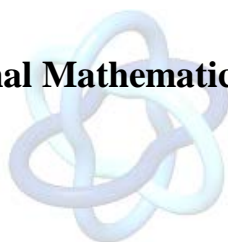
According to what has been decided by the General Assembly, Hiraku Nakajima and Christoph Sorger will be invited to attend the IMU EC meetings in 2022 as guests without voting rights.

Sincerely

Helge Holden
Secretary General of the International Mathematical Union

IMU AO Circular Letter 16/2021

International Mathematical Union



July 16, 2021
IMU AO Circular Letter 16/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Call for nominations for IMU EC, CDC, and ICHM

Dear colleagues,

Further to my call for nominations for the offices of President and Secretary General of IMU, see [IMU AO Circular Letters 1/2021](#) and [9/2021](#), I am now inviting IMU's Adhering Organizations and Committees for Mathematics to submit names for the 2023–2026 term for the offices of the:

- **IMU Vice Presidents and IMU Executive Committee (EC) Members-at-Large.**
The General Assembly will elect 2 Vice Presidents and 6 Members-at-Large.
- **President, Secretaries and Members-at-Large of the Commission for Developing Countries (CDC).**
1 President, 1 Secretary for Policy and 1 Secretary for Grant Selection, and
3 Members-at-Large, representing Africa, Asia, and Latin America to be elected by the General Assembly. See CDC [Terms of Reference](#).
- **IMU Representatives to the International Commission on the History of Mathematics (ICHM).**
2 IMU Representatives to ICHM to be elected by the General Assembly.

Submissions must include a candidate's statement of willingness to serve if elected and a CV.

CVs exceeding two pages in length will not be considered. Only electronic submissions are accepted.

Please send your nominations by **15 November 2021** to the Chair of the Nominating Committee, Wendelin Werner chair@nc22.mathunion.org, using the official email address of your Adhering Organization or Committee for Mathematics. Membership in the Nominating Committee is given in [IMU AO CL 26/2020](#).

Please note that members of the Committee on Electronic Information and Communication (CEIC) and the Committee for Women in Mathematics (CWM) are appointed by the IMU EC.

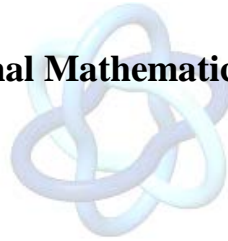
Sincerely

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 17/2021

International Mathematical Union



July 16, 2021

IMU AO Circular Letter 17/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Result on application from Mongolia

Dear colleagues,

I am happy to report about the outcome of the member ballot on the application from Mongolia for associate membership of the IMU, see [IMU AO Circular Letter 10/2021](#).

The vote on Mongolia's application yielded a positive result. As of August 2021, Mongolia is an Associate Member of the IMU.

Thank you for your contribution.

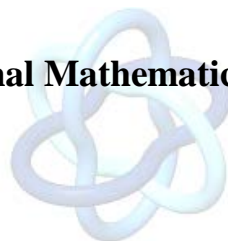
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 18/2021

International Mathematical Union



September 1, 2021

IMU AO Circular Letter 18/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Result on application from Indonesia

Dear colleagues,

I am happy to report about the outcome of the member ballot on the application from Indonesia for a change of group of adherence from Group I to Group II, see [IMU AO Circular Letter 13/2021](#).

The vote on Indonesia's application yielded a positive result. As of October 2021, Indonesia is a Member in Group II of the IMU.

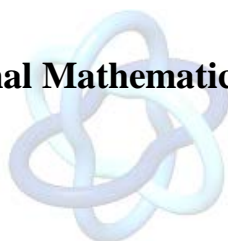
Thank you for your contribution.

Regards

Helge Holden
Secretary General of the International Mathematical Union

IMU AO Circular Letter 19/2021

International Mathematical Union



September 23, 2021
IMU AO Circular Letter 19/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

IMU related newsletters

Dear colleagues,

The IMU and some of its Commissions and Committees issue newsletters regularly throughout the year. They are:

[IMU News](#)

[ICMI Newsletter](#)

[CWM Newsletter](#)

All newsletters are now being delivered via a third-party newsletter provider, making them visually appealing and user-friendly. The provider is fully compliant with the EU General Data Protection Regulation (GDPR).

Subscription is via a simple two-step opt in process. Existing subscribers have already been notified of the change and the subscription renewal process. We are now writing to all members to encourage everyone to subscribe to these newsletters via the links above and keep up-to-date with news from the community.

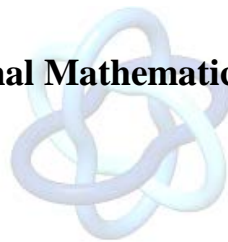
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 20/2021

International Mathematical Union



October 8, 2021
IMU AO Circular Letter 20/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

The IMU centennial conference "Mathematics without Borders"

Dear colleagues,

The IMU celebrated its belated centennial in Strasbourg on 27–28 September 2021, with the conference "[Mathematics without Borders](#)", see Circular Letter [12/2021](#). We were delighted to welcome around 200 attendees to the conference.

To capture the occasion and for the benefit of those unable to attend, the talks were recorded and can now be viewed [here](#). Additionally, the IMU engaged the science journalists Marianne Freiberger and Rachel Thomas from Plus magazine to write about the event, see attachment. Every Adhering Organization is free to publish this article in their newsletter or similar outlet on the condition that the authors' names are given and we are informed about where the article appears. We encourage every AO to use the article.

If you want to illustrate the article, you may use the [group photo](#) taken at the conference along with the following photo credit: Catherine Schröder/Université de Strasbourg.

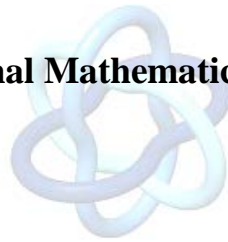
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 21/2021

International Mathematical Union



October 14, 2021
IMU AO Circular Letter 21/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

A further public statement from the IMU regarding recent events in Russia

Dear colleagues,

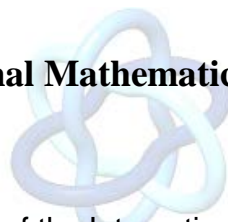
The IMU has been approached by several groups and individuals regarding the mathematician Azat Miftakhov. The Executive Committee of the IMU has decided to issue a further public statement regarding the matter, see attachment. We also refer to [Circular Letter 03/2021](#) with accompanying [statement](#).

Regards

Helge Holden
Secretary General of the International Mathematical Union

IMU AO Circular Letter 22/2021

International Mathematical Union



November 14, 2021
IMU AO Circular Letter 22/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Application for change of group of adherence of Republic of Korea

Dear colleagues,

The Republic of Korea has requested a change of group of adherence from Group IV to Group V. The Executive Committee of the IMU unanimously recommends this change.

The application reads:

Dear Prof. Carlos E. Kenig, IMU President,

Dear Prof. Helge Holden, IMU Secretary General,

On behalf of the Korean Mathematical Society, I respectfully propose that the IMU membership of the Republic of Korea upgrades from Group IV to Group V. The Adhering Organization shall maintain its commitment to pay the corresponding annual membership dues.

Our proposal is motivated by the notable growth, both in quality and quantity, the mathematical community in Korea has recently witnessed. In the year 2007 when the Republic of Korea entered IMU Group IV, 829 research papers were published in SCIE journals authored by Korean mathematicians located in Korea, excluding those with foreign affiliations. This number more than doubled to 1,676 last year in 2020. The current SCIE publications per Capita figure of the Republic of Korea would rank as the 8th among the currently listed IMU Group V members.

In 2014, the Republic of Korea successfully hosted the Seoul ICM, attracting 5,217 registrants from 122 countries and 21,227 general participants, in addition to numerous international meetings in mathematical fields hosted by Korea each year. The number of Korean ICM speakers, which was three at the time the Republic of Korea entered IMU Group IV, soared to 16 since then, including the two scheduled to speak at the ICM 2022 in St. Petersburg. The Korean mathematics community of young students has also shown exceptional growth as evidenced by the 1st ranks in both IMO 2012 and IMO 2017. We provide detailed supporting data in the attached proposal. We kindly request that our proposal receives adequate attention and consideration from the IMU Executive Committee. Please feel free to contact us should any part of our proposal requires additional data.

Sincerely,

JongHae Keum, President of KMS

Professor, School of Mathematics, KIAS

Enclosed is the full application.

Important change in procedure: In addition to postal or fax ballots, we will also accept ballots returned by email to office@mathunion.org under the following conditions. For an email ballot to be valid, it has to be sent from an address associated with your AO. If you are in doubt, please check the email I sent in mid-January of 2021 to each AO. If you are still in doubt, please contact me. If we receive conflicting votes from the same AO, we will notify you. If the issue cannot be resolved, the ballot will be deemed invalid. Postal ballots take preference.

A ballot form is attached to this email, and it will not be sent out by regular mail.

Please vote on the application from the Republic of Korea using the attached ballot, and return it by mail, email or fax by

31 January 2022

to the address indicated on the ballot form.

Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 23/2021

International Mathematical Union



November 22, 2021
IMU AO Circular Letter 23/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Heidelberg Laureate Forum 2022

Dear colleagues,

The 9th [Heidelberg Laureate Forum](#) (HLF) will take place in Heidelberg, Germany between September 18–23, 2022.

At the HLF, all winners of the Fields Medal, the Abel Prize, the ACM A.M. Turing Award, the Nevanlinna Prize, and the ACM Prize in Computing are invited to attend. In addition, young and talented computer scientists and mathematicians are invited to apply for participation. The previous HLFs have been an exceptional success. The HLF serves as a great platform for interaction between the masters in the fields of mathematics and computer science and young talents.

Over the course of the week-long conference, young researchers will be given the exclusive possibility to profoundly connect with their scientific role models and find out how the laureates made it to the top of their fields. As described by a young researcher, "The balance between scientific sessions and informal meetings, as well as discussions on the most up-to-date subjects was just perfect! As a young researcher, this was an experience I'll not ever forget, and I believe the contacts I made will have a positive impact on my future career."

Applications for participation at the 9th HLF are open in three categories: Undergraduate/Pre-Master, Graduate PhD, and PostDocs. The application period for the 9th HLF runs from **November 11, 2021, until February 11, 2022.**

Young researchers at all phases of their careers (Undergraduate/Pre-Master, Graduate PhD, or PostDocs) are encouraged to complete and submit their applications by February 11 (midnight CET).

The IMU Adhering Organizations and national mathematical societies can also nominate young researchers. Nominated persons get “priority treatment”, but, since there may be too many nominations, they have no acceptance guarantee.

See the webpage

<https://application.heidelberg-laureate-forum.org>

for the online application and nomination forms.

The deadline for application is February 11, 2022.

Please note that in compliance with European data protection law all previous login information and nominator accounts were deleted. During the nomination process you will be asked for an Org-ID, which is IMU79342 for the IMU.

For questions regarding requirements and the application process, please contact Young Researchers Relations at: yr@heidelberg-laureate-forum.org.

All applications that are completed and submitted by the deadline are meticulously reviewed by an international committee of experts to ensure that only the most qualified candidates are invited. There are 100 spaces available for each discipline of mathematics and computer science. All applicants will be notified by the end of April 2022 whether or not they are invited.

If meeting in person is not safely possible, a digital alternative will be developed that creates spaces for effective, sustainable interaction.

IMU asks its Adhering Organizations to distribute this information among their national mathematical communities, if possible, through the newsletters of the national mathematical societies.

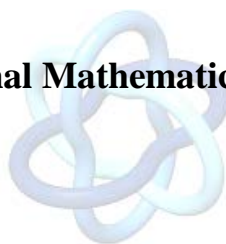
Regards

Helge Holden

Secretary General of the International Mathematical Union

IMU AO Circular Letter 24/2021

International Mathematical Union



December 3, 2021
IMU AO Circular Letter 24/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

2022 – the International Year of Basic Sciences for Sustainable Development

Dear colleagues,

I am happy to announce that on 2 December the United Nations, in a plenary meeting of its General Assembly, proclaimed 2022 as the **International Year of Basic Sciences for Sustainable Development** (IYBSSD 2022). See attached press release and

www.iybssd2022.org

The IMU is a founding union of IYBSSD 2022, which was initiated by our colleagues at IUPAP, the International Union of Pure and Applied Physics.

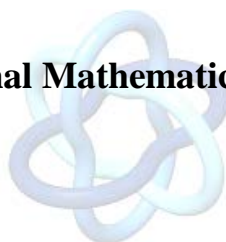
Many activities will take place worldwide throughout the year, and we sincerely hope that mathematicians will take part in these activities and show the fundamental role of mathematics among the basic sciences.

Regards

Helge Holden
Secretary General of the International Mathematical Union

IMU AO Circular Letter 25/2021

International Mathematical Union



December 3, 2021
IMU AO Circular Letter 25/2021

To: The Adhering Organizations of the International Mathematical Union (IMU)

From: Helge Holden, IMU Secretary General

Bids for the ICM 2026

Dear colleagues,

On 30 November the deadline expired to present a bid to host the ICM 2026, see [Circular Letter 15/2019](#). The IMU received one bid from the US with Philadelphia as venue for the ICM and New York City for the General Assembly. The proposed dates are 19–20 July for the General Assembly and 22–29 July, 2026, for the ICM.

The procedure now is as follows: The Executive Committee of the IMU will make a site visit, and based on this and the bid, it will make a recommendation to the General Assembly which will decide on the venue of ICM 2026 at its meeting in St Petersburg 3–4 July, 2022. All documents will be made available to the delegates in time for the General Assembly.

We appreciate all the efforts that our US colleagues have made in preparing their bid.

Regards

Helge Holden
Secretary General of the International Mathematical Union

5. The IMU Secretariat

The Secretariat of the International Mathematical Union has been permanently based in Berlin, Germany, at the Weierstrass Institute (<https://www.wias-berlin.de/index.jsp?lang=1>) since January 2011. Following a positive evaluation of the work of the IMU Secretariat between 2011-2018, an unlimited Cooperation Agreement with WIAS was signed in 2018 (as approved at the 18th IMU General Assembly).

Under the supervision of the IMU Executive Committee, the Secretariat runs IMU's day-to-day business and provides support for many IMU operations, including administrative assistance for the International Commission on Mathematical Instruction (ICMI) and the Commission for Developing Countries (CDC), as well as mainly technical assistance for the Committee on Electronic Information and Communication (CEIC) and the Committee for Women in Mathematics (CWM).

The IMU Secretariat also hosts the IMU Archive.



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6. Impressum

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