



Newsletter

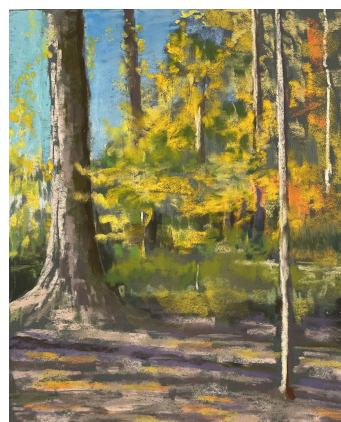
BELGIAN MATHEMATICAL
SOCIETY

142, March 14, 2023

Comité National de Mathématique CNM

C W M
N

NCW Nationaal Comité voor Wiskunde



By Andreas Weiermann

Newsletter of the Belgian Mathematical Society and the National Committee for Mathematics

Belgian Mathematical Society ASBL/VZW
ULB Campus Plaine, C.P. 218/01,
Bld du Triomphe, B-1050 Brussels, Belgium

Website: bms.ulb.ac.be

Newsletter: wendy.goemans@kuleuven.be

Contents

1	News from the BMS & NCM	2
2	(Online) Meetings, Conferences, Lectures, ...	5
3	Job announcements	11
4	News from the universities	12
5	History, maths and art, fiction, jokes, quotations ...	15

The next edition of this newsletter will appear on May 15th, hence, till May 5th all content can be sent to wendy.goemans@kuleuven.be. Any information that you qualify as interesting to be spread among the Belgian Maths community is very much welcomed!

Foreword

Dear BMS members,
Dear friends,

This is my last foreword as President of our Society. It was a great honour for me to serve as president for the past few years and I wish the Society all the best for the future.

The election of the new President, Vice President, Secretary and Treasurer will take place on Wednesday 29/03 during our general assembly, which will be followed by our “Breakthroughs event”. If you have not done so yet, please register for this through our webpage (<https://bms.ulb.ac.be/>). It will be a nice occasion to get together for a chat, a drink, and most of all to listen to some lovely mathematics!

All the best,
Yvik Swan

1 News from the BMS & NCM

1.1 Recent breakthroughs in Mathematics and General Assembly

The Belgian Mathematical Society is happy to invite you to its “Recent breakthroughs and GA” symposium which will take place on the afternoon of Wednesday March 29 2023.

The event will take place at the Palace of the academies, auditorium Albert II.

Aside from the yearly general assembly of the BMS, the event will as usual consist in an afternoon’s discussion by international experts on some of the more breathtaking breakthroughs in contemporary mathematics.

This year the talks will focus on topics which were recently awarded the prestigious Fields medal. All talks will be accessible to large audiences of mathematicians. We will also have the chance to hear a talk by our 2022 “Young Scholar Award” recipient, Daniel Drimbe (KU Leuven).

Participation is free but registration is mandatory, see below. Non BMS members will be invited to become members to enjoy the free drinks :-).

Confirmed speakers

- 13h00 - 13h30 coffee + welcome + AG (BMS effective members only)
- 13h30 - 13h40 welcome
- 13h40 - 14h30 Daniel DRIMBE (KU Leuven) - “BMS Young Scholar Award”
- 14h30 - 15h20 Cédric PILATTE (Oxford) - about the work of James Maynard
- 15h20 - 15h50 pause
- 15h50 - 16h40 Botong WANG (University of Wisconsin-Madison) - about the work of June Huh
- 16h40 - 17h30 Ioan MANOLESCU (Fribourg) - about the work of Hugo Duminil-Copin
- 17h30 - 18h30 drink

Registration and more information: <http://dwispc8.vub.ac.be/nieuwBMS/index.php?id=rbm-and-ga>

1.2 Reminder: membership dues for 2023

The basic BMS membership fee is 20€ per year or 100€ for 5 years. See Section 1.2.1 for reciprocity membership.

You can either pay via bank transfer (BIC: GEBABEBB / IBAN: BE70 0011 7447 8525) or via PayPal (see <http://bms.ulb.ac.be/membership/paypal.php>).

Our address is:

Belgian Mathematical Society
Campus de la Plaine, C.P. 218/01
Boulevard du Triomphe
B-1050 Brussels, BELGIUM

The Project Euclid system for electronic access to our journal, the Bulletin of the Belgian Mathematical Society, is stricter than before and asks the Society to update our subscriber's list yearly in January. So please pay your dues as soon as possible in order to keep uninterrupted access to the Bulletin.

1.2.1 Reciprocity and combined membership

The BMS has reciprocity agreements with the AMS, EMS, DMV, LMS, RSME, SMF, SBPMef, VVWL and KWG. In case you are already member of one of these societies, your membership fee for the BMS is reduced to 18€. Details can be found on [this webpage](#).

We summarize the most common combined memberships:

BMS	20,00€
BMS for 5 years	100,00€
BMS with reciprocity	18,00€
BMS + EMS	45,00€

Note that the EMS (European Mathematical Society) membership fee of 25,00€ is allowed only to persons belonging to an EMS corporate member society, such as the BMS. The individual EMS membership fee is 50,00€ otherwise.

Note that it is now preferred that you pay your EMS membership fee directly to the EMS. See http://www.euro-math-soc.eu/ems_payment_new/ems_payment_new.html for details.

The following QRcodes can be used to pay the membership fee, mention your name as communication.



1.3 Bulletin of the Belgian Mathematical Society - Simon Stevin

Starting from Volume 28 the Bulletin of the Belgian Mathematical Society - Simon Stevin only appears online and is not printed any more. As a member of the BMS you have electronic access to all electronically available issues of the bulletin, free of charge. If you have any trouble logging in or accessing the journal, please contact customer_support@projecteuclid.org.

Content Volume 29 (1) december 2022

- Property (W_E) and topological uniform descent **Yanxun Ren, Lining Jiang, Yingying Kong** DOI: [10.36045/j.bbms.210413](https://doi.org/10.36045/j.bbms.210413)
- Topological Sensitivity on Hyperspaces **Devender Kumar, Mohammad Salman, Ruchi Das** DOI: [10.36045/j.bbms.211024](https://doi.org/10.36045/j.bbms.211024)
- Ground state solutions for weighted N -Laplacian problem with exponential non linear growth **Rima Chetouane, Rached Jaidane** DOI: [10.36045/j.bbms.211020](https://doi.org/10.36045/j.bbms.211020)
- The improved Euler-Jacobi formula and the planar polynomial vector fields of degree 2-4 **Jaume Llibre, Claudia Valls** DOI: [10.36045/j.bbms.210413a](https://doi.org/10.36045/j.bbms.210413a)
- The Euler characteristic of configuration spaces **Louis Hainaut** DOI: [10.36045/j.bbms.211008](https://doi.org/10.36045/j.bbms.211008)
- CS-Rickart and dual CS-Rickart objects in abelian categories **Septimiu Crivei, Simona Maria Radu** DOI: [10.36045/j.bbms.210902](https://doi.org/10.36045/j.bbms.210902)
- Topological Sensitivity on Hyperspaces **Dongfang Xie, Wei-Xue Shi** DOI: [10.36045/j.bbms.200531](https://doi.org/10.36045/j.bbms.200531)
- Mildly version of Hurewicz basis covering property and Hurewicz measure zero spaces **Manoj Bhardwaj, Alexander V. Osipov** DOI: [10.36045/j.bbms.210114a](https://doi.org/10.36045/j.bbms.210114a)

Content Volume 29 (2) december 2022

- Equivariant Morita theory for graded tensor categories **César Galindo, David Jaklitsch, Christoph Schweigert** DOI: [10.36045/j.bbms.210720](https://doi.org/10.36045/j.bbms.210720)
- Deductive systems in unital quantum-B algebras **Lavinia Corina Ciungu** DOI: [10.36045/j.bbms.210912](https://doi.org/10.36045/j.bbms.210912)
- Bounds for the Grundy chromatic number of graphs in terms of domination number **Abbas Khaleghi, Manouchehr Zaker** DOI: [10.36045/j.bbms.211019](https://doi.org/10.36045/j.bbms.211019)
- Finite-dimensional Nichols algebras over the Suzuki algebras I: simple Yetter-Drinfeld modules of $A_{Nn}^{\mu\lambda}$ **Yuxing Shi** DOI: [10.36045/j.bbms.211101](https://doi.org/10.36045/j.bbms.211101)
- Homoclinic solutions for ordinary p -Laplacian systems with local super- p linear conditions **Xiaochun Ge** DOI: [10.36045/j.bbms.211105a](https://doi.org/10.36045/j.bbms.211105a)
- Nilpotent covers of symmetric and alternating groups **Nick Gill, Ngwava Arphaxad Kimeu, Ian Short** DOI: [10.36045/j.bbms.220218](https://doi.org/10.36045/j.bbms.220218)
- Lineability and additivity of almost injective functions **Krzysztof Płotka** DOI: [10.36045/j.bbms.220301](https://doi.org/10.36045/j.bbms.220301)
- Pseudo-Fubini entire functions on the plane in the sense of Riemann **Luis Bernal-González, Juan Fernández-Sánchez** DOI: [10.36045/j.bbms.220321](https://doi.org/10.36045/j.bbms.220321)

For the table of contents of previous issues, see <https://projecteuclid.org/all/euclid.bbms>.

2 (Online) Meetings, Conferences, Lectures, ...

2.1 March 2023

EoS Minicourse Event

March 13 2023, KU Leuven

This is the third Minicourse Event of the Excellence of Science Project *Beyond Symplectic Geometry*. The speakers at this event are Melanie Bertelson (ULB), Amin Ebrahimi (ULB), Andriy Haydys (ULB), and Bruno Premoselli (ULB).

The event will take place on Monday, March 13, 2023 at KU Leuven in Building B (= Math Building) in Room 02.18. Participation is free, but registration is mandatory (to estimate the amount of coffee...).

More information is available on the minicourse event webpage

<https://www.uantwerpen.be/nl/personeel/sonja-hohloch/private-webpage/excellence2-of-scienceminicourses/>

Mathematics Research Day

March 15 2023, UAntwerpen

We invite you to the third edition of the Mathematics Research Day of the Department of Mathematics of the University of Antwerp. The audience aimed at this event are bachelor & master students, PhD students, postdocs, and teachers in mathematics and/or physics.

On the one hand, some junior researchers of the Department of Mathematics will explain their fields of research. On the other hand, important aspects for a career in academia and industry will be discussed. Participation is free, but registration is mandatory (to estimate the amount of coffee ...).

More information (including the registration link) can be found on the event webpage:

<https://www.uantwerpen.be/nl/departementen/wiskunde/onderzoek/onderzoeksdag-wiskunde/>

Recent breakthroughs in Mathematics

March 29 2023, Brussels

See earlier in this newsletter and the poster at the end.

17th International Young Researchers Workshop on Geometry, Mechanics and Control

March 29-31 2023, KU Leuven

This workshop is a yearly international event to promote young researchers in the field of differential geometry and its relations to mechanics and control theory. The workshop features three mini-courses in key topics in the field, given this year by Chiara Esposito (Università degli Studi di Salerno), Azahara de la Torre Pedraza (Sapienza Università di Roma) and Maryam Kamgarpour (École Polytechnique Fédérale de Lausanne). Besides, there are selected talks proposed by the participants and a gong session. This event is targeted to all researchers in the field, with an emphasis on young participants (doctoral students and postdocs).

<https://wis.kuleuven.be/events/young-researchers-workshop2023/young-researchers-workshop2023>

2.2 April 2023

GAME2023 Geometric Algebra mini event

April 19-21 2023, Kortrijk

See the poster at the end of this newsletter.

2.3 May 2023

Numeration 2023 conference

May 22-26 2023, University of Liège

The Numeration 2023 conference is part of a series of events around numeration systems. The main topics of this international meeting are gathered around numeration systems and include (but are not limited to) geometrical aspects, dynamical and probabilistic aspects, arithmetical functions, topological aspects, and computer science. The conference will take place at the Mathematics Department of the University of Liège from 22 to 26 May 2023. Details (deadlines for abstract submissions, registration, practical information, ...) can be found on <https://numeration-2023.sciencesconf.org/>

2.4 July 2023

Category Theory CT2023 conference

July 2-8 2023, UCLouvain

See the poster at the end of this newsletter.

PADGE 2023

July 10-14 2023, KU Leuven

From July 10 till July 14, 2023, the conference “Pure and Applied Differential Geometry - PADGE 2023” will take place at KU Leuven, Belgium. All information will be available on the website

<https://wis.kuleuven.be/events/padge-2023/padge2023>

2.5 August 2023**Finite Dimensional Integrable Systems (FDIS 2023)**

August 7-11, 2023, UAntwerpen

The 7th International Conference on *Finite Dimensional Integrable Systems in Geometry and Mathematical Physics (FDIS 2023)* will take place during August 7-11, 2023 at the University of Antwerp/Belgium *on campus*. The conference aims at bringing together junior and senior researchers from the broad area of integrable systems and its interactions with geometry, topology, algebra, and mathematical physics.

The previous editions took place in Jena/Germany (2011), at CIRM (Luminy)/France (2013), in Bedlewo/Poland (2015), in Barcelona/Spain (2017), in Shanghai/China (2019), and in Tel Aviv/Israel (2022).

The **deadline for contributed talks and/or funded accommodation is April 16, 2023**. More information (including the registration links) can be found on the poster at the end of this newsletter and on the conference webpage

<https://www.uantwerpen.be/fdis2023>

2.6 Seminars and colloquia**Analysis & Geometry Seminar**

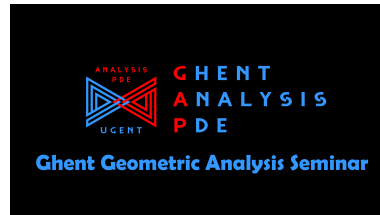
UAntwerpen

(usually Wednesdays 16-17h during term)

This is the weekly research seminar of the analysis & geometry-interested people in Antwerp. During the semester, we have once per week a research talk in analysis and/or geometry and/or related topics. The list of speakers comprises researchers from Antwerp as well as other universities. Details (schedule, speakers, titles, abstracts, seminar room/ online/ hybrid etc.) can be found on the seminar webpage <https://www.uantwerpen.be/nl/personeel/sonja-hohloch/private-webpage/seminars/analysis-geometry/>

To be added/deleted from the mailing list, please send an email to:
sonja dot hohloch AT uantwerpen dot be

Ghent Geometric Analysis Seminar



The Ghent Geometric Analysis seminar is dedicated to studying the modern techniques of elliptic and subelliptic partial differential equations (PDEs) that are used to establish new results in differential geometry and differential topology. We are planning to invite several of the leaders in the fields of microlocal analysis, geometric analysis, and harmonic analysis abroad.

In view of the recent activities and investigations undertaken by the members of the Ghent Analysis and PDE center and the works in the interplay of geometric analysis and harmonic analysis of our group, our seminar also will be a scenario for presenting the recent developments in the field and their applications to other branches in mathematics. Visit the website of our new Ghent Geometric Analysis Seminar at <https://analysis-pde.org/seminars/ghent-on-geometric-analysis/>

Upcoming seminars:

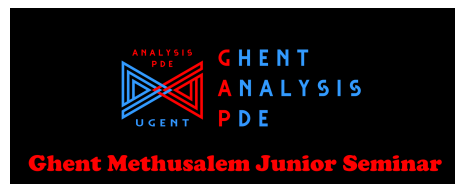
- Julio Delgado, Universidad del Valle, Colombia.
- Loukas Grafakos, University of Missouri, US.
- Sundaram Thangavelu, Indian Institute of Science, India.
- Gerald Folland, University of Washington, US.

Organisers:

- Duván Cardona Sanchez (Duvan.CardonaSanchez@UGent.be)
- David Santiago Gómez Cóbos (davidsantiago.gomezcobos@ugent.be).

Visit also the website of the seminar to be informed of the scheduled intensive mini-courses about geometric analysis.

Ghent Methusalem Junior Seminar



The Ghent Methusalem Junior Seminar is run by PhD students and postdocs at the **Ghent Analysis & PDE Center** (<https://analysis-pde.org>).

It provides an ideal opportunity for young researchers in mathematics to share their ideas and to learn about new trends in a wide range of fields. Targeting a mainly (though not exclusively) young audience

has meant for the organizers to ensure a relaxed atmosphere and to encourage the audience to engage in stimulating discussions with the speakers, ideally leading to new collaborations.

The seminar currently takes place every Wednesday at 4.30 PM (CET) on ZOOM. For more information about our activity and about past and future talks, please visit the dedicated webpage: <https://analysis-pde.org/ghent-methusalem-junior-seminar/>

If you would like to give a talk or to invite someone to give a talk, please contact:

- Duván Cardona Sanchez (Duvan.CardonaSanchez@UGent.be)
- Serena Federico (serena.federico2@unibo.it)
- Vishvesh Kumar (Vishvesh.Kumar@UGent.be)
- David Rottensteiner (David.Rottensteiner@UGent.be)
- Bolys Sabitbek (b.sabitbek@qmul.ac.uk).

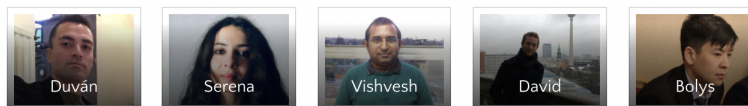
The following talks are planned for the second term of the academic year 2022/23.

- Felipe Ponce Vanegas (Basque Center for Applied Mathematics, Spain)
- Adolfo Arroyo Rabasa (UCLouvain, Belgium)
- Gisel Mattar (University of Göttingen, Germany)
- Stefano Buccheri (University of Vienna, Austria)
- Arrick Shao (Queen Mary University of London, UK)
- Mirco Piccinini (Università di Parma, Italy)
- Tobias König (Goethe University Frankfurt, Germany).

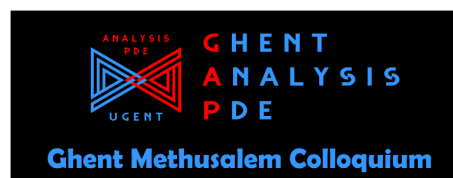
The Ghent Methusalem Junior Seminar is supported by FWO Odysseus 1 Project: Analysis and Partial Differential Equations, and by the Ghent University Methusalem Programme “Analysis & PDE”.



Our organising committee



Ghent Methusalem Colloquium



The Ghent Methusalem Colloquium is intended for a broad audience of PhD students, postdocs and professors at the Ghent Analysis & PDE Center and beyond. The series includes colloquia from visiting and invited guests. Visit the website of our new Ghent Methusalem Colloquium at

<https://analysis-pde.org/ghent-methusalem-colloquium/>

Visit the webpage of the colloquium to have a look of the scheduled talks by:

- Prof Sorin Pop, Hasselt University, Belgium.
- Prof Piero D'Ancona, University of Rome 1 La Sapienza, Italy.
- Prof. Bob Rink, Vrije Universiteit Amsterdam, The Netherlands.
- Prof. Joel Fine, Université Libre de Bruxelles, Belgium.
- Prof. Sonja Hohloch, University of Antwerp, Belgium.

The Ghent Methusalem Junior Seminar and the Ghent Methusalem Colloquium are supported by FWO Odysseus 1 Project: Analysis and Partial Differential Equations, and by the Ghent University Methusalem Programme "Analysis & PDE".

Methusalem Colloquium talks

KU Leuven

Upcoming talks in the Methusalem Colloquium at KU Leuven:

- **Alberto Rodríguez Vázquez** (KU Leuven - section of geometry)
Isometric actions on symmetric spaces
Friday, 17 March, 15-16 pm in Celestijnenlaan 200L.00.07
The colloquium talk will be followed by a minicourse on Lie groups and Lie algebras with lectures on 20, 23, 27 March and 3 April.
- **Mateusz Piorkowski** (KU Leuven - section of analysis)
Lax pairs and scattering theory
Monday, 17 April 16:15-17:15 in Celestijnenlaan 200K.00.06
The colloquium talk will be followed by a mini-course on direct and inverse scattering on 20, 24, 27 April and 2, 4 May.

For details on the mini-courses see

https://wis.kuleuven.be/methusalem-pure-math/colloquia_seminars_lectures/lecture-series

Methusalem Junior Seminar

KU Leuven

- 23 March at 15:00, **Alfilgen Sebandal**, Mindanao State University, Iligan Institute of Technology (MSU-IIT), title: TBA.
This talk will take place online on MS Teams (more information to follow).

- 17 April at 15:00, **Alexis Marchand**, University of Cambridge, title: TBA.
This talk will take place on campus in Aula Erik Duval 200A (Computer Science building).

Further information about the Methusalem Junior Seminar is available at

https://wis.kuleuven.be/methusalem-pure-math/colloquia_seminars_lectures/junior-seminars

3 Job announcements

3.1 PhD position in Eindhoven

In the Department of Mathematics and Computer Science at Eindhoven University of Technology (The Netherlands), there is a vacancy for a 4 year PhD-position within the Vidi NWO project “ Finding graph structure beyond the spectrum: new frontiers and new methods”. This PhD position is supervised by Aida Abiad (<https://aidaabiad.win.tue.nl/>).

The vacancy can be found at: <https://jobs.tue.nl/en/vacancy/phd-position-in-algebraic-combinatorics-at-tu-eindhoven-982914.html>

The vacancy closing date will be April 30, 2023, or until the position is filled. The preferably starting date is September 2023.

PROJECT DESCRIPTION

This project seeks to deduce structural properties of a graph from the graph spectrum. Properties such as connectedness, diameter and regularity, are known to be related to the spectrum of a graph. Nevertheless, for most relevant graph structures the problem remains open, and the existing spectral tools are not sufficient, indicating that genuinely new methods are needed. In this project we will tackle this challenge by strengthening and unifying spectral methods and combining them with tools from other fields like combinatorial optimization, finite geometry and group theory.

The successful candidate for this PhD position will work under the supervision of Aida Abiad in the group Combinatorial Optimization (<https://www.tue.nl/en/>) of the department of Mathematics and Computer Science of TU/e. Your responsibilities include to perform scientific research on the topic of the above-mentioned project and to publish your results at international conferences and in international journals. For a small percentage of your time, you will be asked to assist with educational tasks (course support and supervision of students).

FURTHER INFORMATION

For more information about the project or about the working conditions, please contact Aida Abiad (a.abiad.monge@tue.nl).

HOW TO APPLY

Applications should be done through the following website: <https://jobs.tue.nl/en/vacancy/phd-position-in-algebraic-combinatorics-at-tu-eindhoven-982914.html>

4 News from the universities

4.1 A new COST Action: CaLISTA and call for mobility grants

Cartan geometry, Lie, Integrable Systems, quantum group Theories for Applications
<https://site.unibo.it/calista> and <https://www.cost.eu/actions/CA21109/>

CaLISTA is a new COST Action (Oct 2022–Oct 2026) with a focus on symmetries, realized through Lie groups and Lie algebras. It aims to advance research in mathematics and physics through a systematic application of the ideas and philosophy of Cartan geometry, which is a Lie theoretic approach to differential geometry. The working groups are “Cartan Geometry and Representation theory”; “Integrable Systems and Supersymmetry”; “Noncommutative Geometry and Quantum Homogeneous Spaces”; “Vision models” and “Dissemination and Public Engagement”.

- CaLISTA welcomes [applications for membership](#) in one of its working groups.
- It organizes several [workshops, conferences and schools](#) on its main themes.
- CaLISTA has recently opened two [calls for mobility grants](#) (one for research visits and one for conference participation), for proposals in alignment with one of the working groups. **The first deadline is March 24, 2023**, but more calls will be published later this year.

Further details can be obtained from [Michael Ruzhansky](#) (UGent) or [Tom Mestdag](#) (UAntwerpen).

4.2 UGent

Mini-course on Ordinal Analysis

The UGent mathematics department has currently as visitors Harry Altman (New York) from February 24th to March 23rd and Toshiyasu Arai (Tokyo) from March 13th to March 24th.

On March 14-24 Toshiyasu Arai will give a mini-course on Ordinal Analysis at the University of Ghent. It will be possible to attend the lectures via Zoom.

There will be nine lectures in total on March 14-17 and on March 20-24, all lectures will take place at 10:30-12:00 (CET). The plan of the course is to cover the ordinal analysis of $KP\omega$, $KP\omega + \Pi_1$ -Collection, as well as some theories in-between.

If you are interested in attending online please write to Fedor.Pakhomov@UGent.be or Andreas.Weiermann@UGent.be to obtain a Zoom link.

Methusalem Workshop on Classical Analysis and PDEs

The Methusalem Workshop on Classical Analysis and PDEs took place at UGent. Update information about this conference can be found on the website: <https://analysis-pde.org/methusalem-workshop-on-analysis-and-pdes/>



Research Perspectives Ghent Analysis and PDE Center



There is a new series in Birkhäuser/Springer, associated to our Ghent Analysis and PDE Center: Research Perspectives Ghent Analysis and PDE Center. This series is located within Birkhäuser's Trends in Mathematics series.

Series description:

Research Perspectives Ghent Analysis and PDE Center is a book series devoted to the publication of extended abstracts of seminars, conferences, workshops, and other scientific events related to the Ghent Analysis and PDE Center. The extended abstracts are published in the subseries Research Perspectives Ghent Analysis and PDE Center within the book series Trends in Mathematics. All contributions undergo a peer-review process to meet the highest standard of scientific literature.

Volumes in the subseries will include a collection of revised written versions of the communications or short research announcements or summaries, grouped by events or by topics. Contributing authors to the extended abstracts volumes remain free to use their own material as in these publications for other purposes (for example a revised and enlarged paper) without prior consent from the publisher, provided it is not identical in form and content with the original publication and provided the original source is appropriately credited.

Here is some more information on the type of the papers:

Each paper is 3-8 pages long (including title and references), the upper limit of 8 pages is strict. It is expected that the paper is of an extended abstract type, namely: one can make a short research summary or announce some results without proofs. The idea is similar to publishing in journals like e.g. C.R.A.S. Paris, *Funct. Anal. Appl.*, or *Doklady RAN*. Therefore, publishing a paper in this volume does not influence the publication of a full research paper, which can be published as usual elsewhere. The papers in the volume should be included in Scopus, MathSciNet and Zentralblatt. Publication is free of charge, authors should get free electronic access to the whole volume.

Forthcoming volumes:

- Volume title: Extended Abstracts MWCAPDE 2023
Volume subtitle: Methusalem Workshop on Classical Analysis and Partial Differential Equations
Volume editors: Michael Ruzhansky and Berikbol Torebek
- Volume title: Extended Abstracts 2021/2022
Volume subtitle: Methusalem Lectures
Volume editors: Duván Cardona, Joel Restrepo, Michael Ruzhansky
- Volume title: Extended Abstracts 2021/2022
Volume subtitle: Ghent Analysis and PDE Seminar
Volume editors: Michael Ruzhansky, Karel Van Bockstal
- Volume title: Women in Analysis and PDE
Volume editors: Marianna Chatzakou, Michael Ruzhansky, Diana Stoeva
- Volume title: Analysis and PDE in Latin America
Volume subtitle: ICMAM 2022 Latin America
Volume editors: Duván Cardona, Brian Grajales

Further information will appear on the website:

<https://analysis-pde.org/research-perspectives-ghent-analysis-and-pde-center/>



Microlocal Day #8, 2023

The Microlocal Day is an initiative of a short and intensive series of lectures devoted to different aspects of the microlocal analysis and related topics. Information about the past “Ghent Methusalem Microlocal Day #8” can be found on the website:

<https://analysis-pde.org/microlocal-day-17-feb-2023/>

4.3 Special issue in ATNAA

Dear Colleague,

It is my great pleasure to announce that there will be a special issue on “Mathematical Modelling and Dynamical Systems” in the journal of ATNAA (Scopus, Q2), which will be edited by Professor Sandra Pinelas and Professor Zhanat Zhunussova. Journal page: <https://dergipark.org.tr/en/pub/atnaa>

Open Special Issues – A Special Issue on “Mathematical Modelling and Dynamical Systems 2022”

Quest Editors: Sandra Pinelas (Portugal) Zhanat Zhunussova (Kazakhstan)

The special issue aims to seek and publish interesting papers in every discipline of applied mathematics, science, as well as engineering, and industry to discuss the advances in dynamical systems and the developments of new mathematical models, theories, and applications that contribute to the advancement of scientific knowledge and practice.

Dear Authors,

Please write a cover letter in your submission and indicate that the paper is submitted to this special issue. <https://dergipark.org.tr/en/pub/atnaa/page/10134>

With best regards,
Zhanat Zhunussova

5 History, maths and art, fiction, jokes, quotations ...

5.1 π -day

Many thanks to Paul Levrie for the celebration of π -day, this year commemorating 400 year Schickard, and of course for noting that this edition of the newsletter, number 142, appearing in March, hence 3.142, is serving as a nice rounded value.

5.2 Chess simultan at Alumnidag at UGent

On March 26 an Alumnidag at UGent takes place and Andreas Weiermann will give a chess simultan there:

[https://alumnidag.ugent.be/nl-be/ programma/activiteiten/schaak-eens-tegen-een-wiskundeprofessor/](https://alumnidag.ugent.be/nl-be/programma/activiteiten/schaak-eens-tegen-een-wiskundeprofessor/)

5.3 Imaginary <https://www.imaginarymaths.be/>

Visit this travelling exposition on visible and invisible mathematics:

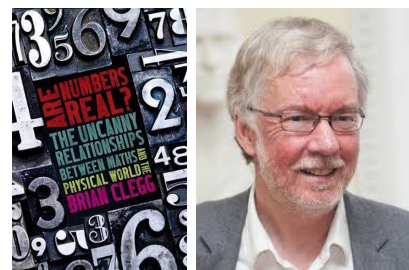
- Leuven 27 February - 26 March 2023
- Brussel 15 April - 13 May 2023

5.4 Adhemar's corner

The review of Adhemar is on a history of mathematics and its relation to physics, in order to answer the question whether mathematics is discovered or invented and thus also whether numbers exist in nature or are a mathematical fantasy.

Are numbers real? by *Brian Clegg*, Little Brown UK, 2017 (304 p.), isbn: 9781472139764.

'Is mathematics discovered or invented' is an old philosophical question, which has no yes or no answer. With the title of this book, Clegg tackles a subquestion about real numbers, and also here, the answer is not univocal. In search of an answer, he takes us on a journey through the history of mathematics from counting sheep to string theory to give in his last chapter a deeper discussion about the relation between science and mathematics.



B. Clegg

Clegg is an experienced science writer with a PhD in physics. That, and the nature of the question he wants to answer, explains why the history of mathematics is explained in close connection with physics. This is also a book with almost no formulas avoiding as much as possible the technical details.

The history of mathematics has been told many times before and Clegg follows the same line of thoughts: the one-to-one relation between the number of sheep and the number of stones representing them is very real, it gains some abstraction when the same number is used to count goats or other things and when they are represented by a number system, they become separated from physical items.

In Greek antiquity mathematics became an independent discipline, but still the idea was that mathematics was only a model for reality which was supposed to be ideal, with nature intrinsically obeying the rules imposed by whole numbers and perfect circles. Zero and infinity did not find a natural counterpart in reality and thus, it took a longer time to be accepted. Roger Bacon (ca. 1214–ca. 1295) is singled out as the one to have promoted mathematics as a structured way of thinking, something that can be developed independently from nature.

Negative and imaginary numbers were introduced for solving equations, and studying on earth falling objects due to gravity and in the sky the motion in the solar system, and speed, as a change of motion, this triggered the development of ratios of change which resulted in derivatives and eventually calculus.

Probability was introduced to deal with problems of gambling, but it soon became a method to deal with a large number of events like molecules in a bottle and quantum particles. This is used as a pretext to move to more physical developments: the Maxwell equations and Schrödinger's equation, and relativity theory. However, mathematical foundation also needed a revision: set theory was used to redefine the number system, Cantor learned us to deal with infinity, and Kurt Gödel showed the limitations of the mathematical system.

Relativity and quantum physics made us aware that reality is not as simple as it seemed to be. It was Emmy Noether's invariants and symmetry that guided the development in theoretical physics where the relation between nature and our mathematical model becomes the motor for the development of physics, even beyond experimental verification. The Higgs particle is at the boundary of what is currently (indirectly) observable and verifiable.

The history told in this book has some new facts and anecdotes that I had not seen before, so that is a nice feature. The last chapters on particle physics are a bit difficult to follow, but it is a difficult subject anyway if you're not a theoretical physicist.

This brings us to the last chapter which is the most interesting if you want an answer to the question in the title and the more general one mentioned in the beginning. Clegg's previous sketch of the history is used to argue that mathematics is a system in which things are either true or not, and it exists, without the need to verify with experiments. Science is a system in which one needs constantly refinements and corrections, and verification through experiments. Mathematics can evolve completely detached from reality, but it can come in handy to explain reality at a later stage when used in a model. However a model is not reality since it is always a simplification. Correlation does not mean causality and statistics cannot be applied to individuals. Numbers as used originally are real but most of mathematics is a fantasy world. Adhemar Bultheel

pi trivia

Did you know that ...

- ... today is π -day? Why? Because in American spelling, the date March 14 is written as 3/14 and 3.14 is an approximation for the number π .
- ... you should definitely eat cake ('pie') today, or even better: treat your colleagues at work with pie?
- ... since 26 November 2019, thanks to UNESCO:



- ... the number π is a constant that gives the ratio of the circumference of a circle to its diameter? Or the ratio of the area of the circle to the square of its radius? To 500 decimal places, π looks like this:

Start Finish

3.141592653589793238462643383279502
 88419716939937510582097494459230781
 64062862089986280348253421170679821
 48086513282306647093844609550582231
 72535940812848111745028410270193852
 11055596446229489549303819644288109
 75665933446128475648233786783165271
 20190914564856692346034861045432664
 82133936072602491412737245870066063
 15588174881520920962829254091715364
 36789259036001133053054882046652138
 41469519415116094330572703657595919
 53092186117381932611793105118548074
 46237996274956735188575272489122793
 818301194913

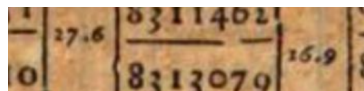
- ... only at the end of the 16th century the above notation for decimal numbers, with the decimal point, was introduced in Europe? Before that, the number 3.1415 was written as

$$3\frac{1415}{1000}$$

which made calculating with decimal numbers difficult. Simon Stevin (1548-1620), our mathematician from Bruges, introduced a new notation:

$$3 \frac{\textcircled{1}}{1} \frac{\textcircled{2}}{4} \frac{\textcircled{3}}{1} \frac{\textcircled{4}}{5}$$

which made arithmetic with it easier. We find the first decimal point in a book by Christopher Clavius (1538-1612) from 1593, here you can see a detail:



- ... that the notation π was probably used for the first time in the book *Synopsis Palmariorum Mathesos* (1706) (translation: *a new introduction to*

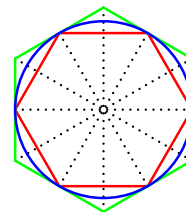
mathematics) by a certain William Jones (1675-1749)?

Take the Practice; as for Instance, in the Circle, the Diameter is to Circumference as 1 to

$$\frac{16}{3} - \frac{4}{239} - \frac{1}{3 \cdot 5^2} - \frac{4}{239^3} + \frac{1}{5 \cdot 5^5} - \frac{4}{239^5} - \dots = 3.14159, \&c. = \pi \dots$$

The great mathematician Leonhard Euler (1707-1783) was responsible for the popularization of the notation.

- ... that there is absolutely no periodicity to be found in the decimals of the number π ? And so there is no fraction with integer numerator and denominator that equals π ? (So 22/7 is just an approximation;-)
- ... that Archimedes already calculated approximations to π around 250 BC? He did this by constructing regular polygons (with an increasing number of sides) inscribed and circumscribed to a circle of radius one, and calculating half the circumference of these polygons.



$$\frac{223}{71} < \pi < \frac{22}{7}$$

These values give upper and lower bounds for the number π . That's why the number π is sometimes called *Archimedes' constant*. The approximation that Archimedes found was correct up to 2 decimal digits.

- ... the oldest exact formulas for the number π are: (1579) the Viète product formula

$$\frac{2}{\pi} = \sqrt{\frac{1}{2}} \cdot \sqrt{\frac{1}{2} + \frac{1}{2}} \cdot \sqrt{\frac{1}{2}} \cdot \sqrt{\frac{1}{2} + \frac{1}{2}} \cdot \sqrt{\frac{1}{2}} \cdot \sqrt{\frac{1}{2} + \frac{1}{2}} \cdot \sqrt{\frac{1}{2}} \cdot \dots$$

(around 1650) the Wallis-productformula

$$\frac{2}{\pi} = \frac{1 \cdot 3}{2 \cdot 2} \cdot \frac{3 \cdot 5}{4 \cdot 4} \cdot \frac{5 \cdot 7}{6 \cdot 6} \cdot \dots$$

(1655) Lord Brouncker's continued fraction

$$\frac{4}{\pi} = 1 + \frac{1^2}{2 + \frac{3^2}{2 + \frac{5^2}{2 + \frac{7^2}{2 + \dots}}}}$$

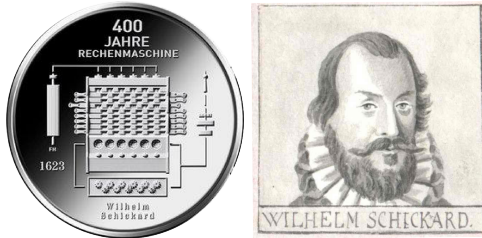
(around 1670) the Gregory-Leibniz series

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \dots$$

(This last one was already known around 1400 by the Indian mathematician Mādhava of Sangamagrāma.)

- ... that Ludolph Van Ceulen (1540-1610), a German mathematician, spent the bigger part of his life calculating digits of the number π by hand? Using Archimedes' method he was able to compute the first 35 decimals. This is why π is sometimes called the *Ludolphian number*.

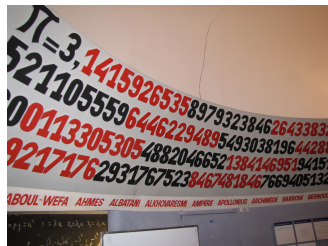
Why by hand? Because, of course, there were no calculating devices available at that time. The first (mechanical) calculating device dates from 1623, exactly 400 years ago this year:



- ... William Shanks (1812-1882), a British amateur-mathematician, did better? He wasted (?) 20 years of his life calculating the first 707 decimals (1853). He had a fixed daily routine: Calculating in the morning, checking in the afternoon. The formula he used was that of *John Machin (1686-1751)*:

$$\frac{\pi}{4} = 4 \cdot \text{Bgtg} \frac{1}{5} - \text{Bgtg} \frac{1}{239}$$

- ... the 707 decimal places calculated by Shanks were painted in 1937 on the ceiling of one of the rooms of the Palais de la Découverte in Paris?



- ... it was not until 1946 that it was discovered by D. F. Ferguson that William Shanks had made a mistake at the 527th decimal, and hence the rest of his calculations was also worthless? And that since those same decimals were painted on the ceiling of the Palais de la Découverte in Paris, something had to be done? They were painted over in 1950. The same Ferguson, by the way, was the first to calculate decimals of π using a mechanical calculator: 808 in 1947.
- ... at this moment 100, 000, 000, 000 decimals of the number π have been calculated? (With a computer, of course, and with much better formulas!) This record was set in 2022 by Emma Haruka Iwao. The calculation took the equivalent of 158 days.
- ... John Venn (1834-1923) in 1888 set out to show just how random the decimals of π are, by representing the digits 0-7 in the first 707 decimals in a graph (see front). Of course, he relied on Shanks' miscalculation! Note that this is the first graph of a

random walk in the history of mathematics.

- ... there's a constant denoted by ν ?

$$\nu = 10000000000006660000000000001$$

is Belphegor's prime number, a palindromic number divisible only by 1 and by itself. With 666 at its centre surrounded on both sides by 13 zeros. Misfortune guaranteed. (Thanks, Stijn!)

- ... the number

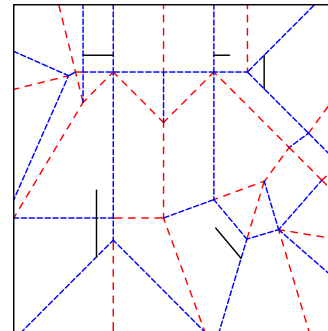
$$\frac{\ln(640\,320^3 + 744)}{\sqrt{163}}$$

(for not so obvious reasons) is equal to the number π to 30 decimal places?

- ... in the US state of Indiana, the value of the number π in 1897 was almost set *by law* at 3.2? This allows us to celebrate E. J. Goodwin day on March 2, after the US physician who proposed this bill. (Thanks, Ivan!)
- ... in Australia August 31 too is a special, π related day? On that day, they celebrate *π down under day*. ($\frac{1}{\pi} = 0.3183\dots$).
- ... you regularly come across the number π in unexpected places, for instance on this recent CD cover? Or on this Chinese bottle of Lemon Black Tea? (Thanks, Erwin!)



- ... you can cut out the number π with one straight cut?



First fold (red = valley fold, blue = mountain fold), then cut along the black line. (Todd Nelson – 2021)

- ... no one knows who the author is of this limerick?

*Said the man about town, 'I have a flair
For squaring the circle, I swear.'
But he found that the strain
Was too great for his brain,
So he's gone back to circling the square.*

- ... there will be a small exhibition at UAntwerpen at the end of this year commemorating the 400th birthday of Schickard's calculating machine?

INTERNATIONAL
CATEGORY
THEORY

CONFERENCE

CT2023
2-8 July 2023

UCLouvain, Louvain-la-Neuve, Belgium

INVITED SPEAKERS

George Janelidze, University of Cape Town

Steve Lack, Macquarie University

Vanessa Miemietz, University of East Anglia

Paolo Perrone, University of Oxford

Luca Reggion, University College London

Christina Vasilakopoulou, National Technical University of Athens

SCIENTIFIC COMMITTEE

Richard Garner, Macquarie University

Sandra Mantovani, University of Milan (Chair)

Jorge Picado, University of Coimbra

Emily Riehl, Johns Hopkins University

Giuseppe Rosolini, University of Genova

Walter Tholen, York University

Tim Van der Linden, Université catholique de Louvain

✉ ct2023-org@uclouvain.be

🖱 <https://sites.uclouvain.be/ct2023/>



GAME23

GEOMETRIC ALGEBRA MINI EVENT

19/20/21 APRIL 2023 - The Penta - Kortrijk - Belgium



**BREAK FREE FROM YOUR
INNER MATRIX, QUATERNION AND SPINOR!**

Introducing Geometric Algebra for robotics, graphics, physics, deep learning, mathematics & engineering.

19/4	10:00 → 11:00		Welcome & GA introduction
	11:00 → 12:00	Steven De Keninck Matrix factory	The first postulate Transformations for Games and Graphics.
	14:00 → 15:00	Joan Lasenby Cambridge Professor of Image and Signal Analysis	GA: Coming full circle Bending lines, conformal transformations and inverse kinematics.
20/4	15:00 → 16:00	Chris Doran Author GA4Physicists, Geometrics, Enlighten	GA: Level Up! Five tricks for high performance GA.
	10:00 → 11:00	Todd Ell Collins Aerospace	GA: the sky is the limit! Deploying GA in cooperate engineering environments.
	11:00 → 12:00	Martin Roelfs Flanders Make	Hidden in the fold Geometry, Cartan-Dieudonne, Mozzi-Chasles and the invariant decomposition.
21/4	14:00 → 15:00	Leo Dorst Author GA4CS, University of Amsterdam	Geometric Dynamics Throwing points, lines and planes around.
	15:00 → 16:30	Anthony Lasenby Cambridge Emiritus Professor of Astrophysics and Cosmology	GA & The fundamental forces A geometric tour de force!
	10:00 → 11:00	Johannes Brandsetter Microsoft Research	Geometric Clifford Algebra Networks Geometric Deep Learning with Cliffords' help.
	11:00 → 12:00	David Eelbode Antwerp University Professor of Mathematics	Rotors and Spinors Rotors and Spinors
	14:00 → 16:00	Steven De Keninck Matrix Factory	workshop : animating a spider A hands-on workshop on game animations. Chats and Drinks
	17:00		

**FREE
NO PREREQUISITES
AFTERPARTY!**

More Information at
[HTTPS://BIVECTOR.NET](https://bivector.net)



**ARE
YOU
GAME?**

VII INTERNATIONAL CONFERENCE ON FINITE
DIMENSIONAL INTEGRABLE SYSTEMS IN
GEOMETRY AND MATHEMATICAL PHYSICS

FDIS 2023

7-11 August 2023, University of Antwerp, Belgium

PLENARY SPEAKERS

Maxim Arnold (Dallas)
Victor Bangert (Freiburg)
Misha Bialy (Tel Aviv)
Alexey Bolsinov (Loughborough)
Gil Bor (CIMAT)
Robert Bryant* (Duke)
Annalisa Calini* (Charleston)
Alessandra Celletti (Rome)
Vladimir Dragovic (Dallas)
Andrew Hone (Kent)
Nikolay Martynchuk (Groningen)
Alfonso Sorrentino* (Rome)
Yuri Suris (Berlin)
Pierre Van Moerbeke (Louvain)
Cornelia Vizman (Timisoara)
Marco Zambon* (Leuven)

Application deadline for contributed talks, posters, and/or funded accommodation is **April 16th, 2023**.

fdis23.antwerp@gmail.com
www.uantwerpen.be/fdis2023

*to be confirmed

Organization committee: Misha Bialy (Tel Aviv), Sonja Hohloch (Antwerp), Vladimir Matveev (Jena), Sergei Tabachnikov (Penn State).

Local organization committee: Sonja Hohloch (Antwerp), Joseph Palmer (Antwerp & Urbana-Champaign), Aldo Witte (Antwerp).

Scientific committee: Misha Bialy (Tel Aviv), Alexey Bolsinov (Loughborough), Allan Fordy (Leeds), Boris Kruglikov (Tromsø), Andrzej Maciejewski (Zielona Gora), Álvaro Pelayo (Madrid), Vladimir Rubtsov (Angers), Dmitry Treschchev (Moscow).



University
of Antwerp



WEDNESDAY MARCH 29 2023

RECENT BREAKTHROUGHS IN MATHEMATICS

PALACE OF THE ACADEMIES

Auditorium Albert II

The **Belgian Mathematical Society** is happy to invite you to its "*Recent breakthroughs and GA*" symposium which will take place on the afternoon of **Wednesday March 29 2023**. This year the talks will focus on topics which were recently awarded the prestigious Fields medal. All talks will be accessible to large audiences of mathematicians.

Welcome and coffee from 13:00.

General Assembly (only for effective BMS members) at 13:00

- 13h40 : **Daniel DRIMBE** (KULeuven) BMS Young Scholar Award 2022
- 14h30 : **Cédric PILATTE** (University of Oxford) about the work of James Maynard
- 15h50 : **Botong WANG** (University of Wisconsin-Madison) about the work of June Huh
- 16h40 : **Ioan MANOLESCU** (University of Fribourg) about the work of Hugo Duminil-Copin

Closing ceremony (free for BMS members) from 17:30.

Register now on <http://bms.ulb.ac.be>

