BELGIAN MATHEMATICAL
SOCIETY

BMS-NCM NEWS: the Newsletter of the Belgian Mathematical Society and the National Committee for Mathematics

BMS-NCM NEWS
—
No 72, March 15, 2009

Letter from the editor

<div align="center">

Welcome

to the March 15, 2009- Issue of our Newsletter

Happy sunny "almost spring" week-end !

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Regards, Françoise

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Contents

1   News from the BMS

<div align="center">

Did you pay your membership dues for 2009?

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You can now check online whether we have received your payment. Just go to our website at the address http://bms.ulb.ac.be and click on "Database" in the header menu on top of the page. You then get a small search box where you can type your surname and hit the "Submit query" box.

You then get an answer like "**John Doe** is indeed a **2009** member of our Society!". The **2009** in this answer means that John Doe has paid his dues for 2009.

If you get **2008** or an even lower number, you should pay your dues as soon as possible. Our bank account number is 000-0641030-54 (or IBAN: BE 42 0000 6410 3054 / BIC : BPOTBEB1) and the membership fee for 2009 is 20 EUR (or 43 EUR for a combined BMS+EMS membership).

More information about membership fees and reciprocity agreements can be found on http://bms.ulb.ac.be/membership/reciproc.php

Remarks: This database query only works if you agreed on making your membership status public. The query feature only searches on family names.

2   Meetings, Conferences, Lectures

2.1   April 2009

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Mathematical Education

April 22, 2009, Academy

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On Wednesday April 22 the National Committee of Mathematics organizes two conferences on "Mathematical Education", delivered by the president and the vice-president of ICMI. An announcemnt of this meeting, organized at the Academy, can be found at the end of this Newsletter.

2.2   May 2009

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FNRS Ecole Doctorale Thématique Mathématique

May 6-7, 2009, UMH

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Professor

<div align="center">

Richard ARON

Kent State University, USA

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will visit Analysis Team from the UMH. Please see the announcement of the lectures at the end of this newsletter.

For more details: contact Catherine Finet (Catherine.Finet@umh.ac.be)

2.3   June 2009

<div align="center">

FNRS Functional Analysis Group

June 4-5, 2009, Esneux (domaine du Rond-Chêne)

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The following speakers have already confirmed their participation (alphabetical order):

- J. BONET (U. Pol. Valencia)

- M. CLAUSEL (U. Paris XII)

- A. DURAND (U. Paris Sud)

- S. GRIVAUX (U. Lille)

- P. SEVILLA-PERIS (U. Pol. Valencia)

- Z.A. WEGNER (U. Paderborn)

The meeting will start on Thursday June 4, at 13:00, for lunch. It will end on Friday June 5, after lunch.

More details in next Newsletter. Contact: F.Bastin@ulg.ac.be

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ULg, June 2009
CANT'09 and AutoMathA

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- 1-5 June 2009:   CANT'09, International school on Combinatorics, Automata and Number Theory.

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http://www.cant.ulg.ac.be/cant2009/index.html

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- 8-12 June 2009: International Conference, AutoMathA : from Mathematics to Applications.

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http://www.cant.ulg.ac.be/automatha/index.html

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2.4   July 2009

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26th Journées Arithmétiques

July 6-10, 2009 in Saint-Etienne, France

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See the page http://ja2009.univ-st-etienne.fr/
Early registration: February, 1, to April, 30, 2009

Plenary Speakers:
Matthew Baker (Georgia Institute of Technology, Atlanta)
Laurent Berger (École Normale Supérieure de Lyon)
Yann Bugeaud (Université de Strasbourg)
Alain Connes (Collège de France, Paris)

Jean-Marie De Koninck (Université Laval, Québec)
Manfred Einsiedler (Ohio State University, Colombus)
Jerzy Kaczorowski (Adam Mickiewicz University, Poznan)
Laurent Lafforgue (Institut des Hautes Études Scientifiques, Paris)
Jeffrey C. Lagarias (University of Michigan, Ann Arbor)
Joseph H. Silverman (Brown University, Providence)
Michael Stoll (Universität Bayreuth)
Jean-Pierre Wintenberger (Université de Strasbourg)

Scientific committee:
Shigeki Akiyama (Université de Niigata, Japon)
Francesco Amoroso (Université de Caen, France)
Kevin Buzzard (Imperial College London, Royaume Uni)
Brian Conrad, (Stanford, USA)
Katia Consani, (Johns Hopkins, USA)
Pierre Liardet, (Université de Provence, France) [Chair]
Richard Pink, (ETH Zürich, Suisse)
Paula Tretkoff (née Cohen), (Texas A&M, USA)
Jerzy Urbanowicz, (IMPAN, Pologne)
Gerard Van der Geer, (Université d'Amsterdam, Hollande)

Organizing Committee:
D. Essouabri, F. Foucault, G. Grekos, F. Hennecart, F. Pellarin, O. Robert

Email: ja2009@univ-st-etienne.fr

2.5 September 2009

Workshop in Nonlinear Elliptic PDEs,

a celebration of Jean-Pierre Gossez's 65th birthday,

September 2, 3 and 4 2009

The meeting will take place at the Université Libre de Bruxelles in the Amphitheater Solvay from Wednesday morning to Friday noon.

Please visit the website of the workshop at http://wnpde09.ulb.ac.be

Mail address of the workshop : WNPDE09 - ULB CP214 - Boulevard du Triomphe, 1050 Bruxelles - Belgium

3 Summary of PhD theses

Algebraic approach to modal extensions of Lukasiewicz logics

Bruno Teheux (ULg); February, 2009, ULg

Advisor: G. Hansoul

Abstract

This dissertation is focused on an algebraic approach of some many-valued generalizations of modal logics. The starting point is the definition of the $[0, 1]$-valued and the $Ł_n$-valued Kripke models, where $[0, 1]$ denotes the well known MV-algebra and $Ł_n$ its finite subalgebra $\{0, \frac{1}{n}, \ldots, \frac{n-1}{n}, 1\}$ for any positive integer n.

Two types of structures are used to define validity of formulas: the class of $\mathcal{L}$-frames and the class of $Ł_n$-valued $\mathcal{L}$-frames. The latter structures are $\mathcal{L}$-frames in which we specify in each world u the set $Ł_m$ (where m is a divisor of n) of the possible truth values of the formulas in u.

These two classes of structures define two distinct notions of validity. We use these notions to study the problem of definability of classes of structures with modal formulas. We obtain for these two classes an equivalent of the Goldblatt - Thomason theorem.

We are able to consider completeness problems with respect to these relational semantics thanks to the connections between relational and algebraic semantics. Our strongest results are about $Ł_n$-valued logic. We are indeed able to apply and develop algebraic tools (namely, canonical and strong canonical extensions) that allow to generate complete $Ł_n$-valued logics.

4   Miscellaneous

4.1   Francqui Chair

International Francqui Chair for Erik Demaine

Erik D. Demaine (born February 28, 1981, in Halifax, Nova Scotia), is an associate professor of Computer Science at the Massachusetts Institute of Technology.

Professor Demaine was awarded a 2007–2008 International Francqui Chair by the Francqui Foundation (http://www.francquifoundation.be).

He gave a series of lectures:

- 19/11, 16h: Inaugural lecture ULB *Mathematics meets Art, Puzzles, and Magic: Fun with Algorithms*

- 2/12, 16h: UCL *(Theoretical) Computer Science is Everywhere*

- 19/2, 16h: VUB *Origami, Linkages, and Polyhedra: Geometric Folding Algorithms*

- 5/3, 16h: Gembloux *Linkage Folding: From Erdös to Proteins*

For abstracts and details, see http://www.ulb.ac.be/di/francqui2008/ or contact Philippe Cara (pcara@vub.ac.be)

There will also be two workshops:

- Folding workshop: March 19–21, ULB

- Khipu workshop: April 23–24, UCL

To participate, please contact Philippe Cara (pcara@vub.ac.be)

4.2   From ULg

There is an **open position ("charge de cours")** at the Department of Mathematics of the **University of Liège** in the domain of **Analysis**. For details and practical information, see the pages

http://www.facsc.ulg.ac.be/postesvacantssciences.htm

Deadline for applications : April 5, 2009.

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

The Indian clerk *David Leavitt.* Bloomsbury, 2008 (485 p.), ISBN 978-0-7475-9632-5 (pb), 978-0-7475-8168-0 (hb).

Srinivasa Ramanujan

David Leavitt
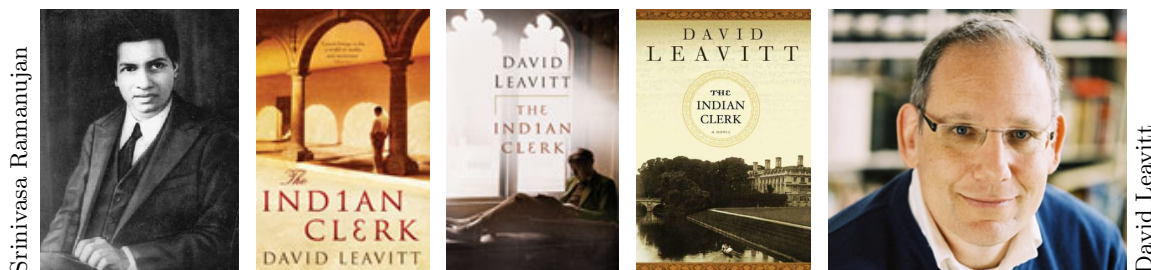
The facts: Srinivasa Ramanujan (22 December 1887 – 26 April 1920) is a self-taught Indian mathematician, working as a clerk in the Accountant-General's office at the Madras Port Trust Office. In 1912 he mails some of his results to three professors in Cambridge. G.H. Hardy is intrigued and asks his colleague E.H. Neville, who was teaching in Madras, to convince Ramanujan to come to Cambridge, which he finally did.

Somewhat lost in a foreign country, and plagued by health problems, Ramanujan lives in England through world war I. He returns to Madras in 1919 where he dies shortly after, at the age of 32.

David Leavitt, being of American breed, obviously did a lot of research to write this novel. Although Ramanujan is the center around which the novel evolves, it is more about Hardy and the academic society in Cambridge, than it is about the "Indian clerk". Just as Ramanujan is encapsulated underneath, also the mathematics are somewhat shrouded away. Some formulas do appear now and then, but they are more like illustrations that interrupt the text, than they are elements in the story. For example Hardy is caught by the formulas in the letter of Ramanujan, or later when Ramanujan is in Cambridge,

E.H. Neville and G.H. Hardy

he is astonished by Ramanujan's remarkable formulas for the approximation of π like, and then the formulas follow without explanation.

Indian stamp

The Riemann conjecture is an exception and it is rather a leitmotiv in the novel. It floats through the story because Hardy is always hoping that Ramanujan could help him out in proving it. Leavitt's trick to explain about the conjecture is by telling about how Hardy, invited at a secondary school, explains the problem before a class of 12 year old schoolgirls. Ramanujan is however not really trained in giving proofs and his mind is difficult to canalize. He is producing long lists of mathematical identities, known to us by his notebooks[1]. Hardy recognizes some of these as known already, some are wrong, but others are astonishing breakthroughs. Ramanujan, being very religious, claims these were given to him in his dreams by a goddess Namagiri who "wrote the formulas on his tongue". This religious aspect plays also a role in the novel because Ramanujan first objected against traveling to England. Crossing the ocean was something not done. Besides religion, also his mother had a strong impact on his life, and it is only after she, and a priest, agreed that he finally has his hair cut, is dressed up in European style, and makes the journey.

The novel is not explicit about it, but it is somewhat suggested that Ramanujan in this English academic world was a bit of an exotic phenomenon, an Indian calculator, that many were curious about, or that makes as a great party attraction. Leavitt translates this as a romantic relation between Mrs Neville (Alice) and Ramanujan. When Ramanujan arrives in Cambridge, the Nevilles take him in their house and Neville's wife does everything she can to meet Ramanujan's vegetarian restrictions, much to the disliking of the rest of the household. A vegetarian goose is a compromise. Leavitt must have done quite some research on vegetarian cookery of those days, both in England and in India. When Ramanujan leaves the house to live in a college, Alice feels like he is taken away from her by Hardy. It is only later when she meets Ramanujan in London that her love for him shows explicitly.

The story of the Nevilles is a bit tragic. Eric Neville, being bad sighted, could easily refrain from fighting during the war, but he openly objected against the conflict, much to the dislikes of Alice. This pacifism is probably the reason why he is not re-elected as a fellow in Cambridge. Strongly disappointed, he had to move to a much smaller college in Reading.

This is another theme of the novel. The atrocities of WWI are not explicit, but it is clear that they influence the lives of the people whether they actively participate or not. For example Bertrand Russell, who is a dominating

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[1]Five volumes edited by B.C. Berndt were published by Springer in the period 1985-2005 and two volumes about his "lost notebook" in 2005 and 2008.

personality at Trinity College Cambridge, is a manifest pacifist which caused his dismissal and later even imprisonment till 1918. Hardy did defend the viewpoints of Russell, but was left alone. He nevertheless left Cambridge to lecture in Oxford in 1919, and did only return in 1932.

Great Court of Trinity College Cambridge.

But this novel is actually about G.H. (Godfrey Harold) Hardy (7/2/1877–1/12/1947). Most of the story is seen through the eyes of Hardy, although most of it is written in the third person. There is also a second story line, when Hardy is lecturing at Harvard, many years later, in 1936, when he is invited, not for his own sake, but to tell about Ramanujan. We read about the lectures he didn't give, and in which he reflects upon his relation with Ramanujan.

Leavitt describes Hardy as a lonely, reticent, closeted, gay, cold fish, haunted by the suicide of his former partner Russel Kerr Gaye, who features as a ghost in the novel when Hardy is depressed. Some examples: As a child, Hardy wounded his sister Gertrude, which was the reason that she had a glass eye. This must have marked his relation with her. Nevertheless, when his mother is about to die, he is only occupied with his rendez-vous with a new friend in London, and leaves his sister alone to look after his mother. When he is about to meet Ramanujan for the first time at the Nevilles, he is on the verge of returning, not knowing how to behave.

Leavitt has a reputation for his gay novels and for rather explicit erotic scenes, but in this case he is rather restrained. He does sketch the secrets of the risqué society where homosexuality was somewhat tacitly tolerated, male couples living together, were invited as a pair at a party, while others, like Littlewood, the collaborator of Hardy, had a mistress that he visits every Friday afternoon in Treen in the South of England (which seems to have been impossible, given the train tables of that time).

There is a lot of name dropping in the novel. We already mentioned Bertrand Russel, who has a bad breath problem, and many other dons from Cambridge show up, like Keynes and Hobson (Hobson and Baker were colleagues of Hardy, to whom Ramanujan had addressed his letters in the first place, but they never reacted), but also Niels Bohr, Wittgenstein, and even D.H. Lawrence makes his appearance in Cambridge.

The health problems of Ramanujan have never been correctly diagnosed during his life. It was at some time said to

Bust of Ramanujan. A small replica is given to the laureate of the Ramanujan prize that is awarded by the International Centre for Theoretical Physics (ICTP, Italy) and funded by the Niels Abel Memorial Fund. The prize is given to a young mathematician of a developing country. A second Ramanujan prize is awarded by Shanmugha Arts, Science, Technology, Research Academy (SASTRA, India).

be cancer, at other instances it was tuberculosis, or another type of infection. He stayed in different sanatoriums but never did really cure. At some time he even attempts suicide. Hardy forbids him to do this ever again, and Ramanujan obediently accepts. It is much later suggested that he suffered from a parasitic infection of the liver that he could have caught in Madras before he came to England. Leavitt however suggests that he got himself poisoned because he was cooking his *rasam*, a very spicy tamarind soup, in a pot that was eroded by the acid. Just before Ramanujan's return to India, Hardy managed to have him elected as a fellow of Trinity and as a fellow of the Royal Society of London. He was the youngest member ever elected.

Leavitt, being an American, has done some research also to be familiar with the world of academics in Cambridge, and if, as a reader you are not familiar, it might help to look up some terms too. For example, Hardy was a member of the *Cambridge Apostles*, a secret society centered at Trinity and King's. Hardy was also very much opposed to the *tripos* that were organized. These were tests (one could pass three of them to get the highest level, degree III). There was a strong competition because it was very prestigious to become a *senior wrangler*, that is the wrangles (somebody who passed the second degree exam) with the top score (Littlewood was a senior wrangler leaving a bigger gap between him and the second wrangler than between the second wrangler and the bottom scorer, called the *wooden spoon*). Perhaps Hardy being a fourth wrangler might have to do something with his aversion to it. Since 1909, the names of the wranglers are listed alphabetically and not by their score.

As a general conclusion: a novel about people, not so much about mathematics, and a bit long-winding, but interesting to learn about British society of that time, if you believe that an American can properly characterize it.

Adhemar Bultheel

Palace of the Academies
Hertogsstraat /Rue Ducale 1
Brussels

Wednesday afternoon
April 22, 2009

MATHEMATICAL EDUCATION

Program

14:00-14:45 : Maggy Schneider (ULiège)

Which level in Mathematics? And for what kind of pupils? How does research in mathematics education enlighten these questions? *

Coffee

15:15-16:00: Dirk Janssens (KULeuven)

Mathematical education as a "design" science. **

Abstracts

*For whom wants to learn mathematics, the main difficulty lies in acceding to knowledge whose structured form results from centuries of development. For whom wants to teach mathematics, the challenge is therefore in the possibility to make this knowledge alive, even in an embryonic form, and with the necessity to adapt the level of rationality to curricular characteristics. I will show how concepts and results from research in mathematics education enable us to investigate this question.

**To realize the specific task of mathematics education a specific linkage is needed with practice at the CORE. The core has a specific character, namely the constructive development of and research into mathematics teaching whereby ingenuity and specific pedagogical content knowledge is of crucial importance. Work in the core must start from mathematical activity as an original and natural element of human cognition. And it must conceive of "mathematics" as a broad societal phenomenon whose diversity and modes of expression (as in science, engineering, statistics, economics, art, daily life …) is only in part reflected by specialized mathematics. Some aspects of curriculum developments for secondary school mathematics education will be analyzed in this "design"-science framework.

Everyone is cordially invited. Participation is free of charge, but registration will be appreciated for practical reasons.

Organisation: The National Committee for Mathematics

Contact: Freddy Dumortier (freddy.dumortier@uhasselt.be)

Catherine FINET

ECOLE DOCTORALE THEMATIQUE

Service ANALYSE MATHEMATIQUE

Richard ARON

Kent State University - USA

fera les exposés suivants :

LE MERCREDI 6 MAI 2009 à 10 H 15
UNIVERSITE DE MONS-HAINAUT
Le Pentagone, LOCAL 3C09
Avenue du Champ de Mars, 6 – 7000 Mons – Belgique

« The Bishop-Phelps-Bollobas Theorems and generalizations »

LE JEUDI 7 MAI 2009, DE 14 H à 15 H
UNIVERSITE DE MONS-HAINAUT
Le Pentagone, LOCAL 3C09
Avenue du Champ de Mars, 6 – 7000 Mons – Belgique

« Linearity in non-linear situations »

INVITATION CORDIALE A TOUS