

BELGIAN MATHEMATICAL SOCIETY

Comité National de Mathématique CNM $C \underset{N}{W} M$ NCW Nationaal Comité voor Wiskunde

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 **# 148**, May 15, 2024



By Andreas Weiermann

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Foreword by the president of the BMS

Dear members of the Belgian Mathematical Society,

Temperature is rising, summer is coming, so we're almost finished with teaching for yet another academic year. Before it is that far however, here's another Newsletter from the BMS, and in a little more than a week we also have a last BMS activity for 23-24: the next edition of our "PhD day". You find the program of this undoubtedly splendid event further in the newsletter or on our website. During this day, we also announce who will be awarded the first "Jacques Tits Chair". We hope you will enjoy all that, and after summer we'll be back with more!

Best wishes to all and see you in Antwerp on May 24 or at the other side of Summer. Joost.

1 News from the BMS & NCM

PhD Day 2024 of the Belgian Mathematical Society UAntwerpen Friday 24 May 2024

Welcome everybody! The next PhD day of the BMS will take place on 24 May 2024 at the University of Antwerp on Campus Middelheim in Building G ("Gebouw G"). The registration deadline was May 10, 2024. Here is a short overview of the program. More details and travel directions can be found on the webpage of the BMS PhD day 2024, see

https://bms.ulb.ac.be/conferences/phd-day-2024/

Schedule:

Welcome coffee and registration [entrance hall of building G].
Godeaux lecture by Mirna Džamonja (Paris) [auditorium G.010].
Questions & short break (i.e. no coffee break) [auditorium G.010].
Poster pitch talks (1 min per person, 1 slide) [auditorium G.010].
Poster session part 1 [entrance hall of building G].
Lunch break [entrance hall of building G].
Poster session part 2 [entrance hall of building G].
Parallel sessions of contributed talks by PhD students. Each parallel session
consists of 3 slots of 20min (= 17min talk plus 3min questions) [auditorium
G.010, lecture hall G.004, lecture hall G.006].
Coffee break (and jury decision for best poster award).
Parallel sessions of contributed talks by PhD students. Each parallel session
consists of 3 slots of 20min (= 17min talk plus 3min questions) [auditorium
G.010, lecture hall G.004, lecture hall G.006].
Talk by Sam Mattheus (VUB), the BMS Young Scholar Award winner 2023
[auditorium G.010].
Best poster award [auditorium G.010].
Pitch presentations by alumni [auditorium G.010].
Reception and possibility to discuss with alumni about experience in the

work field [entrance hall of building G].

1.1 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 31 (1) April 2024

- A Proof of Grilliot's Theorem Juan P. Aguilera, Ferre Vanden Kerchove DOI: 10.36045/j.bbms.221123a
- Small subsets of asymptotic resemblance spaces and their Higson corona **Shahab Kalantari** DOI: 10.36045/j.bbms.230408a
- Two infinite families of regular 3-polytopes of type 3,8*m* **Ting-Ting Kong, Dong-Dong Hou** DOI: 10.36045/j.bbms.230610
- Semidirect products of digroups and skew braces Alberto Facchini, Mara Pompili DOI: 10.36045/j.bbms.230825
- A study on positive solutions for evolution equation with delay in Banach space **Haide Gou** DOI: 10.36045/j.bbms.231002
- On the uniqueness problems of entire functions and their linear differential polynomials **Sujoy Majumder, Nabadwip Sarkar, Pradip Das** DOI: 10.36045/j.bbms.231009
- A characterization of cofinite local cohomology modules in a certain Serre class **Hajar Roshan-Shekalgourabi**, **Dawood Hassanzadeh-Lelekaami** DOI: 10.36045/j.bbms.231010
- Serre's Renorming Problem Albert Kubzdela DOI: 10.36045/j.bbms.231108
- Two Classes of Infinite Series through Contour Integration Jing Li, Wenchang Chu DOI: 10.36045/j.bbms.231115
- Mixed product of Hankel and Toeplitz operators on Fock-Sobolev spaces of negative orders **Chunxu Xu** DOI: 10.36045/j.bbms.240113

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

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

2.1 May 2024

49th Mathematical Olympiad (organised by SBPMef asbl)

18 May 2024 9:45am - 1pm, UCLouvain

The ceremony for announcing the winners of the 49th Mathematical Olympiad (organised by SBPMef asbl) will take place at UCLouvain on Saturday, May 18th from 9:45 am to 1 pm. The public lecture will be given by Pierre-Emmanuel Caprace.

More information on http://omb.sbpm.be/modules/news/article.php?storyid=212. (The BMS is one of the sponsors of this event.)

PhD Day 2024 of the Belgian Mathematical Society

24 May 2024 - UAntwerpen

See all information earlier in this newsletter and on https://bms.ulb.ac.be/conferences/phd-day-2024/

2.2 June 2024

Summer school "Nonlinear Quantum Graphs"

17-21 June 2024, Valenciennes, France

A summer school entitled "Nonlinear Quantum Graphs" will be held in Valenciennes, France, from June 17 to 21, 2024. Nonlinear quantum graphs are metric graphs, i.e. graphs whose edges are considered with a metric structure, endowed with a nonlinear Schrödinger equation. The aim of this school is to introduce participants to this subject. There will be four lectures on the following topics covering both theoretical and numerical aspects :

- S. Dovetta (Politecnico di Torino, Turin, Italy): Variational methods for nonlinear Schrödinger equations on metric graphs
- R. Goodman (New Jersey Institute of Technology, U. Heights, Newark, NJ, USA): A consistent numerical approach to quantum graph computations
- D. Mugnolo (FernUniversität in Hagen, Hagen, Germany): Spectral geometry of metric graphs and further branched spaces
- D. Noja (Università di Milano Bicocca, Milan, Italy): Time dependent NLS equation on metric graphs: Standing waves and their stability

The school is aimed at doctoral students and advanced students as well as researchers in PDE. More information can be found on the school page https://nqg.sciencesconf.org.

Scientific committee: Colette De Coster (UPHF, Valenciennes), Louis Jeanjean (Université de Franche-Comté, Besançon), Stefan Le Coz (Université Paul Sabatier, Toulouse)

Organizing committee: Colette De Coster, Damien Galant (UPHF, Valenciennes and UMONS, Mons, Belgium), Louis Jeanjean, Stefan Le Coz

Summer school on adaptive methods and a posteriori error estimation

24-27 June 2024, UHasselt

At Hasselt University (June 24-27, 2024) we are organizing a summer school on adaptive methods and a posteriori error estimation for the numerical approximation of the solutions to partial differential equations. Such techniques are essential to guarantee that, on one hand, the numerical approximation is accurate enough, and, on the other hand, the numerical method is efficient, limiting the computations to the minimum necessary.

All sessions will be hands-on, meaning that sufficient time for exercises, writing codes (using prepared templates in FreeFem++), and their discussion is planned. This will provide the participants with the necessary knowledge to apply these novel techniques to their own research projects.

Prerequisites: The summer school is open to participants having knowledge in partial differential equations, numerical methods and scientific computing, as they are taught to engineers and scientists.

Registration: Registration is free of charge but mandatory (until May 25, 2024). For any question, do not hesitate to contact Sorin Pop (sorin.pop@uhasselt.be).

More information can be found at https://www.uhasselt.be/en/doctoral-schools/academic-researchcompetences-course-offer/summer-school-on-adaptive-methods-and-a-posteriori-error-estimation

2.3 August 2024

Summer School "Direct and Inverse Problems with Applications, and Related Topics"

19-24 August 2024

https://analysis-pde.org/summer-school-direct-and-inverse-problems-with-applications-and-related-topics/

Brussels Summer School of Mathematics 2024

26-30 August 2024, ULB

The *Brussels Summer School in Mathematics* (or *BSSM*) is an event organized yearly at the end of August where diverse mathematical talks happen (algebra, analysis, differential geometry, topology, mathematical physics...).

This year the BSSM will be from August 26 to August 30. The talks are sometimes in French, sometimes in English and are given by both young researchers (PhD students and Postdocs) and by professors.

The goal is not to propose any formation about one theory or the other, but to discover a multitude of interesting mathematics. The presentations are accessible to bachelor students.

More informations are available on our Website and on our Facebook Page.

2.4 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

Cohen-Macaulay complexes and Bieri-Eckmann duality Richard Wade (Oxford) 11 June, 10 am, KU Leuven Kulak, Kortrijk (room A143)

See https://kulak.kuleuven.be/nl/onderzoek/Onderzoeksdomeinen/zuivere-wiskunde-en-wiskunde-onderwijs/en/seminar

Ghent Geometric Analysis Seminar

https://analysis-pde.org/seminars/ghent-on-geometric-analysis/

Ghent Methusalem Junior Seminar

https://analysis-pde.org/ghent-methusalem-junior-seminar/

Seminar of Analysis and PDE

https://analysis-pde.org/seminars/

Ghent Methusalem Colloquium

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

SPP seminar at ULB on 21 May 2024

On Tuesday the 21st of May at 16h30, the next edition of our monthly SPP (Students, Phd and Postdocs) seminar will take place in the Salle des Profs (NO9) at Campus de la Plaine, ULB. The goal of these seminars is that the department's PhD students and postdocs get to know each other's research a little bit, so the talks are accessible for a broad mathematical audience. On May 21 our speaker is **Matthieu Ménard**, he will speak about spectral theory for Schrödinger operators. After the seminar there is time to have an informal chat and eat some biscuits. Everybody is welcome! More info can be found on the website (https://phdsemin.ulb.be/).

3 PhD thesis

Stars and weightlessness in projective space

Sam Adriaensen Vrije Universiteit Brussel May 31, 2024, 16.30 Promotiezaal D.201

Thesis advisors: Prof. Dr. Philippe Cara and Prof. Dr. Jan De Beule

Summary:

What is finite geometry? Briefly stated, geometry is "calculation by drawing". Geometry gives us an intuitive framework to think about the algebra hiding behind the screens. In classical geometry, the underlying algebra are the real numbers (the set of decimal numbers). There exist however algebraic structures which share many properties with the real numbers, but which have only a finite number of elements. This gives rise to geometries with only a finite number of points, lines, et cetera. This is finite geometry.

Finite geometry has important links with other mathematical branches such as graph theory and coding theory. These links are explored in the thesis.

A *graph* models a network: you have a number of vertices and you decide for each pair of vertices whether or not they are connected. Geometries give rise to highly structured graphs. We can associate an algebraic object, called a matrix, to this. A detailed study of the algebraic properties of the matrix can yield valuable information about the underlying graph.

In the first part of the thesis, we use graph theory to study a geometric problem. Circle geometries are the geometries of points and plane sections of spheres, cones, and hyperboloids (think of cooling towers) in 3-dimensional space. We investigate how large a family of circles can be, which pairwise all share a point. We prove that large intersecting families have a trivial structure: there exists a point lying on all circles.

The second part of the thesis takes us to coding theory. This is the study of reliable communication over a noisy channel. Think about two computers sending ones and zeros to each other, but where along the way a 0 can change into a 1 or vice versa. We want to add some extra symbols to be able to correct errors. We want to correct many errors by adding few symbols. These are of course conflicting goals.

Interesting codes can be constructed from finite geometries. These codes exhibit a great deal of structure and symmetry and can be investigated using our extensive knowledge of the underlying geometry. To understand how far different codewords lie from each other, we need to study the codewords of low weight. Strong characterisations of low weight codewords are known for the codes from finite planes. In the thesis, this characterisation is extended to higher dimensions.

4 Job announcements

4.1 From KU Leuven

(BOFZAP) Research Professor in Stochastics: Financial math, Risk modeling or Stochastic processes.

4.2 From UHasselt

Position for an assistant in algebra, see all the information at the end of this newsletter.

4.3 From VUB

Part-time professorships in statistics and data science at the VUB department of Mathematics and Data Science

• two 10% positions to develop and teach MA courses in applied statistics and data science (deadline = June 2, we recommend candidates to apply for both positions):

https://jobs.vub.be/job/Elsene-Professor-Wiskunde-en-Data-Science/1065462101/

and

https://jobs.vub.be/job/Elsene-Professor-Wiskunde-en-Data-Science/1065466501/

• 10% position to teach 3BA course in mathematical statistics (which must be taught in Dutch, deadline = June 2):

https://jobs.vub.be/job/Elsene-Professor-Wiskunde-en-Data-Science/1065465201/

4.4 From ULB

Three full-time PhD positions, see all the information at the end of this newsletter.

5 News from the universities and other societies

5.1 Book series "Research Perspectives Ghent Analysis and PDE Center"

First books in the series "Research Perspectives Ghent Analysis and PDE Center" are published. It is a subseries within the esteemed book series "Trends in Mathematics" published by Birkhäuser/Springer. This series is dedicated to publishing extended abstracts of seminars, conferences, workshops, and other scientific events associated with the Ghent Analysis and PDE Center.

Book Details:

- Extended Abstracts MWCAPDE 2023: Methusalem Workshop on Classical Analysis and Partial Differential Equations Editors: Michael Ruzhansky and Berikbol Torebek;
- Extended Abstracts 2021/2022: Ghent Analysis and PDE Seminar Editors: Michael Ruzhansky and Karel Van Bockstal;
- Extended Abstracts 2021/2022: Methusalem Lectures Editors: Duván Cardona, Joel Restrepo, and Michael Ruzhansky.

5.2 Report of the excELLEnces event at ULB on April 26

On the 26th of April, the event "excELLEnces", an afternoon dedicated to women in science, took place at ULB. First, there were presentations of female scientists who are not widely known despite their remarkable accomplishments: Marie-Anne Pierrette Paulze, Chien-Shiung Wu and Jane Goodall. Next, three researchers from ULB (Karen Fontijn, Charlotte Nachtegael and Mélanie Bertelson) came to speak about their career paths and experiences as women in academia. The third part consisted of a panel discussion with Alice Nucci, Patricia Mélotte and Jessica Mulpas about possible barriers girls feel to pursue a science degree. The event was a great success with a diverse public ranging from secondary school pupils to bachelor students, assistants and professors.

The "excELLEnces" event was organised by a team of students and assistants: Anaïs, David, Guine-vere, Imane, Julie, Louise, Mohamed, Nehir and William.

Some photos :



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

6.1 Problem of the week

Ali Imad Raad (ali.imadraad@kuleuven.be) runs a "Problem of the week", see below instructions on how to be put on the mailing list to receive this weekly during the semester in your mailbox.

Problem of the Week

Chocolate Bar

Week 20 - 2024

To subscribe to the mailing list, send an email to listserv@ls.kuleuven.be with the message (in place of Your Name you put your actual name):

SUBSCRIBE ProblemOfTheWeek Your Name

Problem. A rectangular chocolate bar is made up of $m \times n$ pieces. Your aim is to break the chocolate bar into its individual squares. You may divide pieces horizontally or vertically along the grid lines that appear on the chocolate bar. Show that regardless of which method you use to divide, it will always take the same number of steps to finish the task.



6.2 Adhemar's corner

To start the summer well and have something to read until September, here follow two reviews by Adhemar. The first one is on some history of the IAS in Princeton from 1930 to about 1980 and the main characters that have visited, E. Regis' *Who got Einsteins's office*?. Then B. Butterworth describes how many cognitive tests illustrate that all living creatures have some sense of counting in *Can fish count*?.

Who Got Einstein's Office? Addison Wesley, 1987 & Basic Books, 1988 (336 p.), isbn: 978-0201122787. Wie zit er op Einstein's stoel?, Uitgeverij Contact, 1989 (319 p.) by *Ed Regis*.

Those who read these reviews regularly will know that I love to visit flee markets where I can occasionally find some long forgotten book that is not directly available in usual bookshops or websites. There I found the Dutch version of Ed Regis' book from 1987: Who got Einstein's Office? Eccentricity and Genius at the Institute for Advanced Study.



Ed Regis is a science writer and in this book he sketches the history of the *Institute for Advances Studies* (IAS) in Princeton founded in 1930 by Abraham Flexner with money from the couple Louis and Caroline Bamberger. The original idea was to attract the best scientists worldwide and let them investigate science for its own sake. With the climate in Europe in those days it triggered a brain drain of the best scientists, and Einstein was one of the first and the best known, who acted as a magnet for geniuses like Kurt Gödel, Hermann Weyl, John von Neumann, Robert Oppenheimer, and others. So we learn in this book about the way the institute evolved and how its inhabitants interacted, and to some extent their main achievements, i.e., what they were famous for, is explained in a readable form.



L. & C. Bamberger Fuld







Einstein & Oppenheimer H. Weyl

Einstein's and Gödel's work is known well enough and fits the original idea of the ISA. Fields Medal winner John Milnor, studied dynamical systems and visualisation as fractal images links with Mandelbrot, but the latter didn't seem to have the appropriate credentials to be accepted. Next came von Neumann. He was still considered a mathematician, but he introduced the idea of building a computing machine, which was considered too applied, and he was banned to the cellar of the institute, where he worked, in collaboration with nearby universities. But he also contributed to the Manhattan project (developing the atomic bomb), quantum mechanics, informatics, and several mathematical topics. He always dressed up with a tie and a suit.

When Oppenheimer (Oppie), the 'father of the atomic bomb', became director of the ISA after WW II, it was only after a vote, and that was not unanimous. Eventually the choice was between Oppenheimer and Wolfgang Pauli. Einstein and Weyl were asked to make an evaluation who preferred theory above experimental work, so, they proposed Pauli. But just like Feynman and Schwinger, Pauli did not accept a permanent position at the ASI and so Oppie became the top choice, and he brought a new wind to the institute. Not only bombs but also a laboratory, was considered to be too applied. Cosmology, astrophysics, particle and quantum physics entered the institute with colorful characters such as Freeman Dyson. Directors stayed in office about 10 years, but Oppenheim was director from 1947 to 1966.

Carl Kaysen was the successor of Oppenheimer as the director. He collected money to add new buildings on the campus of the institute. He however proposed a permanent position to Robert Bellah, a sociologist, which was unheard at the ISA and raised some mutiny of the mathematics faculty. The astrophysics faculty attracted Stephen Wolfram, whose divided interest was particle physics and cosmology. He started a study of cellular automata, which he considered to be systems that governed with a kind of self learning strategic rules could explain why and how the cosmos evolved as it did. He wanted to study complexity that emerged from simple rules. The Game of Life designed by John Conway in 1970, that at some time was immensely popular, is a well known example. Wolfram also designed, and commercialized a formula manipulating system (which we all know as Mathematica). Edward Witten was another genius that joined the ISA. As theoretical physicist he worked on string theory, quantum gravity, super symmetric quantum fields. He was the first physicist who won the Fields Medal in 1990.



K. Gödel



R. Oppenheimer









S. Wolfram

E. Witten

Besides all these individual characters and their idiosyncracies, the reader is also introduced to the theory that they developed. There is even an appendix with BASIC programs to generate a Mandelbrot set and a cellular automaton, originally written by Milnor. Of course, one is only informed up to the situation as it was during the mid 1980's when the book was written. Some of the story is told in the form of an interview that Regis had with some of the scientists and the world has drastically changed since then.

The last chapter is an epilogue which is a reflection on the sense and nonsense of having an institute like the IAS. If one is only appointed as a professor after winning a Nobel Prize, or Fields Medal or any other major recognition, then it is doubtful that such people will produce another equivalent result when they are paid to do just research during the whole day without any distraction. The IAS does not provide PhD's. It can still have some meaning if contact with invited young scientists is intense, so that the latter have time to prepare a PhD that they will obtain form another university. Another condition to make the institute successful is that administration and management is not the concern of the inhabitant scientists. Geniuses tend to have independent minds that do not easily submit to rules. The epilogue gives also a curious account about documents that were prepared about the history of the IAS but that were anxiously kept in a safe. A 800 pages document was prepared by Beatrice Stern who had access to the archives. She covered the period 1930-1950. However, it is locked away and Regis suggests it is because it could reveal too much of the disagreements between the members. For the 100th birthday of Einstein, a similar smaller scale project was started. W.G. Wing was appointed for that but when he arrived at the computer project of the IAS when the disagreement among IAS members raised to a peak, the project was stopped. So, Regis actually produced here, the first history book about the IAS.

The current IAS in Princeton has a permanent staff of 27 professors and many visiting scientists. The current director David Nirenberg is the successor of Robbert Dijkgraaf (2012-2022). The ideas of the IAS were imitated worldwide and one can now find IAS's, some local, some national, in many countries. Since 2020 also Leuven has its own Leuven Institute for Advanced Studies (LIAS).

Adhemar Bultheel

Can fish count? Brian Butterworth. Basic Books, 2022 (384 p.), isbn: 978-1541620810.

Somewhat related to the question: is mathematics real and do we discover it or is it an invention of the human mind, one may ask whether our brain is trained to deal with numbers and if so, where in the course of evolution did it start to develop. A possible answer is explored by Brian Butterworth, an emeritus professor of cognitive science. Therefore he collects information about how numbers are observed by different animals and how well they can deal with them and make elementary calculations.

First one has to understand what exactly is recognized. Can the subject recognize A = B, A > B, or even A + B = C? These operations can be understood by counting, but there seems to be some intuition when it concerns small numbers (less than 5) then the number pops up in our mind without counting, and that also happens with non-human animals. More generally, also for larger numbers, Weber's law says that A < B will be better recognized when |A - B|/B is larger: it is easier to distinguish between 5 and 10 kilo than it is between 9 and 10 kilo. However, the major problem with experiments is to set them up such that the proper test is performed. If 6 black dots are recognized as more than 3 black dots, is it the number of dots that are recognized and not the amount of blackness?

Butterworth then goes through a number of experiments that have been performed to investigate the numeracy that can be detected in humans, then in apes and monkeys, mammals, birds, amphibians and reptiles, fish and even insects.

It will not come as a surprise that human babies already have some intuitive sense of numbers. This can be trained to extraordinary performances, but dyscalculia exists, which is definitely dif-

ferent from low numeracy, while a minimum of numeracy is essential to be successful in life, certainly as we live in a world where we process a large amount of numbers every day. However also animals have to estimate numbers to survive: the size of prey that is safe to attack, estimate the number of predators to resist or not, birds navigate over continents, fish swim lager distances from foraging to breeding areas, spiders compare one large prey with two small ones, and honey bees communicate distances and directions.

Modern humans are different from other animals in that we have words for numbers and we have a system to denote numbers. That has been learned and is obviously not innate. Some isolated groups have been found that can barely count beyond 1-2-many. Thus some elements are innate. There is a whole section about the history of several number systems and the invention of the zero symbol. Anyway, the main advantage we humans have over other animals is speech and writing.

Lions do count, since attacking intruders depends on the ratio between the number of intruders they hear and the number they see in their own group. Of course the behaviour of animals in the wild and in the lab is very different. Rats for example can be trained in a lab to make simple additions. Note that the size of the brain is not a parameter. Whales have the largest brain, but birds with a much smaller brain are smarter, and it's not the brain body mass ratio either, because dolphins have a larger ratio than humans.

Birds with a tiny brain are champions in counting and even calculation. The parrot named Alex has reached a legendary status. The navigation capabilities of birds, fish, ants, and bees is remarkable. They may reach their target along different paths, for example when the previous route has been blocked. But even amphibians and reptiles count. A female frog responds better to a male that can produce a larger number of mating calls, which they prefer to produce in larger groups since calls attract predators. Cicada have a life cycle corresponding to a prime number of years by counting seasonal changes. Cuttlefish can distinct (small) numbers, even beyond Weber's law.

This is not a book about mathematics, and the only formula it contains is clearly wrong: $a^2 + b^2 = (a+b)(a-b) + b^2$. This research helps to understand how the brain deals with numerosity, and therefore this research may also help to find better ways to teach mathematics. Adhemar Bultheel



13



UHASSE

Vacature

De Universiteit Hasselt draagt bij tot de ontwikkeling van de kenniseconomie in de (Eu)regio. Actief onderwijs op maat van de student, toponderzoek in welomlijnde domeinen en een internationale oriëntatie zijn haar kenmerken. Dank zij haar kleinschaligheid bouwt zij met haar medewerkers aan een organisatie waar het aangenaam werken is. Kwaliteiten bij mensen zijn de enige maatstaf. Geslacht, etnische afkomst, handicap, nationaliteit, leeftijd worden niet in overweging genomen.

••

De faculteit Wetenschappen, vakgroep Wiskunde en statistiek, Universiteit Hasselt zoekt een (m/v)

assistent Algebra

Achtergrond

Als assistent ben je betrokken in het onderwijs van verschillende faculteiten van de UHasselt. Daarnaast bereid je een doctoraat voor in de Wiskunde aan de Universiteit Hasselt. Je maakt deel uit van de vakgroep wiskunde en statistiek.

Onderwijsopdracht

Je maakt deel uit van de onderwijsteams van opleidingsonderdelen verzorgd door de vakgroep wiskunde en statistiek. Het exacte onderwijspakket wordt jaarlijks vastgelegd in samenspraak binnen de vakgroep wiskunde en statistiek. Het onderwijs kan plaatsvinden in de bacheloropleidingen in de faculteit wetenschappen en/of andere faculteiten zoals de faculteit bedrijfseconomische wetenschappen.

Onderzoeksopdracht

Als assistent bereid je een doctoraat voor in de onderzoeksgroep Algebra. Meer informatie is te vinden onder: https://www.uhasselt.be/nl/onderzoeksinstituten-centra-en-groepen/detail/38-algebra Het specifieke thema van het doctoraatsonderzoek wordt gekozen in overleg met de kandidaat.

Profiel

- Je behaalde een master in wiskunde (of gelijkwaardig).
- Laatstejaarsstudenten worden eveneens aangemoedigd om zich kandidaat te stellen.
- Je houdt van lesgeven en kan studenten enthousiasmeren.
- Je bent vlot in schriftelijke en mondelinge communicatie, zowel in het Nederlands als het Engels.
- Je bent in staat om projectresultaten helder te presenteren en te rapporteren.
- Je hebt onderzoeksinteresse in Algebra.
- Je bent collegiaal en je kan goed in teamverband werken

Aanbod

Je wordt aangesteld als <u>assistent</u>. Aanstelling van $3 \ge 2$ jaar na positieve evaluatie

Selectieprocedure

Je kan enkel online solliciteren en dit tot en met 26 juni 2024.

Meer info

Prof. dr. Yinhuo ZHANG, +32-11-268249, <u>yinhuo.zhanq@uhasselt.be</u> Prof.dr. Sorin POP, +32-11-268581, sorin.pop@uhasselt.be Prof. dr. Inneke VAN NIEUWENHUYSE, +32-11-269119, inneke.vannieuwenhuyse@uhasselt.be Meer weten over werken aan de UHasselt? Kijk op <u>www.uhasselt.be/jobs</u> voor onder meer onze <u>personeelsvoordelen</u>. UNIVERSITÉ LIBRE DE BRUXELLES



TROIS POSTES D'ASSISTANT·E TEMPS PLEIN EN MATHÉMATIQUE

FACULTÉ DES SCIENCES

Référence : 2024/S247 Date limite du dépôt des candidatures : 01/06/2024 Date d'entrée en fonction prévue le : 01/10/2024

Descriptif du poste

Ce poste est destiné aux candidat.e.s désirant effectuer un doctorat en sciences mathématiques. Les activités d'un.e assistant.e se répartissent entre la recherche, l'enseignement et les services à la collectivité.

Les activités de recherche sont principalement consacrées à la réalisation d'une thèse de doctorat dans un des domaines de recherche du Département de Mathématique. Le/la candidat.e doit avoir pris un contact préalable dans ce sens avec l'un.e des Professeur.e.s du Département.

Les activités consacrées à l'enseignement concernent l'encadrement de séances d'exercices et des projets pour des cours divers dans le domaine des mathématiques (maximum 300 h/an) et d'autres tâches pédagogiques telles l'élaboration, la surveillance et la correction d'examens ...

Occasionnellement l'assistant.e participe à des activités de service à la collectivité (par ex. participation aux instances participatives, aux salons étudiants, aux activités de diffusion, etc.).

Le poste d'assistant.e fournit une riche expérience dans le domaine de l'enseignement supérieur, et constitue également un accès privilégié au doctorat. Les conditions salariales sont compétitives.

Titre requis

Titulaire d'un Master 120 crédits en Sciences mathématiques, en Statistique, en Sciences Actuarielles, ou titre reconnu équivalent et satisfaire aux conditions d'accès au doctorat.

Les assistant.e.s doivent poursuivre des recherches en vue de l'obtention d'un doctorat. Les candidatures de personnes étant déjà titulaires d'un doctorat ne seront par conséquent pas examinées.

Compétences requises

- Haut niveau scientifique en mathématiques.
- Excellentes qualités pédagogiques.
- Bonne capacité d'intégration au sein de l'équipe d'enseignants.
- Excellent niveau en français, bases en anglais

Enseignements à encadrer

Exercices et travaux personnels, y compris l'élaboration, la surveillance et la correction d'examens (et autres travaux), de mathématique de 1er et 2ème cycle.

Intéressé·e ?

Des renseignements complémentaires peuvent être obtenus auprès de Thomas VERDEBOUT (<u>thomas.verdebout@ulb.be</u>).

Le dossier de candidature doit être transmis sous format électronique, via l'envoi d'un mail unique adressé au Rectorat de l'Université libre de Bruxelles (à l'adresse <u>rectrice@ulb.be</u>) et au Décanat de la Faculté à l'adresse suivante : <u>Aff.acad.sciences@ulb.be</u>.

Il contiendra les pièces suivantes :

- une lettre de motivation ;
- un Curriculum vitae :
- si vous le souhaitez un formulaire type peut être complété via le site internet : <u>https://www.ulb.be/fr/documents-officiels/completer-votre-cv-en-ligne</u>. Une fois complété, celui-ci doit être téléchargé et joint au dossier de candidature.
- une description du projet de thèse (4 pages maximum) ;
- le nom du/de la Professeur.e contacté.e au sein du Département ;
- deux lettres de référence dont une du/de la Professeur.e du Département.

Politique d'égalité des chances

La politique de gestion du personnel de l'ULB est axée sur la diversité et l'égalité des chances.

Nous recrutons les candidates en fonction de leurs compétences, indépendamment de leur âge, leur genre, leur orientation sexuelle, leur origine, leur nationalité, leurs convictions, leur handicap, etc.

Vous souhaitez bénéficier d'aménagements raisonnables dans le cadre de la procédure de sélection en raison d'un handicap, d'un trouble ou d'une maladie ? N'hésitez pas à prendre contact avec Marie Botty (<u>marie.botty@ulb.be</u>) notre personne de contact en charge des aspects de diversité pour le personnel enseignant et scientifique. Soyez assuré·e de la confidentialité de cette information.

Plus de détails sur les politiques de genre et de diversité sont disponibles sur <u>https://www.ulb.be/fr/l-ulb-s-engage/diversites</u>.

Vous trouverez l'ensemble des dispositions relatives aux carrières du corps scientifique sur notre site à l'adresse <u>http://www.ulb.ac.be/emploi/academique.html</u>.