BELGIAN MATHEMATICAL
SOCIETY

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

BMS-NCM NEWS
—
No 83, May 15, 2011

Letter from the editor

> *Hello again, and welcome to this May issue of our Newsletter. The next one is scheduled for September 15, 2011. Have a nice summer!*
>
> With my best regards,
> Françoise

Contents

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1   News from the BMS

Next November, the **BMS and the National Committee** are organizing a meeting with the Société Belge des Professeurs de Mathématique d'expression française (**SBPMef**) and the Vlaamse Vereniging voor Wiskundeleraars (**VVW**):

> ### *Mathematics in secondary schools: now... and afterwards?*
>
> ### *Les mathématiques dans l'enseignement secondaire: quel futur?*
>
> ### *De toekomst van de wiskunde in het middelbaar onderwijs?*

Place: Royal Academy, auditorium Rubens
Date: Saturday, November 19, 2011, 10.00-13.00
Program:

- 09.30: Welcome coffee

- 10.00: Speaker: Gilles Godefroy (Paris)

- 11.00: Speaker: Frans Keune (Radbout University Nijmegen)

- 12.00: Panel discussion chaired by Alain Verschoren, rector of UA

- 13.00 : Reception

Details will soon be available (next editions of the Newsletter and directly from the societies SBPMef, VVW).

Note that the

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General Assembly

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of the BMS will also take place on November 19, 2011, at the end of the discussions (around 13:00) at the Academy. On this occasion, elections for President and Vice-president (2011-2013) will be organized.

2   Meetings, Conferences, Lectures

2.1   January-June 2011

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Doctoral course:
6 lectures in multicriteria decision aid and multi-objective optimization.

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Organizers: Y. De Smet (ULB), Th. Marchant (UGent), M. Pirlot (UMONS)

Target audience: doctoral students in decision, optimization, operational research, preferences in data base search

Goal : offer an introduction (at doctoral level) to a few fundamental mathematical models in the field of multiple criteria decision analysis and multi-objective optimization and to algorithmic problems raised by the use of such models.

Organization: six lectures of about 3 hours in English (once a month from January to June). Each lecture focuses on a specific topic. All lectures will take place in Brussels (ULB, Campus Plaine) or Mons (UMONS, Faculté Polytechnique) as indicated in the programme below.

Venue for the first lecture in Mons: UMONS, Faculté Polytechnique, rue de Houdain 9, 7000 Mons, Seminar room of MathRO (Mathematics and Operational Research department), third floor

All lectures in Mons will take place in the same room. The location of the lectures in Brussels will be announced later.

Further information: contact Prof. Marc Pirlot: marc.pirlot@umons.ac.be

Inscription is free; for organizational purposes it is asked that people intending to attend the lectures let it know to one of the organizers.

 Programme

1. January 20, 2011, 14.00-17.00 in Mons. M. Pirlot (UMONS): Additive value functions and conjoint measurement

2. February 23, 2011, 14.00-17.00 in Brussels. D. Bouyssou (CNRS Paris Dauphine): Models for deciding under risk and uncertainty

3. March 23, 2011, 14.00-17.00 in Brussels. J. Figueira (Université de Nancy): Outranking methods

4. April 27, 2011, 14.00-17.00 in Mons. P. Meyer (Telecom Bretagne): Algorithms and software for aiding decision : the Decision Deck project

5. May 18, 2011, 14.00-17.00 in Brussels. To be confirmed, M. Geiger (Universität Hamburg): Interactive methods in multiple objective optimization

6. June 15, 2011, 14.00-17.00 in Mons. P. Perny (Paris VI): Multiobjective combinatorial optimization

This programme could be modified. The persons who would like to be informed of possible changes in the programme are invited to contact the organizers.

This course is organized with the support of the thematic doctoral school in Mathematics (EDT Math, FNRS).

2.2   May 2011

Category Theory, Algebra and Geometry
May 26-27, 2011

The conference will be held on Thursday the 26th and Friday the 27th of May 2011 in Louvain-la-Neuve

Invited speakers

- Eugenia Cheng, University of Sheffield

- Maria Manuel Clementino, Universidade de Coimbra

- René Guitart, Université Paris 7 Denis Diderot

- Kathryn Hess Bellwald, Ecole Polytechnique Fédérale de Lausanne

- Peter Johnstone, University of Cambridge

- André Joyal, Université du Québec à Montréal

- Tom Leinster, University of Glasgow

- Sandra Mantovani, Università degli Studi di Milano

- Ieke Moerdijk, Universiteit Utrecht

- Ross Street, Macquarie University

- Isar Stubbe, Université du Littoral-Côte d'Opale

Informations: http://perso.uclouvain.be/tim.vanderlinden/ctag.html

Chaire de la Vallée Poussin, 24-27 mai 2011
Monoidal categories in, and linking, geometry and algebra

Le Professeur **Ross STREET** (Macquarie University, New South Wales, Australie) fera une série d'exposés dans le cadre de la Chaire de la Vallée Poussin 2011 du 24 au 27 mai 2011.

Toutes les leçons seront données en l'auditoire de la Vallée Poussin (CYCL 01) du bâtiment Marc de Hemptinne, chemin du cyclotron, 2 à Louvain-la-Neuve.

Programme:

- Mardi 24 mai : 16h-17h - Leçon inaugurale: *From linear algebra to knot theory via categories*

- Mercredi 25 mai : 16h-17h: *Monoidal categories, Hall algebras and representation theory*

- Jeudi 26 mai : 16h-17h : *Mackey functors and classifying spaces*

- Vendredi 27 mai : 9h-10h: *Monoidal category theory for manifold invariants*

FNRS group "Functional Analysis"
May 31, June 1, 2011
Esneux (Liège) , Domaine du Rond-Chêne

Following the tradition, the FNRS group "Functional Analysis" will meet next May (Tuesday May 31, Wednesday June 1, 2011). The meeting will take place in the small town of Esneux, in the "Domaine du Rond-Chêne"

The speakers are (alphabetical order):

- Maria J. BELTRAN, U. Pol. Valencia

Spectra of weighted (LB)-algebras of entire functions on Banach-spaces

- Bruno BRIVE, U. Mons

Some aspects of differential operators of infinite order with constant coefficients
and entire functions

- Bernardo CASCALES, U. Murcia

Bishop-Phelps-Bollobas theorem, integration of multi-functions and boundaries

- Bernard DIEROLF, U. Trier

Exact structures

- Jörg ESCHMEIER, U. Sarrebrücken

Essential normality of analytic Hilbert modules on the unit ball

- Etienne MATHERON (Lille-Artois)

Strongly mixing linear operators and sets of extended uniqueness

The meeting will start on Tuesday May 31, 2011, at 13:00, for lunch. It will end on Wednesday June 1rst, 2011, after lunch. (Note: the reason for this "unusual" part of the week is the "ascension day" and agendas. This is exceptional and probably we will go on with Thursday-Friday next year.)
Full board is **90 EUR** (74 EUR if you do not need a room). There are **no registration fees**.
<u>Contacts</u>: Françoise Bastin (F.Bastin@ulg.ac.be) or Samuel Nicolay (S.Nicolay@ulg.ac.be)

2.3   June 2011

Rencontres franco-italiennes
Lens, 4 juin 2011

See at the web page

http://www.sbpm.be/2011/04/4-juin-2011-4emes-rencontres-franco-italiennes-universite-dartois-lens-france/

Numeration
Liège, June 6-10, 2011

The goal of this conference is to bring together researchers interested in numeration systems from various points of view. This includes geometric aspects (fractals, tilings, quasi-crystals), dynamical/probabilistic aspects (odometers, subshifts), analytic aspects (related arithmetical functions), topological aspects (compactifications and applications), and computer science (automata, languages).

<u>Topics of the Conference</u>

- General numeration systems,

- Geometric representations, Rauzy fractals, tilings

- Representations of operations in Pisot base by finite automata,

- Sofic systems associated with Pisot numbers,

- Redundant representations and cryptography,

- Shift-radix systems,

- Abstract numeration systems,

- Negative base systems,

- beta-integers,

- Delaunay (Delone) sets,

- Dynamical systems and cocycles related to numeration,

- Spectra and spectral measures associated with numeration,

- Sums of digits for classical and non-classical numerations, associated fractals,

- S-adic conjecture,

- Analytic and probabilistic study of arithmetic functions related to numeration,

- Cellular automata,

- Link with mathematical logic and definable sets of numbers

Invited Speakers (Instructional lectures):
Bernard Boigelot (University of Liège), Yann Bugeaud (University of Starsbourg), Cor Kraaikamp, TU Delft
Jörg Thuswaldner (University of Leoben), and an extra talk on Cobham's theorem for substitutions given by
Fabien Durand, LAMFA, Amiens

Scientific Committee:
B. Adamczewski, (CNRS, Univ. Claude Bernard Lyon 1), V. Berthé (CNRS, LIAFA), C. Frougny (LIAFA,
CNRS & Univ. Paris 8), P. Grabner (TU Graz), P. Liardet (Université de Provence), E. Pelantová (Czech
Technical University, Prague), M. Rigo (ULg), J. Shallit (Univ. of Waterloo), W. Steiner (CNRS, LIAFA)

See also the page

http://www.cant.ulg.ac.be/num2011/

2.4   July 2011

International summer school for young mathematicians of high level
July 2011, Bremen

Have a look at the informations at the address

http://math.jacobs-university.de/summerschool/

2.5   November 2011

Mathematics in secondary schools: now... and afterwards?

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The March 2011 issue of the Notices of the AMS is a special issue on education. It can be interested to read it in view of the planned meeting! See at the pages http://www.ams.org/notices/201103/

2.6   June 2012

On June 6-8, 2012, the BMS will co-organized a meeting (in Liège) with the Real Sociedad Matemática Española and the Luxembourg mathematical society. A web page and the first announcement will soon be available.

3   Miscellaneous

3.1   Olympiades

Awards ceremony of the "Vlaamse Wiskunde Olympiades"
May 18th, 2011, Antwerp

and

lecture by Prof. Dr. Étienne Ghys: "How to dress a ball"

De plechtige proclamatie mét prijsuitreiking van de Junior Wiskunde Olympiade en de Vlaamse Wiskunde Olympiade vindt dit jaar plaats op woensdag 18 mei om 15u00 te Antwerpen: Universiteit Antwerpen - Campus Drie Eiken Aula Fernand Nédée Universiteitsplein 1, 2610 Wilrijk.

Registration and further information at

http://www.vwo.be/vwo/2010-2011/proclamatie

Awards ceremony of the "36èmes Olympiades mathématiques"
May 21rst, 2011, Liège

and

lecture by Prof. Dr. Rittaud "Le pari de la foi — Pascal et les probabilités"

Further information at

http://omb.sbpm.be/modules/news/article.php?storyid=53

3.2   From EMS

Here are some news from the EMS:

1. The call for nominations of candidates for the EMS Prizes has been already published at

   $http://www.euro-math-soc.eu/ems_prizes.html$

   The deadline for submission is 1 November 2011.

2. The call for nominations of candidates for the Otto Neugebauer Prize for the History of Mathematics has been published at $http://www.euro-math-soc.eu/node/995$

   The deadline for submission is 31 December 2011.

3. The EMS is willing to play an active role in the discussions on the Strategic Framework for Future EU Research and Innovation Funding. We have written a Position Paper that can be downloaded at

   http://www.euro-math-soc.eu/index.html and also at $http://ec.europa.eu/research/csfri/index_en.cfm?pg = responses$

   Everybody can contribute to the EC debate by filling out an online questionnaire at

   $http://ec.europa.eu/research/csfri/index_en.cfm?pg = questionnaire$

4. The EMS has become a partner of the project Mathematics of the Planet Earth 2013, see $http://www.mpe2013.org/$

<div align="right">
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EMS President
http://www.euro-math-soc.eu/
</div>

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Office phone: +34 934021655, Fax: +34 934020172, www.mat.ub.edu/ sanz

3.3   News from UA

At the University of Antwerp, a **vacancy** has been opened for a **full-time academic staff in Statistics or Financial Mathematics** (starting: October 2011). Deadline for application: May 27, 2011 at the latest. See information at the address

> http://www.ua.ac.be/main.aspx?c=*VACATURES& n=26394& ct=c025734&e=261547

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

4.1   A book about Henri Bosmans

Annonce de la publication d'un ouvrage sur l'historien belge des mathématiques, le Père jésuite Henri Bosmans (1852-1928):

> *Le Père Henri Bosmans sj (1852-1928) historien des mathématiques*

Henri Bosmans est réputé pour ses écrits sur des mathématiciens de la Renaissance. Il fut aussi le deuxième président de la Société Mathématique de Belgique.

L'ouvrage contient (mais pas seulement) les Actes de deux colloques[1]portant sur son œuvre et sur sa vie.
Références
Bulletin de la Classe des Sciences,
6e série, Tome XXI, 2010
Éditeurs : Michel Hermans et Jean-François Stoffel
Académie royale de Belgique.

L'ouvrage est vendu dès la mi-mai 2011 au prix de 25 euros par l'Académie royale de Belgique (voir son site Internet et sa Lettre d'information). Monsieur Luc Moreau, luc.moreau@cfwb est le responsable de la vente.

4.2   Do you know Cornelius Lanczos?

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[1]organisés par les Archives de la Province belge méridionale et du Luxembourg de la Compagnie de Jésus, le Groupe de contact "Histoire comparée des sciences" du F.N.R.S. et la Société Scientifique de Bruxelles (en 2006 à l'ULB (au CIERL) et en 2008 (aux FUNDP))

The intrinsic nature of things. Life and science of Cornelius Lanczos. *Barbara Gellai*, AMS, 2010 (xv+168 p.), soft cover, ISBN 978-0-8218-5166-1.
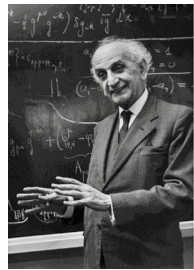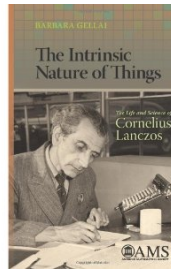

Cornelius Lanczos   Barbara Gellai

Cornelius Lanczos was in the front lines of the scientific (r)evolutions of the twentieth century. Always seeking new challenges, he became a cosmopolitan, both geographically and scientifically. He has contributed to theoretical physics as well as to applied and computational mathematics. He survived two world wars and helped shaping Einstein's relativity theory and invented numerical techniques as computers gradually entered the daily lives of scientists.
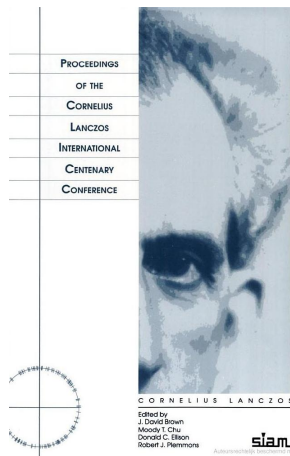
Proceedings C. Lanczos
centenary conference
NCSU, Raleigh, 1993

Lanczos was born on February 2, 1893 in Székesfehérvár, Hungary, some 100 km South-East of Budapest. Kronél Löwy, as he was called then, was the eldest of five children in a Jewish family. His father was a well-respected cultured man and his mother was a gifted pianist, something that Cornelius Lanczos inherited from her.
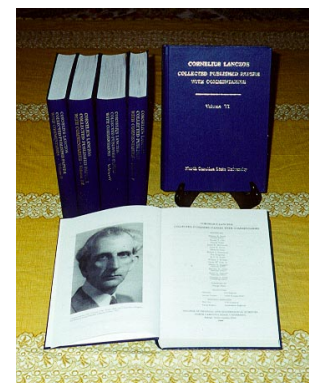
Out of respect and solidarity with their home country, the Löwy children decided in 1906 to change their name into Lanczos (pronounced 'lantsosh'), which sounded much more Hungarian, and means something like "fitted with chains". At first Lanczos kept his first name Kornel, but since 1935, he signed his papers with Cornelius. Lanczos was raised bilingual and spoke German as well as Hungarian.

After attending the Gymnasium, Lanczos went to the university in Budapest where he took physics, mathematics and philosophy. His math teacher was Leopold (Lipód) Fejér. After his graduation he became an assistant of Károly Tangl at the Budapest Institute of Technology where he had to supervise a chemistry laboratory.

Scientifically, this was a most exciting time that changed the world view: the interplay of Maxwell's equations (1861-62), special (1905) and general (1907-15) relativity theory, and the foundations of quantum physics being shaped and reshaped in this period. All this formed a boiling mixture that was at the focus of interest of all the big shots of the scientific community of that time.

Lanczos too got interested in these topics and worked on a PhD on relatively using quaternions. He asked Einstein in 1919 to supervise it. However, Einstein replied that he, not being connected to a university, could not supervise. So Lanczos finished his doctoral degree with a thesis *The function theoretical relationships of the Maxwellian aether-equation. A contribution to the theory of relativity and electrons* in 1921 at the university of Szeged under the supervision of Rudolf Otvay. Because of a bad political climate and discriminating laws against Jews, it got never properly published. Soon afterwards Lanczos left Hungary to take a position at the university of Freiburg, Germany. Later he moved to Frankfurt am Main, where he attended several seminars that attracted scientists from all over the world.

Collected works Cornelius
Lanczos, NCSU, 1999

Lanczos has always be a scientific loner not so good in teamwork. So when he was invited by Einstein in 1928 to spend a year with him in Berlin, Lanczos and Einstein had different ideas about what to research during that period and while so much was expected from their collaboration, not much, and not even a single joint publication came out of this.

In 1927 Lanczos married Maria Rupp, who had a delicate health, because of a tuberculosis condition. Nevertheless, Lanczos couldn't resist an invitation to come to Purdue University. So he left his wife with his parents and moved to the States in 1931. This was a whole new start since he switched form theoretical physics to applied mathematics, or "workable mathematics" as he called it. This is a characteristic of his. He often used his own terminology, which made his papers sometimes difficult to understand for others. In those days of desktop calculators, finding efficient methods and designing fast converging series was an absolute must (well, it still is with supercomputers, only the problems are many magnitudes bigger). In that period he designed his technique of telescoping series, the tau-method for solving differential equations, and used truncated Fourier series for noise reduction. He also joined for a while the Mathematical Tables Project of the National Bureau of Standards (NBS) (which most of us will know from the Abramovitch and Stegun's *Handbook of mathematical functions*). In 1939 he brought his son to the US, his wife being sick and his family hoping to escape the German hunt for Jews. However, shortly after, they were all transported to Birkenau and none of them survived. After his return in the US, Lanczos worked on his doubling algorithm (1942), which was closely related to the Cooley-Tucky algorithm (1965) for the fast Fourier transform.

Lanczos joined for a while the Boeing company in Seattle (1946-49) and later the Institute of Numerical Analysis (INA) of the NBS in Los Angeles (1949-1952). That institute had John Todd as the chief of the Computational Laboratory and Olga Tausky-Todd as a consultant. During that period, his most important contribution to numerical analysis was made. The Lanczos algorithm (1950), by which he is best known in computational mathematics, is an iterative method to compute the eigenvalues of a matrix, or, after discretization also of a differential equation. Because he didn't read Russian, and he could only look up the summary in the *Zentralblatt*, Lanczos denied that his method was part of the family of Krylov methods published by Alexei Nikolaevich Krylov in 1931.
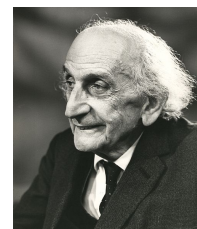
In 1953, with an increasing pressure of McCarthyism, Lanczos was interrogated under the pretext of disloyalty. Lanczos knew that he should leave the US. Eventually, the INA in Los Angeles was closed down anyway. So he accepted an invitation of the Irish Prime Minister to become a senior professor at the School of Theoretical Physics of the Dublin Institute of Advanced Studies (DIAS). His son, who was then 20, decided to stay in the US. Whereas in the US he had to divide his time between teaching and research, here he was completely free to do research. Erwin Schödinger was the first president of DIAS. Lanczos and Schrödinger were not the best of friends. There had been disagreements on scientific matters before. In Dublin, Lanczos and his second wife Ilse Hildebrand were very popular, often organizing parties at their home that usually ended up with Lanczos playing the piano. Lanczos disliked arrogance, and Schrödinger, being president of the DIAS considered this position as the "most appropriate" for him caused 'some friction'. Although Lanczos had some disagreements with Einstein as well, his admiration for Einstein was so big, that they stayed in correspondence.

Although his position required that Lanczos switched back from applied mathematics to theoretical physics, he still did some of the latter now and then. He did re-invent the singular value decomposition (which he calls 'the decomposition form') completely independently and is involved in generalized inverses and in the discretization (he calls it 'algebraization') of differential equations.

He retires at the age of 75 from the Institute in 1968. He still travels and visits universities in the US and Germany. However a third heart attack was fatal. He became ill during an appointment with a journalist and dies the next day on June 25, 1973 in a Budapest hospital.

This is a very quick overview of Lanczos' life, just mentioning some basis 'facts'. This biography that was compiled by Barbary Gellai, also is mainly hooked up on facts, but in much more detail of course and with a lot more back-ground information. The scientific achievements of Lanczos are placed in a rudimentary but appropriate summary of the mathematical or the physical theory. There are also chapters of a more philosophical nature, Lanczos' vision of teaching, on mathematics and on nature. This booklet expands considerably her lecture at the Lanczos International Centenary Conference, held in North Carolina State University in Raleigh, December 12-17, 1993. She was also a driving force in publishing Lanczos' *Collected published papers with commentaries* (4 volumes), NCST 1999. The list of references, of Lanczos' publications, and time table, as well as the detailed index make it a useful tool.

Adhemar Bultheel