

CIMPA

Centre International
de Mathématiques Pures et Appliquées

PROVISIONAL
2020 ANNUAL REPORT
www.cimpa.info

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FOREWORD



This report presents CIMPA's activities during 2020. It has been a year of change at CIMPA. We gratefully acknowledge the excellent service by former Executive Director, Ludovic Rifford, whose term of office ended in August 2020. In September we welcomed Christophe Ritzenthaler, our new Executive Director. It is a pleasure

work with and support Christophe, and his energy and enthusiasm for the work done by CIMPA, as well as the new activities he plans, are greatly valued.

No-one could have predicted the COVID-19 sanitary health situation which has affected CIMPA severely, as it has every other interaction globally. We are still learning how to manage this and so it has been a very challenging start to Christophe's tenure as the new CIMPA Executive Director. Many CIMPA Schools planned for 2020 have been postponed to 2021 and a number of those to be held in the first part of 2021 are also being considered for postponement. For the first time since its founding both the annual Governing Board meeting and the General Assembly were held as online meetings. At first they were rescheduled from the end of June to September, hoping that we would be able to meet in person. This wasn't possible, but fortunately the online meetings were successful and even included the election of individual members who will serve on the next Governing Board, whose term begins in January 2021.



This annual report has a different tone from previous years because of the health crisis which has hit our countries hard. Since March, the activities of CIMPA have mostly been postponed to 2021 or even 2022. We therefore present here the details of those which were fortunate enough to be able to go ahead: 4 schools, 18 courses, a school in partnership and 3 CIMPA fellowships.

18 courses, a school in partnership and 3 CIMPA fellowships.

"This crisis has served as a catalyst for thinking about our distance learning provision."

We will continue to have to live with the consequences of this pandemic for at least part of 2021, which requires many adjust-

CIMPA's mission is to promote and develop growth and research in mathematics in the developing world, primarily by co-organizing and supporting numerous activities, such as research schools, special courses and fellowships. By adapting to online

"By adapting to online activities, we are still able to achieve this mission, and to find new and effective ways for young mathematicians to participate in our events."

activities, we are still able to achieve this mission, and to find new and effective ways for young mathematicians to participate in our events. Although this cannot compare with the benefit and value of being together physically, many of the key objectives can still be achieved. This depends to a very great extent on the lecturers and organizers offering their schools and courses online. Therefore we thank all involved for this important contribution, undertaken in a far less conducive mode than usual and with less pleasure of cross-cultural interaction and experience. We all hope the situation will return to normal soon.

Barry Green
PRESIDENT

ments. We have taken the initiative to offer online versions of our activities. Some organizers and colleagues have already adopted this mode at short notice in order to continue research training in mathematics for students from developing countries, who are particularly vulnerable during this crisis. We thank them warmly.

This crisis has served as a catalyst for thinking about our distance learning provision. It is likely that some online initiatives will continue and combine with our existing activities in order to get the best of both worlds.

The operation of CIMPA in normal times requires the energy and time of a large number of employees and volunteers: members of the Governance, the Scientific Council, the Steering Council, Scientific Officers and the Administrative Staff of CIMPA. The difficulties and especially the lack of clarity on the progress of the pandemic have obviously complicated this work. A big thank you to all these participants for their redoubled efforts. Finally, our association would not function without the financial support of member countries (France, Norway, Spain and Switzerland). We warmly thank them for the trust they place in us in these uncertain times.

Christophe Ritzenthaler
EXECUTIVE DIRECTOR

ABOUT US



The *Centre International de Mathématiques Pures et Appliquées* (CIMPA - International Center for Pure and Applied Mathematics), founded in France in 1978, is a non-profit organization that promotes research into mathematics in developing countries.

It is situated in Nice, is a **UNESCO Category 2** Centre and is part of the *Centre d'Accueil et de Rencontres Mathématiques Internationales* (CARMIN laboratory of excellence). It benefits from the financial support of France, Norway, Spain and Switzerland.

CIMPA co-organizes and sponsors numerous activities in developing countries in all continents. Each activity is funded through a process of calls for proposals in one of the following categories:



CIMPA
Schools



CIMPA
Courses



CIMPA
Fellowships

CIMPA also strongly supports activities developed in close collaboration with continental mathematical unions, such as Schools in Partnership, the purpose of which is to introduce undergraduate and master's students to research in mathematics.

For most of its activities, **CIMPA** works in partnership with other organizations with similar objectives, such as the **International Mathematical Union (IMU)**, the **European Mathematical Society (EMS)** and the **International Centre for Theoretical Physics (ICTP)**.

CIMPA, SINCE IT WAS FIRST CREATED

Founded in **1978** Located in **Nice** France

ADMINISTRATION

12

members of the Executive Team

13

A Governing Board of 7 Individual Members and 6 Institutional Members

12

members of the Scientific Council

22

A Steering Council of 7 Individual Members and 15 Institutional Members

3

employees

179

CIMPA members



A worldwide partner network of organizations and academic institutions

ACTIVITIES

Each year, more than

1000

participants attend CIMPA Schools

Activities in more than

100

countries in the world

COMMUNICATION



Present on 3 social networks



A Youtube channel
CIMPA Math



A website
www.cimpa.info

Budget about

€ 500K

per year

INTERVIEW WITH CHRISTOPHE RITZENTHALER



Christophe Ritzenthaler

Born in 1976, Professor at the *Université de Rennes 1* and Executive Director of CIMPA since september 2020.

The coronavirus crisis is hitting our societies hard. What are the consequences of the health crisis on CIMPA's activities?

CIMPA's activities are highly international, which involves a lot of travel. The current crisis is therefore a considerable constraint on our usual activities. Thus, almost all of the events that should have taken place from March 2020 have had to be postponed to 2021 or 2022. The hope was that this pandemic would be temporary and that we could soon resume "as we were before". The second wave that we are now experiencing seems to show that the problem will probably have to be managed over the long term, at least until the arrival of vaccines in all countries. Depending on how the situation evolves, we anticipate that some of the 2021 schools or courses may take place as planned, but they may have to be modified.

How has CIMPA adapted to the situation to ensure the continuity of its activities?

For starters, we are fortunate to be an association, which gives us a flexibility in accounting that is very useful in these unpredictable times. I would also like to thank our financial supporters who place their trust in us.

Also, we work very closely with the organizers of events. We adapt the dates of the schools and the application deadlines for students according to the latest developments.

It takes a lot of discussion to coordinate all the actors but we do it so the

take place in person.

This is why we have implemented online courses and schools. Our colleagues who wish to, can come to Nice or to CIRM to be filmed in normal classroom conditions. This arrangement allows us to welcome the teaching team, keeping alive the friendly atmosphere as well as relieving them of the technical aspects of recording and broadcasting course videos. For students, if possible we try to group them together at the venue planned for the school. If this is not possible, we contact them individually to ensure that they have the technical means to attend school.



WAMS Istanbul (Turkey) - June, 2018

work done by the organizers to set up their school does not go to waste. I would like to thank the Scientific Officers and the Administrative Staff of CIMPA who are also involved in this monumental task.

At the same time, we have to face the prospect that, despite our efforts, schools may not be able to

But watching videos, or listening to a class in person, is not enough to properly get into a mathematical subject: you don't learn to ride a bike by watching someone ride a bike! It seems to us essential to encourage interactions with students and also between them. It is obviously more complicated from a distance but it is not impossible. On the technical side, this involves the creation of a set of dedicated tools for chatting and video-conferencing in mathematics. We are currently working on the creation of a dedicated platform in cooperation with the SMF, the INSMI and the institutes of the Labex Carmin. On the educational side, this requires the development

"Watching videos, or listening to a class in person, is not enough to properly get into a mathematical subject"

of a different way of designing our schools and courses: since the presentations are recorded, the students can digest them at their own pace, ask questions using the tools put in place, then give feedback in the form of exercise corrections. We can extend the duration of CIMPA

for some time. In addition, there are people who would like to get involved in CIMPA but are unable to travel for several weeks at a time for personal (disability, family, etc.) or professional reasons (teaching commitments, no financial support, etc.). Lastly, the online format makes it

low-up via a chat) to allow time, as with our own students, to integrate the concepts. Then the in-person school, where we take full advantage of the opportunities for exchanges on site. Finally, after the school, mentoring for the best students and/or building institutional links with the host institute. Giving our time is the greatest resource that we can share at CIMPA!

"Giving our time is the greatest resource that we can share at CIMPA"

activities and no longer have a marathon of presentations over a (too) short period, which in fact blocks any possibility of exchanges. This aspect will certainly be worth maintaining, even after the crisis.

I have spoken a lot about schools and courses, just a word about the CIMPA Fellowships. Here too, with our partners, we have adapted: we offer our successful candidates who are unable to travel to attend the program at the partner institute (IHP, CIRM or CRM) financial support to enable them to participate in events at home. We are also in discussions with the organizing teams to find the best format to include these remote participants as much as possible.

How is the resumption of your activities going?

At present, it is still a little too early to tell. A few schools decided to go online with good results. I would like to warmly thank all the teaching teams who have made this effort to adapt in a period which is otherwise complicated (many speakers already have a heavy online teaching load). Others have declined to do so: the speakers and organizers do not see the educational value of this type of teaching or find it worthwhile. This is understandable because an online school is not the school they had envisaged, but from the CIMPA's global perspective, we only have a limited latitude and we must ensure activities continue in 2021.

What long-term changes / opportunities do you think this crisis will have on CIMPA's operations?

The current crisis has given a boost to reflections on our provision of distance learning. Indeed, even in the absence of health restrictions on travel, our community has been questioning the ecological costs of travel

possible to offer the same course to several small isolated groups, which was unthinkable before.

I feel that the well-understood use of digital technology is a fundamental trend. CIMPA has everything to gain by positioning itself to take ad-

Do you have other projects?

Yes, there is a big effort centered around our communication: increasing the visibility of our website and making CIMPA known to more colleagues. I feel that there are many people who would have a lot to contribute to CIMPA if they knew of its existence and how it runs.

Another project that is close to my heart is to "decentralize" our activities. Of course, most of our initiatives take place in developing countries, but they rely heavily on "north-sou-



CIMPA School Montevideo (Uruguay) - February, 2019

vantage of the best of both worlds. Face-to-face meetings are essential in order to preserve the informal, open-ended exchanges that are often the triggers for ideas in research. They are also important to offer a time and place away from the distractions of daily life in order to concentrate on a particular task. Finally, they are a vital part of the social fabric of our community that particularly benefit more isolated students, colleagues and institutes. However, we have a responsibility to make every trip count. I would like to see the establishment of schools in two or even three stages: online preparation with lectures (with fol-

low-up via a chat) to allow time, as with our own students, to integrate the concepts. Then the in-person school, where we take full advantage of the opportunities for exchanges on site. Finally, after the school, mentoring for the best students and/or building institutional links with the host institute. Giving our time is the greatest resource that we can share at CIMPA!

th" collaboration. I am working with our partners, in particular the EMS-CDC and the INSMI so that certain centers located in developing countries and whose excellence has been recognized, can become new hubs for "south-south" CIMPA activities, such as hosting CIMPA Fellowships. Finally, with the governance of CIMPA, we wish to complete the integration of Germany as a member country of CIMPA. We are also beginning talks with other countries in order to extend this expansion policy so that CIMPA can become an organization for the entire European community.

GOVERNING BOARD

The Governing Board is responsible for overseeing the administration of CIMPA. It approves the financial statements and ensures that they have been implemented in accordance with CIMPA's aims.

INDIVIDUAL MEMBERS



1 Barry Green
PRESIDENT
Univ. of Stellenbosch, South Africa

2 Annie Raoult
VICE-PRESIDENT
Université Paris Descartes, France

3 Ivan Area
SECRETARY
Universidade de Vigo, Spain

4 Marc Aubry
TREASURER
Université Côte d'Azur, France

5 Servet Martinez
Universidad de Chile, Chile

6 Modeste N'Zi
Université Felix Houphouët Boigny,
Ivory Coast

7 Viet Dung Nguyen
Vietnam Academy of Science
and Technology, Vietnam

INSTITUTIONAL MEMBERS

- ▶ Délégation aux relations européennes et internationales et à la coopération (DREIC), France
- ▶ Direction générale de la recherche et de l'innovation (DGRI), France
- ▶ Institut national des sciences mathématiques et de leurs interactions (INSMI-CNRS), France
- ▶ Norwegian Ministry of Education and Research, Norway
- ▶ Ministeria de Economía y Competitividad (MINECO), Spain
- ▶ UNESCO
- ▶ Université Côte d'Azur, France

SCIENTIFIC COUNCIL

The Scientific Council is comprised of 12 members.
It makes recommendations on CIMPA's scientific activities.

INDIVIDUAL MEMBERS



1



2



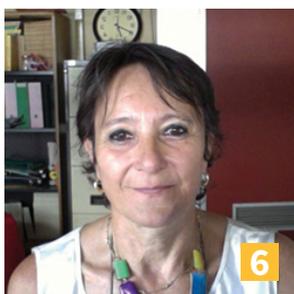
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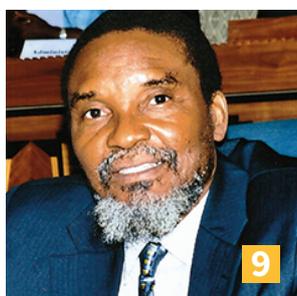
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7



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9



10



11



12

1 Hans Munthe-Kass
PRESIDENT
University of Bergen, Norway

2 Volker Bach
Tech. Univ. Braunschweig, Germany

3 Edy Tri Baskoro
Inst. Teknologi Bandung, Indonesia

4 Mohamed Boucetta
Université Cadi-Ayad, Morocco

5 Carlos Di Prisco
Univ. de Los Andes, Colombia

6 Laura Geatti
Università di Roma Tor Vergata, Italy

7 Henar Herrero Sanz
Univ. de Castilla-La Mancha, Spain

8 Bertrand Maury
Université Paris-Sud, France

9 Mahouton Norbert Hounkonnou
Université d'Abomey-Calavi, Benin

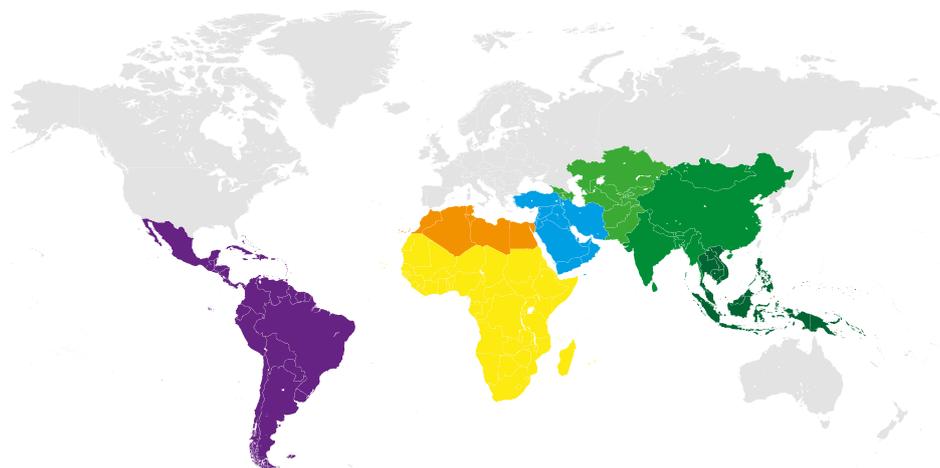
10 Helena Nussenzeig Lopes
Univ. Federal de Rio de Janeiro, Brazil

11 Sujatha Ramdorai
Univ. of British Columbia, Canada

12 Sara Van de Geer
ETH Zurich, Switzerland

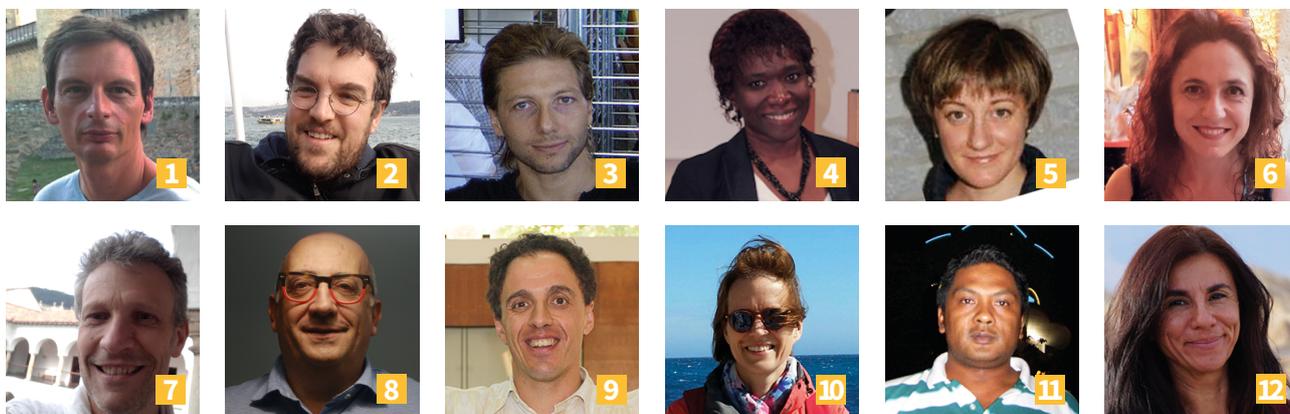
EXECUTIVE TEAM

CIMPA's Executive Team consists of an Executive Director, a group of Scientific Officers and Administrative and Technical Staff. The Executive Director, who is responsible for the day-to-day running of CIMPA, benefits from the expertise of the Scientific Officers, who act as consultants for geographical areas and other important issues.



- Latin America
- North Africa
- Sub-Saharan Africa
- Middle East
- West Asia
- Central Asia
- East Asia

EXECUTIVE DIRECTOR & SCIENTIFIC OFFICERS



- 1** **Christophe Ritzenthaler**
EXECUTIVE DIRECTOR
Université de Rennes 1, France
- 2** **Alp Bassa** ● ●
Boğaziçi University, Turkey
- 3** **Yacine Chitour** ● ●
Université Paris-Sud, France
- 4** **Sophie Dabo** ● ●
Université de Lille, France
- 5** **Giulia Di Nunno** ● ●
University of Oslo, Norway
- 6** **Jorge Mozo Fernandez** ● ●
Universidad de Valladolid, Spain

- 7** **Lidia Fernàndez** ● ● ●
Universidad de Granada, Spain
- 8** **Fabrice Gamboa** ● ●
Université Paul Sabatier, France
- 9** **Joan-C. Lario** ● ● ● ●
Univ. Politècnica de Catalunya, Spain
- 10** **Stéphanie Nivoche** ● ●
Université Côte d'Azur, France
- 11** **Vlady Ravelomanana** ● ●
Université Paris 7, France
- 12** **Rosane Ushirobira** ●
Inria, France

STAFF

Agnès Gomez
Executive Secretary

Héla Lamiri
Communication Officer

Roland Ruelle
Université Côte d'Azur, France
IT Manager

STEERING COUNCIL

The Steering Council draws up CIMPA's medium-and long-term scientific strategy. It offers policy guidance, suggests priorities and makes recommendations. Every year, it designs the program for the CIMPA Schools and other activities, based on the recommendations of the Scientific Council.



Steering Council in Valladolid (Spain)- January 2020

INDIVIDUAL MEMBERS



Barry Green
PRESIDENT
University of Stellenbosch,
South Africa

Ivan Area
Universidade de Vigo, Spain

Marc Aubry
Université Côte d'Azur, France

Servet Martinez
Universidad de Chile, Chile

Modeste N'Zi
Université Félix Houphouët
Boigny, Ivory Coast

Viet Dung Nguyen
Vietnam Academy of Science
and Technology, Vietnam

Annie Raoult
Université Paris Descartes,
France

INSTITUTIONAL MEMBERS

- ▶ Académie des sciences, France
- ▶ Comisión Nacional Española de Cooperación con la UNESCO, Spain
- ▶ Comité Español de Matemáticas (CEMAT), Spain
- ▶ Commission nationale française pour l'UNESCO, France
- ▶ Institut national de recherches en sciences et technologies du numérique (INRIA), France
- ▶ Institut national des sciences mathématiques et de leurs interactions (INSMI-CNRS), France
- ▶ Norwegian Mathematical Society, Norway
- ▶ Real Sociedad Matemática Española (RSME), Spain
- ▶ Sociedad de Estadística e Investigación Operativa (SEIO), Spain
- ▶ Sociedad Española de Matemática Aplicada (SEMA), Spain
- ▶ Societat Catalana de Matemàtiques (SCM), Spain
- ▶ Société de mathématiques appliquées et industrielles (SMAI), France
- ▶ Société Française de Statistique (SFdS), France
- ▶ Société mathématique de France (SMF), France
- ▶ Swiss Mathematical Society (SMS), Switzerland

LIST OF PARTNERS

The primary partners of **CIMPA** are the institutional members of the Steering Council which develops the strategy and the scientific policy of **CIMPA**:

- ▶ Académie des sciences (France)
- ▶ Comisión Española de Cooperación con la UNESCO (Spain)
- ▶ Comité Español de Matemáticas (CEMAT) (Spain)
- ▶ Commission nationale française pour l'UNESCO (France)
- ▶ Institut des Sciences Mathématiques et de leurs Interactions (INSMI-CNRS) (France)
- ▶ Institut national de recherches en sciences et technologies du numérique (Inria) (France)
- ▶ Norwegian Mathematical Society (Norway)
- ▶ Real Sociedad Matemática Española (RSME) (Spain)
- ▶ Sociedad de Estadística e Investigación Operativa (SEIO) (Spain)
- ▶ Sociedad Española de Matemática Aplicada (SEMA) (Spain)
- ▶ Societat Catalana de Matemàtiques (SCM) (Spain)
- ▶ Société de mathématiques appliquées et industrielles (SMAI) (France)
- ▶ Société française de statistique (SFdS) (France)
- ▶ Société mathématique de France (SMF) (France)
- ▶ Swiss Mathematical Society (SMS) (Switzerland)

Being part of the French Laboratoire d'Excellence **CARMIN** (Centre d'Accueil et de Rencontres Mathématiques Internationales), **CIMPA** works in close collaboration with the three other **CARMIN** members:

- ▶ Centre international de rencontres mathématiques (CIRM) (France)
- ▶ Institut des hautes études scientifiques (IHES) (France)
- ▶ Institut Henri Poincaré (IHP) (France)

CIMPA has signed agreements of cooperation with several institutions:

- ▶ Académie Hassan II des Sciences et Techniques (Morocco)
- ▶ African Institute of Mathematical Sciences (AIMS)
- ▶ Arba Minch University (Ethiopia)
- ▶ Centre de Recerca Matemàtica (Spain)
- ▶ Institut national de recherches en sciences et technologies du numérique (Inria) (France)
- ▶ Instituto Nacional de Matematica Pura e Aplicada (IMPA) (Brazil)
- ▶ Ministerio de Ciencia, Tecnología e Innovación Productiva de la República Argentina (MinCyT)
- ▶ Université Côte d'Azur (France)

Most of **CIMPA's** activities benefit from close ties established by **CIMPA** with the following international organizations:

- ▶ Agence Universitaire de la Francophonie (AUF)
- ▶ Commission for Developing Countries (CDC) of the International Mathematical Union (IMU)
- ▶ Committee for Developing Countries (CDC) of the European Mathematical Society (EMS)
- ▶ International Center for Theoretical Physics (ICTP)

Close partners of **CIMPA** also include several continental mathematical unions, for example through the funding of Schools in Partnership:

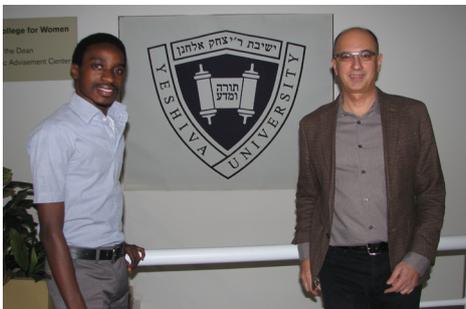
- ▶ African Mathematical Union (AMU)
- ▶ South East Asian Mathematical Society (SEAMS)
- ▶ Southern Africa Mathematical Sciences Association (SAMSA)
- ▶ Unión Matemática de América Latina y el Caribe (UMALCA)
- ▶ West Asian Mathematical Schools (WAMS)

Other **CIMPA** partners:

- ▶ Association pour la Promotion Scientifique de l'Afrique (APSA)
- ▶ Centro de Modelamiento Matemático (CMM)
- ▶ Colloque Africain sur la Recherche en Informatique et Mathématiques Appliquées (CARI)
- ▶ Comité National Français des Mathématiciens (CNFM)
- ▶ Deutsche Mathematiker Vereinigung (DMV)
- ▶ European Mathematical Society (EMS)
- ▶ Gesellschaft für Angewandte Mathematik und Mechanik (GAMM)
- ▶ Institut de recherche pour le développement (IRD)
- ▶ International Mathematical Union (IMU)
- ▶ International Council for Industrial and Applied Mathematics (ICIAM)
- ▶ Mathrice
- ▶ Simons Foundation (USA)
- ▶ Soutien aux Activités de Recherche en Informatique et Mathématique en Afrique (SARIMA)
- ▶ UNESCO

2020 HIGHLIGHTS

A MEETING IN BENIN THAT LEADS TO A SCHOLARSHIP IN NEW YORK...



Samuel Wale Akingbade and Marian Gidea at Yeshiva University (NYC, USA) - February, 2020

Samuel Wale Akingbade, one of our participants at the CIMPA School in Benin “Dynamical Systems and Applications: Geometrical, Topological, and Numerical Aspects”, in 2018, was accepted earlier this year into the PhD program at Yeshiva University in New York.

Samuel met and spoke with Professor Marian Gidea, Chair of the Department of Mathematics at Yeshiva University, during the school. Then, they kept in touch. In 2019, Prof. Gidea informed him of a PhD opportunity at Yeshiva University. He was delighted with the news and he applied.

Find the interview of Samuel and Marian on the CIMPA website



MICHEL WALDSCHMIDT IS THE RECIPIENT OF THE 2021 BERTRAND RUSSELL PRIZE



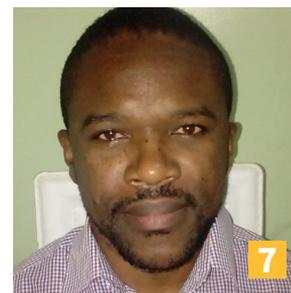
Stéphanie Nivoche (Université Côte d'Azur, France), Michel Waldschmidt (professor emeritus at Sorbonne University, France) and Michel Jambu (Université Côte d'Azur, France) at CIMPA (Nice, France)

The Bertrand Russell Prize 2021 was awarded to Michel Waldschmidt, professor emeritus at Sorbonne University Pierre and Marie Curie Campus and member of CIMPA, for his work in promoting research in mathematics in developing countries, and for his sustained commitment to building bridges between mathematical communities around the world.

Discover the interview of Michel Waldschmidt on our YouTube channel



WELCOME TO NEW CIMPA MEMBERS!



1 Alp Bassa
Boğaziçi University
Turkey

2 Bas Edixhoven
Universiteit Leiden
Netherlands

3 Edgar Martinez-Moro
University of Valladolid
Spain

4 Marusia Rebolledo
Université Clermont Auvergne
France

5 Patrick Tchepmo Djomegni
North West University
South Africa

6 Renaud Leplaideur
Université de la N^{elle} Calédonie
France

7 Tony Ezome
Université de Masuku
Gabon

CIMPA HAS OBTAINED A GRANT FROM THE SIMONS FOUNDATION!

SIMONS
FOUNDATION

This grant will help to develop CIMPA Courses (in person and on-line) and will also allow the creation of more CIMPA Fellowships, either with existing centers (CIRM, CRM and IHP) or new ones.

Thanks to this grant, many great projects will be made possible!

ONLINE EVENTS



ONLINE KENITRA CIMPA SCHOOL

October 9–20:1-2-3 step process!

Due to the health situation, the CIMPA School “Analyse numérique & optimisation, contrôle et problèmes inverses” was held online. This was made possible thanks to the efforts and generosity of the organizers (Hanaa Hachimi, Mourad Bouneffa, Hichem Ramoul) and the speakers (Franck Boyer, Michel Cristofol, Martin Jacok Gander, Manuel Gonzalez Burgos and Florence Hubert), who readily adapted to the situation in order to enable the school to go ahead.

THE SCHOOL TOOK PLACE IN THREE STEPS :



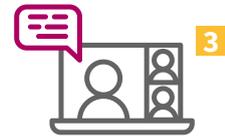
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The speakers recorded their lectures, some at home and others at CIRM (Marseille, France) to take advantage of the professional recording facilities there and be together.



2

The courses were made available on the CIMPA YouTube channel. Students could watch the videos and ask the lecturers their questions on a Zulip chat over three weeks.



3

Students and speakers gathered online to share the corrections that were prepared by some students and do tutorials with mathematical software.

SOME STATISTICS FROM THE ANONYMOUS SURVEY

68.8%

of participants saw more than 5 course videos.

86.7%

of participants found the “Zulip” chat system satisfactory.

57%

of the participants say that attending this school is a really important step in their mathematical development: 41% (8-10 on a scale of 1 to 10) and 16% (6-7 on a scale of 1 to 10).

80%

of participants appreciated the work in groups during the tutorial sessions.

68.8%

of participants think they would have learned more from a face-to-face school (in Kenitra).

ONLINE CIMPA COURSES

from December 14–19, 2020



Online CIMPA Courses by Michel Waldschmidt
December 2020



Online CIMPA Courses by Michel Mehrenberger
December 2020



Online CIMPA Courses by Florence Hubert
December 2020

Due to travel restrictions, CIMPA Courses are now offered online with the possibility for the speaker to come to CIMPA (Nice, France) or to CIRM (Marseille, France) to record their lectures.

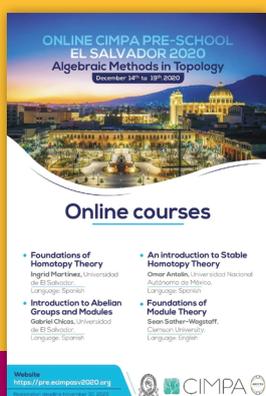
Before this option was available, Professor Krerley Oliveira (Universidade Federal de Alagoas, Brazil) gave a CIMPA Course on “Numerical Linear Algebra” through the Zoom platform to master’s students at COMSATS University Islamabad Lahore Campus (Pakistan).

In the same spirit, Professor Patrick Tchepmo Djomegni (North West University, South Africa) gave a CIMPA Course on “Study of Hyperbolic PDEs” through the Zoom platform to the Master of MISSA students at the L2MIAS Laboratory of the University of N’Djamena (Chad).

Professor Michel Waldschmidt, professor emeritus at Sorbonne University Pierre and Marie Curie Campus, was the first speaker to come to Nice to record his lectures. We had the pleasure of receiving him on our premises from December 7–10. He recorded a course on “Interpolation Formula” for master’s and doctoral students at Ramnarain Ruia Autonomous College (India).

Other professors have recorded their courses at CIRM (Marseille, France). This was the case with Florence Hubert and Michel Mehrenberger who recorded CIMPA Courses for master’s students at the University of N’Djamena (Chad).

Check out the online courses on our YouTube channel  /CIMPA Maths



ONLINE EL SALVADOR CIMPA PRE-SCHOOL 2020

from December 14–19, 2020

Check out the online courses on the event’s YouTube channel

 /CIMPA Pre-School El Salvador 2020

EXECUTIVE BOARD & GENERAL ASSEMBLY



On September 17 and 18, we held the first hybrid (face-to-face and virtual) meeting of our Executive Board, and our first virtual annual General Assembly. This ensured the continuity of collective decision-making during this difficult period.

In these meetings, Christophe Ritzenthaler presented projects for the coming years, in particular to support the actions of CIMPA during the health crisis. Investment in online activities with a quality logistics framework is one of the new approaches being developed. He also mentioned the diversification of CIMPA Fellowships and activities, directly held in recognized centers from developing countries. These measures will be implemented gradually.

The scientific council of October 22 was also held online and allowed the study of the proposals for 2022 CIMPA schools to be held in the best possible circumstances.

CIMPA SCHOOLS

In **2020**, CIMPA financed
4 CIMPA Schools in **4** countries
 for a total cost of **€25,260**

Historically, CIMPA's activity focuses on the organization of CIMPA Schools in developing countries. Each CIMPA School offers a series of research-level courses taught by specialists in a field of mathematics, with a duration of 8 to 15 days.

CIMPA Schools are aimed at doctoral students and teacher-researchers from developing countries.

CIMPA finances part of the cost of organizing the School, as well as the travel and living expenses for participants from neighboring developing countries.

1 Quezon City, Philippines

Numeration and Fractals

January 6-17, 2020

ORGANIZERS

Manuel Joseph Loquias

University of the Philippines Diliman, Philippines

Pierre Arnoux

Université d'Aix-Marseille, France

CIMPA SUPERVISOR

Stéphanie Nivoche

Université Côte d'Azur, France



2 Johannesburg, South Africa

Functional Analysis and Applications

January 13-24, 2020

ORGANIZERS

Bertin Zinsou

University of the Witwatersrand, South Africa

Isabelle Chalendar

University Paris Est Marne-la-Vallée, France

CIMPA SUPERVISOR

Vlady Ravelomanana

Université Paris Diderot, France



Quezon City (Philippines) - January, 2020



Johannesburg (South Africa) - January, 2020



3 Yogyakarta, Indonesia
 Group Actions in Arithmetic and Geometry
 February 17-28, 2020

ORGANIZERS

Sri Wahyuni
 Universitas Gadjah Mada, Indonesia
Marusia Rebolledo
 Université Clermont Auvergne, France

CIMPA SUPERVISOR

Lidia Fernàndez
 Universidad de Granada, Spain



Yogyakarta (Indonesia) - February, 2020

4 Kenitra, Morocco
 Analyse numérique & optimisation, contrôle
 et problèmes inverses
 November 9-18, 2020

ORGANIZERS

Hanaa Hachimi
 ENSA, Université Ibn Tofail, Morocco
Mourad Bouneffa
 Université du Littoral Côte d'Opale, France
Hichem Ramoul
 Université Abbes Laghrour, Khenchela, Algeria

CIMPA SUPERVISOR

Annie Raoult
 Université Paris Descartes, France



Kénitra (Morocco) - November, 2020

CIMPA COURSES

In **2020**, CIMPA financed
18 CIMPA Courses in **9** countries
 for a total cost of **€17,271**

A CIMPA Course is a master's-level or research-level mathematics course given by visiting professors, with a duration of 1 to 4 weeks.

The courses take place in higher education and research institutions in developing countries.

They are aimed at master's and doctoral students, post-doctoral researchers and young researchers.

CIMPA finances the involvement of the professors by supporting a large part of their travel expenses.

1 **Arba Minch University, Ethiopia**
 Computational Optimization
 by Surafel Lulseged Tilahun (University of Zululand, South Africa)
 January 02 – 13, 2020



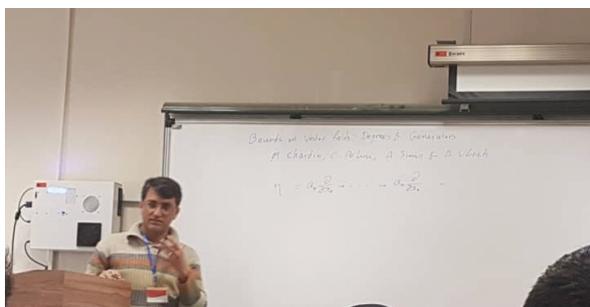
Surafel Lulseged Tilahun in Ethiopia - January, 2020

3 **Arba Minch University, Ethiopia**
 Selected Topics in Analysis: Topology
 by Michel Jambu (Université Côte d'Azur, France)
 January 10 – February 7, 2020



Michel Jambu in Ethiopia - January-February, 2020

2 **University of Isfahan, Iran**
 Algebraic Holomorphic Foliations and Commutative Algebra
 by Seyed Hamid Hassanzadeh (Fed. Univ. of Rio de Janeiro, Brazil)
 January 4-11, 2020



Seyed Hamid Hassanzadeh in Iran - January, 2020

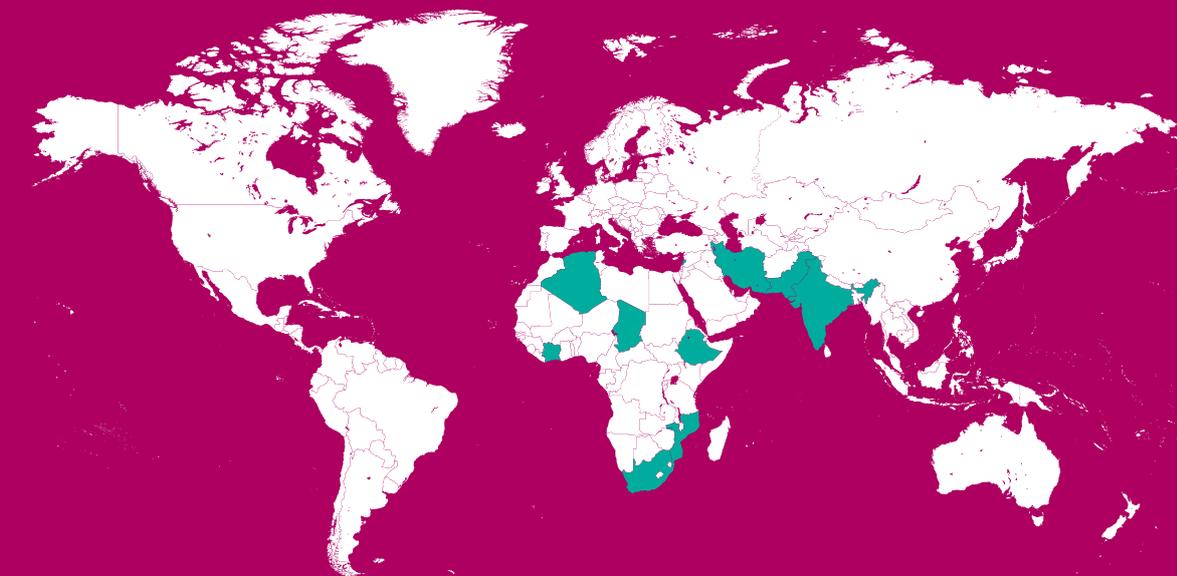
4 **Lebanese University, Lebanon**
 Riemannian Geometry
 by Barbara Nelli (University of L'Aquila, Italy)
 January 26 – February 1, 2020



Barbara Nelli in Lebanon - January, 2020

5 **École Normale Supérieure de Kouba, Algeria**
 Géométrie et topologie des espaces de configuration
 by Abdelghani Zeghib (CNRS, ENS de Lyon, France)
 February 4 – 27, 2020

6 **Isfahan University of Technology, Iran**
 Holomorphic Differential Equations
 by Jorge Mozo Fernández (Universidad de Valladolid, Spain)
 February 6 – 19 2020



7 Arba Minch University, Ethiopia
 Introduction to Systems and Control Theory, Part I
 by Ludovic Rifford (Université Côte d'Azur, France)
 February 16 – 23, 2020



Ludovic Rifford in Ethiopia - February, 2020

13 University of N'Djamena, Chad
 EDP d'évolution
 by Patrick Tchepmo Djomegni (North West Univ., South Africa)
 October 22 – 30, 2020



Patrick Tchepmo Djomegni in Chad - October, 2020

8 Arba Minch University, Ethiopia
 Introduction to Systems and Control Theory II
 by Francesca Chittaro (University of Toulon, France)
 February 22 – 29, 2020

9 Université Felix Houphouët-Boigny, Ivory Coast
 Branching Processes
 by Ibrahima Drame (Cheikh Anta Diop Univ. of Dakar, Senegal)
 February 23 – March 6, 2020

10 University of Islamabad, Pakistan 
 Numerical Linear Algebra - Online Teaching
 by Krerley Oliveira
 May 4 – June 9, 2020

11 Universidade Pedagógica de Maputo, Mozambique
 Algebra Linear
 by Leonardo Fernández Jambrina (Univ. Politécnica de Madrid, Spain)
 March 8 – 28, 2020

12 Universite de N'Djamena, Chad 
 Study of Hyperbolic PDEs (Part I) - Online Teaching
 by Patrick Tchepmo Djomegni (North West Univ., South Africa)
 July 21 – 27, 2020

14 University of N'Djamena, Chad
 EDP hyperboliques
 by Mohamed Mbehou (Université de Yaoundé I, Cameroon)
 November 8 – 21, 2020

15 Ramnarain Ruia Autonomous College, India 
 Interpolation Formulae
 by Michel Waldschmidt (Emeritus Professor, Sorbonne Univ., France)
 December 7-10, 2020

16 University of N'Djamena, Chad 
 Schémas volumes finis pour des équations elliptiques en 1D
 Online Teaching
 by Florence Hubert (I2M, Aix-Marseille Université, France)
 December 14-18, 2020

17 University of N'Djamena, Chad 
 Schémas volumes finis pour des équations elliptiques en 1D
 Online Teaching
 by Michel Mehrenberger (I2M, Aix-Marseille Université, France)
 December 14-18, 2020

18 Arba Minch University, Ethiopia
 PDE II
 by Patrick Tchepmo Djomegni (North West Univ., South Africa)
 December 12 - 28, 2020

CIMPA FELLOWSHIPS

In **2020**, CIMPA financed the participation of **8** young mathematicians for a total cost of **€17,056**

The CIMPA Fellowships offer funding to enable young researchers from developing countries to take part in short thematic programs in partner European research institutes, for 1 to 3 months. The CIMPA Fellowships cover all the participants' costs.

January 6th to April 3rd, 2020

Organized by:
 David Hernandez, Université Paris Diderot-Paris VII
 Nicolas Jacon, Université de Reims Champagne-Ardenne
 Emmanuel Letellier, Université Paris Diderot-Paris VII
 Simon Riche, Université Clermont Auvergne
 Eric Vasserot, Université Paris Diderot-Paris VII

ihp Institut Henri Poincaré
 15 rue Pierre et Marie Curie
 75231 Paris Cedex 13
 France

Representation Theory
 Thematic program with short courses, seminars and workshops

CIRM Pre-school Marseille
 January 6th to 10th, 2020

Geometry and representation theory
 January 27th to 31st, 2020

Quiver varieties, character varieties and DT-invariants
 February 24th to 28th, 2020

Categorifications: Hecke algebras, finite groups and quantum groups
 March 23rd to 27th, 2020

Program coordinated by the Centre Emile Borel (CEB) at IHP
 Participation of postdocs and PhD students is strongly encouraged
 Scientific program on: <http://repthory2020.ihp.fr/>

Registration is free however mandatory on: www.ihp.fr
 Deadline for financial support: June 15th, 2019
 Contact: repthory2020@ihp.fr

Delphine Espinasse: CEB organizational assistant
 Sylvie Lhermitte: CEB Manager

Supported by IHP, CRM (grant ANR-15-CE40-0001), ERC (grant 621747), ANR (grant ANR-18-CE40-0001)

Logos: S, CNRS, CARMN, FSMP, etc.

REPRESENTATION THEORY

from January 6 to April 3, 2020



Gael Ngambali Ndzakima
 Université Abomey Calavi
 Benin



Zahra Kharaghani
 Université d'Isfahan
 Iran



Martin Mereb
 Universidad de Buenos Aires
 Argentina

CRM
 Centre de Recerca Matemàtica

www.crm.cat/2020/ihp_dynamicalsystems

INTENSIVE RESEARCH PROGRAMME

LOW DIMENSIONAL DYNAMICAL SYSTEMS AND APPLICATIONS

FEBRUARY 3 - APRIL 30, 2020

CENTRE DE RECERCA MATEMÀTICA (CRM) BARCELONA

[@GRMATEMATICA](https://twitter.com/GRMATEMATICA)

WORKSHOP: BIFURCATIONS AND NITENESS PROBLEMS IN ORDINARY DIFFERENTIAL EQUATIONS
 FEBRUARY 17-22, 2020

WORKSHOP: COMBINATORIAL DYNAMICS
 MARCH 16-21, 2020

WORKSHOP: FATOU COMPONENTS OF TRANSCENDENTAL MAPS
 APRIL 20-25, 2020

WEEKLY SEMINAR:

LOW DIMENSIONAL DYNAMICAL SYSTEMS AND APPLICATIONS

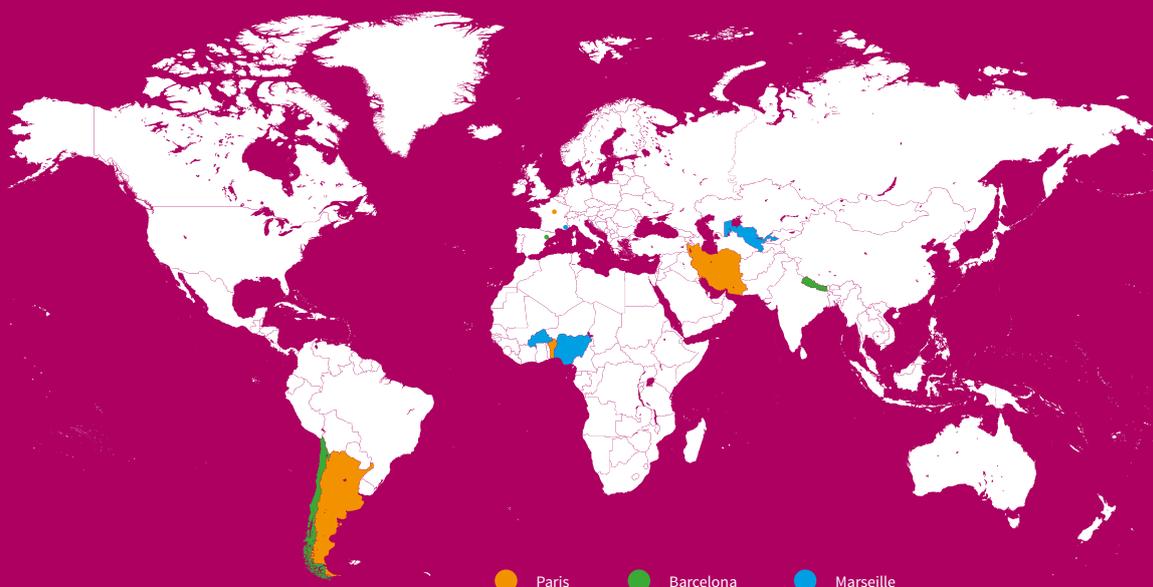
from February 3 to April 30, 2020



Bishnu Hari Subedi
 Tribhuvan University
 Nepal



Igsyl Domínguez Calderón
 Pontificia Universidad Católica de Chile
 Chile



● Paris ● Barcelona ● Marseille

Thematic month on mathematical issues in biology
 February 3 - March 6, 2020
 CIRM, Marseille, FRANCE

Organized by the math bio groups of the Institute of Mathematics of Marseille, FRANCE
<https://mathbiomaths.univmarseille.fr>
<https://conferences.cirm-math.fr/2142.html>

MATHEMATICAL ISSUES IN BIOLOGY

from February 3 to March 6, 2020



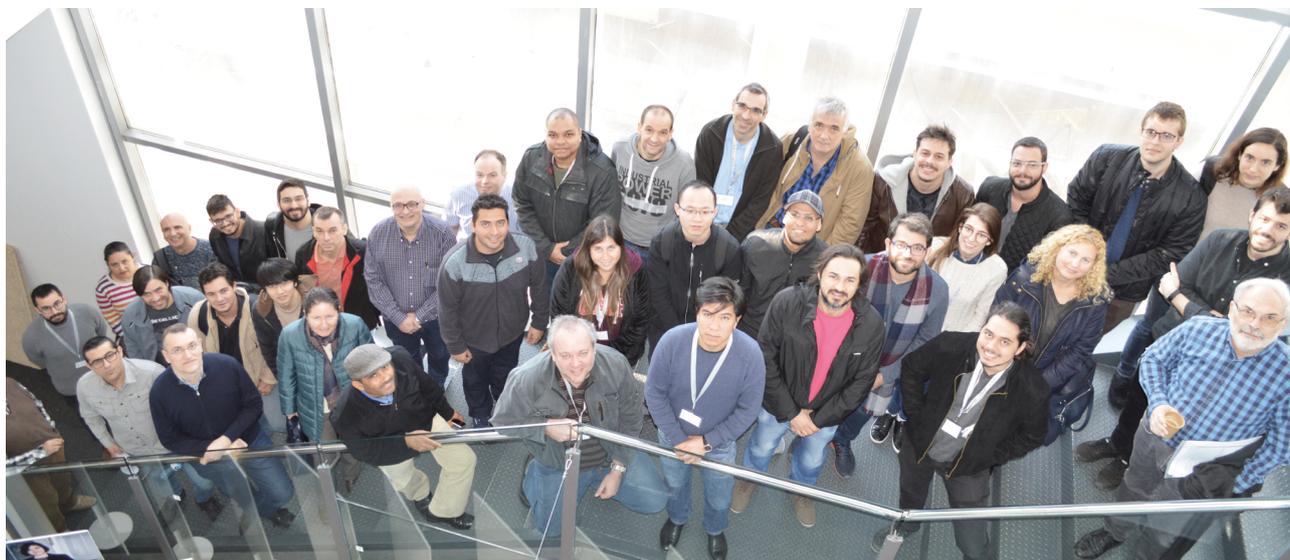
Umida Baltaeva
 Urgench State University
 Uzbekistan



Emmanuel Afolabi Bakare
 Federal university Oye Ekiti
 Nigeria



Bakary Traore
 Université Nazi Boni
 Burkina Faso



Group photo at CRM - February, 2020

SCHOOLS IN PARTNERSHIP

In **2020**, CIMPA financed
1 School in Partnership
 for a total cost of **€4,000**

CIMPA supports schools of mathematics at master's level or students at the end of their undergraduate studies, in partnership with continental mathematical societies:

- ▶ **African Mathematical Schools (AMS)**
- ▶ **Escuelas de Matemática de América Latina y del Caribe (EMALCA)**
- ▶ **SEAMS Schools of Mathematics (SEAMS)**
- ▶ **West Asian Mathematical Schools (WAMS)**

The Schools in Partnership take place in higher education and research institutions in Africa, South or Central America and West Asia, and have a duration of 1 to 3 weeks. CIMPA's financial support covers the travel and living expenses for CIMPA participants from neighboring developing countries.



SOUTH EAST ASIAN MATHEMATICAL SCHOOLS

Institute of Mathematics (VAST), Vietnam
 Arithmetic, Geometry and Model Theory
 January 10 – February 7, 2020



SEAMS at Institute of Mathematics (VAST) - February, 2020



Ta Thi Hoai An at Institute of Mathematics (VAST) - February, 2020

IMPACT OF THE COVID-19 CRISIS

CIMPA ACTIVITIES

4

CIMPA SCHOOLS

18

CIMPA COURSES

3

Activities

IHP Trimester, Intensive Research Programs at CRM, Thematic Months at CIRM

CIMPA FELLOWSHIPS

1

Activity

SEAMS

SCHOOLS IN PARTNERSHIP

ACTIVITIES WHICH HAVE NOT TAKEN PLACE

22

CIMPA SCHOOLS

30

CIMPA COURSES

2

Activities

2 IHP Trimester

CIMPA FELLOWSHIPS

19

Activities

8 AMS, 4 EMALCA, 3 SEAMS and 4 WAMS

SCHOOLS IN PARTNERSHIP

ÉCOLES CIMPA CIMPA SCHOOLS 2020



 **Quezon City, Philippines** [Jan. 06 > 17]
Numeration and Fractals

 **Ibarra, Ecuador** [Jan. 13 > 24]
The Geometry of Mechanics

 **Johannesburg, South Africa** [Jan. 13 > 24]
Functional Analysis and Applications

 **Yogyakarta, Indonesia** [Feb. 17 > 28]
Group Actions in Arithmetic and Geometry

 **Lahore, Pakistan** [Mar. 2 > 14]
CIMPA school on Recent Advances in Dynamical Systems

 **Kenitra, Morocco** [Mar. 25 > Apr. 5]
Analyse numérique & optimisation, contrôle et problèmes inverses

 **Saida, Algeria** [Apr. 4 > 16]
Groupoïdes et algébroïdes de Lie

 **Santiago de Cuba, Cuba** [May 4 > 15]
Mathematical Models Applied to Molecular Dynamics and Oncology

 **Tunis, Tunisia** [May 26 > Jun. 4]
Structure and Geometry in Matrix Analysis and Computations

 **Tunis, Tunisia** [May 26 > Jun. 6]
Structures ordonnées et leurs applications en finance

 **Nador, Morocco** [Jun. 1 > 10]
Équations aux dérivées partielles non-linéaires, théorie spectrale et applications

 **Khansar, Iran** [Jun. 8 > 19]
Khansar School on Graph Algebras, Current Trends and Perspectives

 **Bogotá, Colombia** [Jun. 16 > 27]
Geometric Tools in Combinatorics

 **Brazzaville, Congo** [Jun. 22 > Jul. 3]
École de géométrie

 **Kigali, Rwanda** [Jun. 29 > Jul. 10]
Mathematics of Climate Science

 **Ziguinchor, Senegal** [Jun. 29 > Jul. 11]
Quelques aspects réels et effectifs de la géométrie algébrique

 **Zanjan, Iran** [Jul. 4 > 15]
Spectra in Riemannian and Symplectic Geometry

 **Stellenbosch, South Africa** [Jul. 6 > 15]
Enumerative and Analytic Combinatorics

 **Rabat, Morocco** [Jul. 6 > 17]
Optimal Control and its Applications in Economics, Engineering and the Environment

 **Guanajuato, Mexico** [Jul. 13 > 21]
Hodge Theory and p-adic Hodge Theory

 **Tsaghkadzor, Armenia** [Jul. 13 > 24]
Finite Point Configurations and Discrete Integrable Systems

 **São Carlos, Brazil** [Jul. 13 > 24]
Singularities and Applications

 **San Salvador, El Salvador** [Jul. 13 > 24]
Algebraic Methods in Topology

 **Villa de Leyva, Colombia** [Jul. 20 > 31]
Algebraic and Topological Methods in Quantum Field Theory

 **Antananarivo, Madagascar** [Aug. 31 > Sep. 12]
Non-associative Algebras and their Applications

 **Vladivostok, Russia** [Sep. 15 > 24]
Packing, Tiling and Optimizing

 **Mexico City, Mexico** [Sep. 16 > 24]
p-Adic Numbers, Ultrametric Analysis, and Applications

 **Natal, Brazil** [Nov. 30 > Dec. 9]
Logic@Natal: School in Mathematical Logic and Applications



CIMPA

www.cimpa.info

Centre International
de Mathématiques
Pures et Appliquées

Promoting Research in Math in Developing Countries



CIMPA SUBSIDIES

CIMPA RECEIVES SUBSIDIES FROM VARIOUS EUROPEAN AND INTERNATIONAL INSTITUTIONS



Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation (France)



Université Côte d'Azur (France)



Laboratoire d'Excellence CARMIN (France)



Institut national des sciences mathématiques et de leurs interactions (France)



Ministère de l'Europe et des affaires étrangères (France)



Ministerio de Ciencia e Innovación (Spain)



Ministry of Education and Research (Norway)



Université de Neuchâtel (Switzerland)



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Secrétariat d'État à la formation, à la recherche et à l'innovation (Switzerland)



UNESCO

2020 SUBSIDIES



French Ministry	48.5%	237K€
Switzerland (Univ. of Neuchâtel and EPFL)	27%	130K€
Labex CARMIN	12%	58K€
Norwegian Ministry	6%	30K€
Université Côte d'Azur	2.5%	12K€
Own ressources	2%	10K€
CNRS-INSMI	1.5%	7K€
Other institutes	0.5%	3K€

SUBSIDIES

	€
MENESR/DGRI	230,920.00
Ministerio de Ciencia e Innovacion (Spain)/FECYT	0.00
Université de Neuchâtel et EPFL (140 000 CHF)	129,884.59
Ministry of Education and Research (Norway)	30,000.00
CNRS-INSMI	7,117.00
Labex CARMIN	57,639.00
MAEE-Iraq	6,000.00
Université Côte d'Azur	11,826.63
Membership fees, donations	10,700.00
Compositio (support for the CIMPA school in Indonesia)	3,000.00

TOTAL INCOME 487,087.22

2020 EXPENSES



■ Administration + Miscellaneous	72%	166K€
■ CIMPA Schools	11%	25.5K€
■ CIMPA Fellowships	7.5%	17.5K€
■ CIMPA Courses	7.5%	17K€
■ Schools in Partnership	2%	4K€

EXPENSES

ACTIVITIES	€
CIMPA SCHOOLS	
Philippines	6,177.00
South Africa (Johannesburg)	2,723.00
Indonesia	12,381.48
Pakistan	0.00
Morocco (Kenitra) On line	3,978.76
Algeria	0.00
Cuba	0.00
Tunisia (Tunis)	0.00
Tunisia (Tunis) School cancelled	0.00
Morocco (Nador)	0.00
Iran (Khansar)	0.00
Colombia (Bogota)	0.00
Congo	0.00
Rwanda	0.00
Senegal	0.00
Iran (Zanjan)	0.00
South Africa (Stellenbosch)	0.00
Morocco (Rabat)	0.00
Armenia	0.00
El Salvador	0.00
Brazil (Sao Carlos)	0.00
Mexico (Guanajuato)	0.00
Madagascar	0.00
Russia	0.00
Mexico (Mexico City)	0.00
Brazil (Natal)	0.00
TOTAL CIMPA SCHOOLS	25,260.24
SCHOOLS IN PARTNERSHIP	
EMA	0.00
EMALCA	0.00
SEAMS	4,000.00
WAMS	0.00
TOTAL SCHOOLS IN PARTNERSHIP	4,000.00
CIMPA FELLOWSHIPS	
Trimestre IHP T1 "Representation Theory" (3 laureates)	10,577.54
Trimestre IHP T2 "Random Geometry and Quantum Gravity" (2 laureates)	204.64
Trimestre IHP T3 "Systems out of Equilibrium: Interplay between Statistical, Quantum and Disorder Dynamics"	0.00
Intensive Research Program at CRM (Barcelona) "Low Dimensional Dynamical Systems and Applications" (2 laureates)	2,351.55
Thematic Month at CIRM (Marseille) "Mathematical Issues in Biology" (3 laureates)	3,922.76
TOTAL CIMPA FELLOWSHIPS	17,056.49
CIMPA COURSES	
Semester 1 (with the balance of semester 2 of 2019)	17,271.36
Semester 2	0.00
TOTAL CIMPA COURSES	17,271.36
OTHER EXPENSES	
Support IRAQ activities in Iraq through the French Embassy in Iraq	0.00
Travel expenses of members of the Executive Team and the Governing Board	15,258.46
Expenses for General Assembly/Governing Board/Scientific Council/Steering Committee meetings	4,933.90
TOTAL OTHER EXPENSES	20,192.36
TOTAL ACTIVITIES	83,780.45

ADMINISTRATIVE EXPENSES	€
Rent, Equipment, Office Supplies	17,424.46
Website, Communication Supports	15,895.76
Bank Fees, Taxes, Membership fees	4,735.35
Salaries, Payroll Taxes	108,000.00
TOTAL ADMINISTRATIVE EXPENSES	146,055.57

TOTAL EXPENSES	229,836.02
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SURPLUS	257,251.20
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TOTAL GENERAL	487,087.22
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Provisional budget as of December 31, 2020



CIMPA

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Campus Valrose, Bâtiment Dieudonné II
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