



# Newsletter

BELGIAN MATHEMATICAL  
SOCIETY

# 110, November 15, 2016

Comité National de Mathématique CNM

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NCW Nationaal Comité voor Wiskunde

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

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## Welcome to the November edition of the BMS-NCM Newsletter!

Dear BMS member,

The rainy days of Autumn give us the opportunity to stay inside, get cosy, read and think mathematics... The period between this and our previous newsletter also coincides with busy times for most of us because of the start of a new academic year. This could explain why this newsletter contains a bit less announcements than usual. Let me remind you that our next newsletter is due on January 15th 2017 and that *your* news or announcement is very welcome (before January 10th). You can send all information to our newsletter editor: Françoise Bastin <[F.Bastin@ulg.ac.be](mailto:F.Bastin@ulg.ac.be)>.

On the side of the Society we have mainly been working on the organisation of the joint conference with the maths teacher's associations: the [Vlaamse Vereniging voor Wiskundeleraars](#) (VVWL) and the [Société Belge des Professeurs de Mathématique d'expression française](#) (SBPMef). This BMS event will take place on 25, 26 and 27 May 2017 (this is the "long weekend" of the Ascension) and tries to revive to good relationship between mathematics teachers of all highschool levels and academic mathematicians. Now more than ever before there is a great shortage of mathematics teachers and mathematicians in general. This is a direct consequence of the low number of students enrolling in a mathematics curriculum at university and we would very much like to understand why this is the case. We think that not only universities but also teachers and all other mathematicians should try to bring a better perception of mathematics to pupils and society. That is why we decided to organise a joint conference with the teachers. It is the perfect occasion to meet old friends and to strengthen contacts with colleagues.

This three-day conference will have a variety of activities where each day is organised by one of the three societies. The general program of a day will contain two plenary lectures in the morning, workshops in the afternoon and a late afternoon activity. To encourage everyone to participate we have decided that the conference will be held in 3 languages: French, Dutch and English. Each day will have its main language. On the BMS day (Friday May 26th) we will invite the universities to present their activities aimed at highschool teachers and pupils in order to attract more students. This will be both informative for us and for the highschool teachers. In the late afternoon we will organise a round table discussion around the factors that influence pupils in their choice of higher studies and what maths teachers and universities can improve.

The collaboration with the teacher's associations is very fruitful and we hope to be able to announce the conference officially very soon. The only obstacle remaining is that we have unexpectedly lost the option we had on a venue for the conference. We are still (urgently) looking for a nice and easy to reach place in Brussels to organise this event. Some of the usual places (like the Palace of the Academies) are closed because of the Ascension holidays. Any suggestion or help will be welcomed with great enthusiasm!

I hope you will all enjoy the end of the year, do lots of mathematics and have plenty of announcements and news for our next newsletter.

Philippe Cara,  
president of the BMS

# 1 Meetings, Conferences, Lectures

## 1.1 November 2016

*Mathematics Colloquium: Games on Partitions: The Bulgarian Solitaire  
by Vesselin Drensky*

*Friday, November 18 at 4:00pm in UGent Sterre building S3, Leszaal Benoit Emile Clapeyron*

**Abstract:** The (quite amusing) story presented in the talk is an example of this how an elementary mathematical game can inspire serious mathematical investigations in combinatorics, graph theory, discrete dynamical systems, cellular automata, linear algebra, statistics, and economic models. The topic has the advantage that most of the problems can be stated in a form which attracts young people to mathematical research.

The main object of the talk is the Bulgarian solitaire. This is a mathematical card game played by one person. A pack of  $n$  cards is divided into several decks (or "piles"). Each move consists of removing of one card from each deck and collecting the removed cards to form a new deck. The game ends when the same position occurs twice. It has turned out that when  $n = k(k+1)/2$  is a triangular number, the game reaches the same stable configuration with size of the piles  $1, 2, \dots, k$ . The problem was brought to Bulgaria from Russia in 1980 and then was spread to the world. The first solutions appeared in 1981 in Bulgarian and Russian. The name was given by Henrik Eriksson and then popularized by Martin Gardner.

In the language of partitions, each division of the pack of  $n$  cards into decks corresponds to a partition of  $n$ . The set  $P(n)$  of all partitions of  $n$  is considered as a discrete dynamical system. Starting with a partition, each move of the Bulgarian solitaire plays the role of the updating function of the system. The main problem is, starting with a partition (the initial state), to determine the state that the system reaches after some time interval  $t$ . The study of the system involves methods from combinatorics, graph theory, linear algebra, statistics, etc.

The Bulgarian solitaire has several "younger brothers," e.g., the Austrian, Carolina, and Montreal solitaires, the Red-green, Three-dimensional, Dual, and Multiplayer Bulgarian solitaires, Stochastic Bulgarian solitaires.

See also <http://www.wiskunde.ugent.be/kalender/>

*Lecture by Jean MAWHIN*

*UCL, Thursday November 24, 2016*

J. Mawhin donnera une conférence à l'UCL à l'occasion du 150e anniversaire de la naissance de Ch.-J. de La Vallée Poussin

See the poster at the end of this Newsletter.

## 1.2 January 2017

### *Model theory and applications*

*Mons, January 16th - 19th, 2017*

This workshop will be dedicated to model theory and its applications to algebra and other branches of mathematics. It will be the opportunity to review some lines of the subject as well as to focus on its recent developments. The panel of invited speakers reflects the large diversity of applications.

Early registration and submission of contributed talk and poster– until November 30th: More details on the website of the workshop

<http://www.mathconf.org/mta2017>

### Speakers and lectures

- Luc Bélair (Montréal), The logic of decimals.
- Alexis Bès (Paris-Créteil), Logic, automata and numeration systems.
- Zoé Chatzidakis (ENS Paris), Model theory of difference fields and applications to problems in diophantine geometry.
- Raf Cluckers (CNRS, Lille, KU Leuven), A tameness notion for definable sets in valued fields.
- Paola D'Aquino (Caserta, Napoli2), TBA
- Arthur Forey (ENS Paris), TBA
- Andrew M.W. Glass (Cambridge), The model theory of  $n$ -permutation groups (joint work with John S. Wilson).
- Immanuel Halupczok (Düsseldorf), TBA
- Jonathan Kirby (East-Anglia), Exponential-algebraic closedness.
- Angus Macintyre (Queen Mary, University of London), Model Theory of Local Rings and Related Structures.
- Nathanaël Mariaule (Mons), Some remarks about the field of  $p$ -adics expanded by a multiplicative subgroup.
- Dugald Macpherson (Leeds), Definable simple groups in valued fields.
- Michel Rigo (Liège), Is Büchi's theorem useful for you?
- Katrin Tent (Münster), Profinite NIP groups.
- Frank Wagner (Lyon), Almost invariant families (joint work with Itai Ben Yaacov).

This conference is organized with the support of FRS-FNRS, CNRL, ASL & UMONS (Complexys)

### 1.3 May 2017

Save the date!

*Joint VVWL–SBPMef–BMS congress  
Brussels, May 25–27, 2017*

In May next year we plan a joint conference with the two main teacher's associations in Belgium: the [Vlaamse Vereniging voor Wiskundeleraars](#) (VVWL) and the [Société Belge des Professeurs de Mathématique d'expression française](#) (SBPMef). The conference is aimed at highschool mathematics teachers and other professional mathematicians who care about mathematics education.

### 1.4 August 2017

*11th International Conference on Clifford Algebras and Their Applications in Mathematical Physics*

**Date:** 07.08.2017 – 11.08.2017 – **Venue:** Ghent University, Faculty of Engineering and Architecture, Jozef Plateaustraat 22, B-9000, Gent, Belgium

**Main organizer:** Hennie De Schepper – **Info:** <http://www.icca11.ugent.be> – **Contact:** <[icca11@ugent.be](mailto:icca11@ugent.be)>

## 2 Job announcements

### 2.1 From ULB

**A full time academic position at ULB!** See informations at the address

<http://www.dev.ulb.ac.be/greffe/files/5403.pdf>

Deadline for application is February 20th, 2017.

## 3 PhD theses

No thesis announcements this time.

Will you defend your PhD soon? Do you have a student who is about to obtain his PhD? **Grab the opportunity to announce it in our Newsletter!**

Next Newsletter will appear on January 15. The deadline for contributions is January 10. Contact Françoise Bastin <[F.Bastin@ulg.ac.be](mailto:F.Bastin@ulg.ac.be)> with title, abstract and defence date/place.

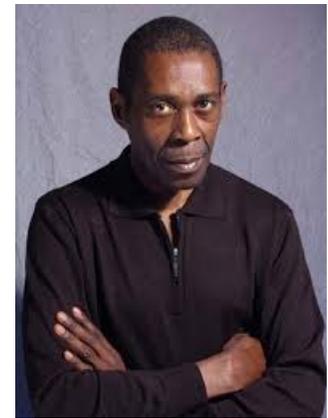
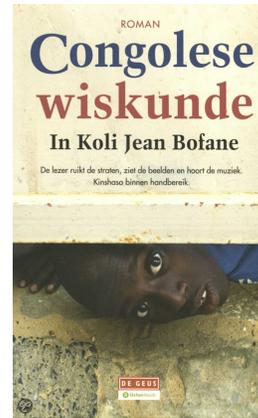
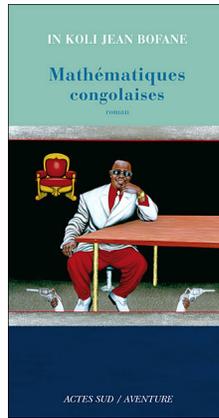
## 4 History, maths and art, fiction, jokes, quotations ...

To read during long... Winter evenings and ... anytime!!, please find here some reviews from Adhemar Bultheel.

**Mathématiques Congolaises** Actes Sud, 2008, ISBN 978-2-7427-7457-9, 320 pp.

**Congolese Wiskunde** *In Koli* Jean Bofane De Geus, 2013, ISBN 978-9-0445-1617-3, 320 pp.

This is a novel of the Congolese war orphan In Koli Jean Bofane who now lives in Brussels. The history is playing in Kinshasa where a young man Célio Matemona, who, because of his love for the introductory booklet of mathematics that he almost knows by heart is called Célio Mathématik. Tshilombo is the head of a military department of information, working for the



In Koli Jean Bofane

president. Instead of gathering information, they rather organize things such that this allows them to spread the information they want in favor of the president. For example, he lets his assistant Bamba Togbia organize a pro-presidential demonstration, but opens fire on the hired ‘protesters’ to demonize the opposition party, and one of Célio’s friends gets killed.

One day, Tshilombo, impressed by Célio’s wit and his agile use of mathematical terms, hires him to work for his department. One of his successful missions is to organize a spying scandal, which is explained as a preparation for a French invasion. Thus just to put France in a bad light, and an innocent French citizen coming to work for his company in Congo is the victim.

Bamba who is tired of his job is dreaming of retirement in his village with his family. To this end, he consults a sorcerer, who asks him to bring something personal from a dear one and a black rooster. Something personal stands for the soul and the rooster for the life of somebody. He gives a primitive toothbrush stolen from the sorcerer, and when the sorcerer dies, Bamba is so afraid of the curse that he dares not to sleep during the night, and is fighting to stay awake as much as possible during day time.

When Tshilombo organizes a fake coup where a video message that he has prepared is broadcasted by national television. The video shows the leader of the opposition who allegedly has invaded and gives a direct speech from there. Bamba who has organized everything is promised a big amount of money for his discretion, but of course he is killed and the fake coup is foiled. However Bamba had foreseen something and leaves a diary disclosing all the wicked games played by Tshilombo, and these are found by Célio who leaks the info to several journals. In the epilogue, the first Congolese democratic elections are prepared (which actually took place in 2006).

One main theme is to illustrate how difficult it is to keep your integrity when you are hungry. Both government and opposition are as corrupt as can be and reflects the situation of around 1997. Célio lost his family during the 1977 war and is fostered and educated by a Belgian Father Lolos. His love for mathematics is stimulated by a mathematics book for secondary school that belonged to his father. This is also the reason why he thinks in mathematical analogies and he uses mathematical terms when he proposes strategies to Tshilombo. This is enough for his environment to consider him as an intellectual.

So all in all there is little mathematics in this book. However to have a math-loving hero in a novel is rather exceptional. The mathematical analogues he uses in his discussions remain on an elementary level and are for the sake of the theme of the book, without being essential or functional. The titles of the chapters also refer to some mathematical term. Of course the logic and the rules of mathematics also refer to an integer and non-corruptible system, as opposed to the society in which Célio has to grow up.

A. Bultheel

**This Idea Must Die: Scientific theories that are blocking progress** John Brockman (ed.). Harper Perennial, 2015, ISBN 978-0062374349 (pbk), 592 pp.

John Brockman is a science author and founder of the *Edge Foundation*<sup>1</sup>. This organization tries to bring together a broad selection of scientists who work at the edge of their domain. In particular those belonging to the ‘third culture’. That are those that try to bring together again the ‘sciences’ and the ‘humanities’ which P.C. Snow defined in 1959 as the two diverging cultures in Western civilization. So also non-science authors are included in this project.

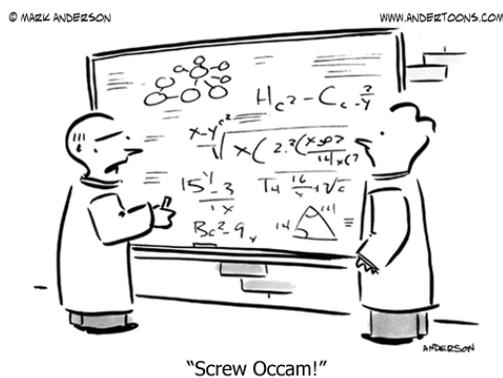


John Brockman

Every year since 2005 Brockman proposes a broad science question and collects the vision of a large number of authors that are published as a book. Some examples of previous questions: *What do you believe is true even though you cannot prove it?* (2005), *How is the internet changing the way you think?* (2010), *What should we be worried about?* (2011), and in 2014 *What scientific idea is ready for retirement?*. The harvest of answers to the latter are collected in this book.

The book contains more than 150 short answers with their argumentation. The collection is very broad, from cosmology, to brain science to psychology, to computer science, to biology and sociology, or whatever field you might think of, and you probably have your own answer that is not even there. If you look at the ideas that are ready to get rid of, then it is as if almost anything is ready for the waste bin. The arguments are somewhat more subtle and they might even raise the feeling ‘Well if you look at it this way, then perhaps...’.

Max Planck once claimed that progress is only possible one funeral at a time. New ideas get only accepted by a new generation, when representatives of the old vision literally die. Even this idea is one that should die according to some of the contributors. Once good arguments are given, then new ideas get quickly accepted. And we should also drop the principle of Occam’s razor. The simplest possible explanation is not always the proper one. It may help to accept a heliocentric theory over a geocentric one, but reality is not always simple. The parabolic trajectory of a thrown object is simple and beautiful, but a falling leaf is subject to much more complicated physics. Hence drop simplicity. Some ideas come up repeatedly like the theory of everything and the grand unification theory. The Big Bang theory should be abandoned. There is not just one universe, and it did not start with lowest possible entropy, anyway the importance of the second law of thermodynamics and the prominent role of spacetime in general relativity theory should be relaxed as well.



I will not go through all of the contributions, but select some that might be of interest to mathematicians.

*Allocating funds via peer review:* This is just a waste of time. Long term research is unpredictable anyway. Just give money to postdocs who do not need to submit a project and evaluate after a period based on publications and citations resulting from their research.

*Infinity.* Max Tegmark<sup>2</sup> proposes to drop the notion of infinity. Everything is essentially discrete

<sup>1</sup>edge.org

<sup>2</sup>Max Tegmark, *Our mathematical universe*, reviewed in this newsletter, issue 98, May 2014.

which removes the necessity to talk about the infinitely large and the infinitely small, thus we should also drop the notion of continuity.

*Cause and effect:* We like to think one-way where some phenomenon is the cause and another is the effect, but when the output influences the input, it is not clear what is cause and what is effect.

*Things are either true or false:* What is true and what is not depends on the framework. What is true today may not be true tomorrow.

*Multiple regression as a means of discovering causality:* A correlation between the use of olive oil and mortality, does not imply that you will live longer by consuming olive oil.

*The uncertainty principle:* Heisenberg used *Unschärferelation* which is wrongly translated as uncertainty relation.

*Big data:* This is the hype of the moment. Science is not big data, and not all the effort and all the funding should go to big data projects.

*Science is self-correcting:* Some ideas are misunderstood or wrongly translated and become urban legends. And these are very hard to be removed, even though there is often ample evidence against them.

*The way we produce and advance science:* Sometimes the cost for a scientific result (e.g. the search for the Higgs boson) is beyond proportion, and in domains where there is a hard competition, researchers may be forced to slavery, working day and night to get some result ready in time.

*Geometry:* We can still use geometry, but geometry is no longer the description of physical space. Quantum geometry is not much of geometry any more.

*Calculus:* The role of calculus in our education system should be reduced to make place for discrete mathematics, and undergraduate computer science.

*Computer science:* This has evolved into an abstract digital world, totally disconnected from the physical machines on which the software should run. Time to introduce physical units into computer science.

*Statistical significance:* Medical or physical papers get published to prove something by experiments that are ‘statistically significant’, i.e., random effects are excluded with high probability. However, in most cases it is not the random effect, but some careless set-up of the experiment or some misinterpretation of the researcher, or just some plain error that gives a wrong result that passes the statistical significance test perfectly. The same abuse of statistics happens in social sciences that embrace more and more the numerical approach.

*Average:* The averages of a property taken over groups are used to compare the groups, but the variance may be much more important.

*Standard deviation:* This notion should be left to mathematicians and physicists, and should be replaced by mean deviation, i.e., not summing the squares of the deviation from average (root mean square), but sum the absolute values ( $\ell_1$  instead of  $\ell_2$ ), which is much more relevant.

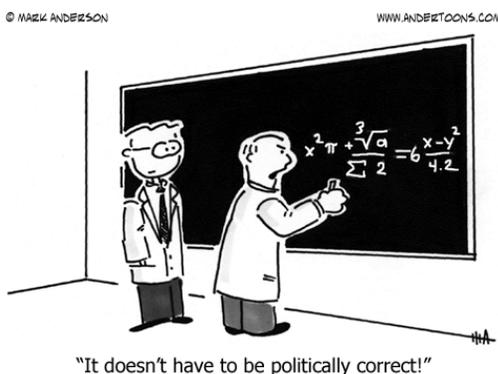
*Statistical independence:* The whole world is interconnected by gravity alone, yet most statistical analysis relies on independent variables.

Let me emphasize that this selection is not made because they represent my own vision. It is only a small selection in which I tried to formulate a brief approximation. For more details you should read the book.

The penultimate contribution in the book is by R.S. Wurman, the founder of the TED conference:

*Certainty, absolute truth, exactitude:* None of these can be absolute and they only block the launching of new ideas.

A. Bultheel





Charles-Jean  
de La Vallée Poussin  
**LES MATHÉMATIQUES**  
une passion **pérenne**

le 24|11|2016 à l'occasion  
du **150<sup>e</sup> anniversaire** de la naissance  
du Baron Charles-Jean de La Vallée Poussin.

**Conférence du Professeur Jean Mawhin,**  
membre de l'Académie royale des sciences,  
des lettres et des beaux-arts de Belgique,  
professeur émérite de l'Université catholique de Louvain

**INSCRIPTION requise**  
pour le 14 novembre 2016 au plus tard  
<http://agenda.irmp.ucl.ac.be/event/delavalleepoussin2016>

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