BELGIAN MATHEMATICAL SOCIETY

Comité National de Mathématique CNM

C W N M

NCW Nationaal Comite voor Wiskunde

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

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BMS-NCM NEWS

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No 58, May 15, 2006

Letter from the editor

Welcome to the "May 15, 2006 Issue" of our Newsletter!

After Halloween, Christmas and New Year, Carnival ... Spring time is running now. With... allergies and exams...

Have a nice Summer. See you next September,
Françoise

Contents

1 News from the BMS

The last meeting of the BMS Committee held on Saturday April 22. It was planned to hold the (2006) General Assembly of our Society on September 23, 2006:

General Assembly of the BMS
Saturday September 23, 10:00
ULB, building NO, Room 9.06

Please also find here below some information about the *Belgian Center of Mathematical Studies* **(BCMS)**.

The Belgian Center of Mathematical Studies

The Belgian Center of Mathematical Studies was created in 1949 by a group of Belgian mathematicians at the initiative of Lucien Godeaux. It was financed by the Ministry of Education. Among its main activities was the organization of conferences on promising mathematical topics. Some of these left a lasting mark on the subject, as the conferences on fiber spaces (1951), algebra (1956), topology (1960) and algebraic groups (1962). The Center went into hibernation when the Ministry cancelled the financing. A revival attempt in the beginning of the eighties did not succeed. In the light of the new law on non-for-profit organizations it is advisable to wind up the Center.

According to the law the dissolution of the organization has to be decided by an extraordinary meeting of the members with two third of them present. If there is not a quorum, a second meeting can decide whatever the number of members attending. The first extraordinary meeting has been convened on 12 May 2006 and did not have a quorum . A second extraordinary meeting is

scheduled on 23 September 2006

after the general meeting of the BMS and at the same venue, with the following **agenda:**

1. Dissolution of the association
2. Allocation of the assets of the association
3. Appointment of two liquidators.

Members of the Center are invited to contact one of the undersigned to receive the invitation to attend the meeting.

The secretary, Paul Henrard
Henrard@math.ucl.ac.be

The treasurer, Franz Bingen
fbingen@vub.ac.be

2 Meetings, Conferences, Lectures

2.1 June 2006

Groupe de contact FNRS – Funtional Analysis
June 1-2, 2006, Domaine du Rond-Chêne, Esneux

The list of speakers is the following:

- Alberto CONEJERO (U. Pol. Valencia): *Sets of Hypercyclic Vectors for Some Classical Operators*
- Andreas DEFANT (U. Oldenburg): *Classical summation methods in Banach function spaces*
- Susanne DIEROLF (U. Trier): *The three space problem for locally m-convex algebras*
- Sophie DISPA (U. Liège) *Beyond Besov spaces, Snu spaces: Topology and prevalent properties*
- Tobias HEINRICH (U. Düsseldorf): *A new necessary condition for the local Phragmén-Lindelöf condition*
- Hervé QUEFFELEC (U. Lille): *Spaces of bounded analytic functions and Bohr's inequality*
- BA TAYLOR (U. Ann Arbor): *Limit varieties and their application to the study of Phragmén-Lindelöf conditions*

For further information, please contact Françoise Bastin at the address F.Bastin@ulg.ac.be

Applied Dynamical Systems
June 22-23, 2006, Gent

The organizers: Willy Govaerts (Gent), Dirk Roose (Leuven) and Yuri A. Kuznetsov (Utrecht, NL). For further information, see **users.ugent.be/ bsautois/workshop**

2.2 August 2006

See the announcement at the end of this Newsletter for the meeting

Evolution Equations 2006 in the memory of G. Lumer

and also the web page at the address **http://www.univ-valenciennes.fr/lamav/eveq06**

2.3 September 2006

See the announcement at the end of this Newsletter for the meeting (first announcement)

New Techniques in Hopf Algebras and Graded Ring Theory

Brussels, September 19-23, 2006

2.4 2008

5ECM, July 14-18, 2008
5th EUROPEAN CONGRESS of MATHEMATICS

Informations can be found at the address **http://www.5ecm.nl**

3 Summary of PhD theses

Beyond Besov spaces, S^ν spaces: Topology and prevalent properties

Sophie DISPA, ULg, May 12, 2006

A wide range of smoothness classes such as Hölder, Lipschitz, Sobolev or Besov spaces have been intensively investigated from the middle of last century onwards. In particular, the inhomogenous Besov spaces $B^s_{p,q}$ consist of functions from Lebesgue space L^p and of smoothness s. They allow an exact characterization of their elements in terms of wavelet decompositions which makes their use very natural in the setting of signal and image processing. In this thesis, we show the equivalence between some quasi-norms of Besov spaces on Lipschitz domains and obtain an intrinsic characterization based on generalized differences and moduli of smoothness. We also mention their description (see [1][CDD]) with wavelet coefficients. Then we study the periodic counterparts of the classical spaces evoked above. We present their relationships and prove that they appear to be special cases of periodic Besov spaces. We characterize periodic Besov spaces with the wavelet coefficients of their functions.

In order to provide a more precise information than Besov spaces (for instance in the context of multifractal analysis introduced below), S. Jaffard defined S^ν spaces in [2][J1]. Roughly speaking, a sequence (of wavelet coefficients) $\vec{c} = (c_{j,k})$ $(j \geq 0, k \in \{0, ..., 2^j - 1\}^d)$ belongs to S^ν if and only if, for each scale j and for every $\alpha \in \mathbb{R}$, there are about $2^{\nu(\alpha)j}$ coefficients larger than $2^{-\alpha j}$. In the thesis, we study these new spaces which are independant of the wavelet basis chosen from a topological point of view. We obtain that they can be endowed with a (unique) complete metric for which we get a full characterization of the compact sets, that they are separable and that operators which appear in a natural way when dealing with wavelet coefficients are continuous. We study connections with Besov spaces and construct a natural Borel probability measure on S^ν. This measure provides prevalent properties: Prevalence is a notion of genericity which extends to infinite dimensional spaces the concept of translation invariant "Lebesgue measure zero set".

Then we come back to one of the incentives of S. Jaffard when introducing S^ν: The improvement of the classical (thermodynamical, among others) multifractal formalism. Multifractal analysis is concerned with the study of the spectrum of singularities d_f of functions $d_f(s) = \dim(\{x : h_f(x) = s\})$ where dim means Hausdorff dimension and $h_f(x)$ is the pointwise Hölder exponent of f, (see for example [3][J2] and [4][JM]. Estimates of d_f in the literature often involve a probability approach (connected to prevalence), see for instance [5][AJ] and [6][FJ]. In the thesis, we show that S^ν spaces represent a nice model in this context as the spectrum of singularities of a prevalent set of their functions can be computed from ν, which justifies a new multifractal formalism, not limited to concave spectra.

Multiscale and hybrid methods for the solution of oscillatory integral equations

Daan HUYBRECHS, Computer Science K.U.Leuven, May 29, 2006 (Arenberg castle Heverlee)

Promotor: S. Vandewalle

Waves and oscillatory phenomena abound in many disciplines of science and engineering. Prime examples are electromagnetic and acoustic waves that permeate the atmosphere. In this thesis, we analyse and develop algorithms for the efficient numerical simulation of the scattering of such waves.

Time-harmonic scattering problems are modelled by an integral equation formulation. We consider three multiscale methods for the efficient solution of the resulting oscillatory integral equation: methods based on wavelets, methods based on hierarchical matrices and fast multipole methods. Although the discretisation matrix for integral equations is a dense matrix, each of these methods yields a fast matrix-vector product,

[1][CDD] A. Cohen, W. Dahmen, R.A. DeVore, *Multiscale Decompositions on Bounded Domains,* Trans. Amer. Math. Soc. , 352, 8, 3651-3685, 2000.

[2][J1] S. Jaffard, *Beyond Besov Spaces, Part I : Distributions of wavelet coefficients,* Journal of Fourier Analysis and its Applications, Vol. 10, 3, 221-246, 2004.

[3][J2] S. Jaffard, *Multifractal formalism for functions Part I: results valid for all functions,* SIAM J. Math. Anal., 28 (4), 944-970, Jul. 1997.

[4][JM] S. Jaffard, Y. Meyer, *Wavelet methods for pointwise regularity and local oscillations of functions,* Mem. Amer. Math. Soc., 123 (587), Sep. 1996.

[5][AJ] J.-M. Aubry, S. Jaffard, *Random Wavelet Series,* Commun. Math. Phys. 227, 483-514, 2002.

[6][FJ] A. Fraysse, S. Jaffard, *How smooth is almost every function in a Sobolev space ?*, to appear in Revista Matematica Iberoamericana.

where the number of operations scales approximately linearly in the number of unknowns. The solution can then be obtained efficiently in combination with an iterative Krylov subspace solver.

We show that wavelet based methods are not suitable for high frequency problems, where the number of oscillations is large with respect to the size of the scattering obstacle. We quantify the behaviour of the method in the oscillatory setting, and propose an improvement based on wavelet packets. Quadrature techniques are constructed for the efficient implementation of wavelet Galerkin discretisations. Methods based on hierarchical matrices and fast multipole methods are discussed for low frequency and high frequency scattering problems, and their applicability is compared.

Due to their ubiquitous nature in wave phenomena, oscillatory integrals are studied. A new method is proposed for the evaluation of univariate and multivariate oscillatory integrals, based on an extension of the method of steepest descent. Contrary to traditional methods, the accuracy of the new method increases rapidly with increasing frequency of the integrand, and it is shown that its computational cost is very low.

Finally, the insights in the behaviour of oscillatory integrals lead to the formulation of a novel method for highly oscillatory integral equations. We propose a hybrid method that combines asymptotic estimates of the solution with a classical boundary element discretisation. The hybrid asymptotic method requires a number of operations that is fixed with respect to the frequency. Results are given for the case of smooth and convex scattering obstacles. We show that the discretisation matrix in this case is small and highly sparse.

Patch dynamics: macroscopic simulation of multiscale systems

Giovanni SAMAEY, KUL, May 30, 2006 (Huis Bethlehem, Schapenstr. 34, Leuven)

Promotor: Dirk Roose

For an important class of multiscale problems, a separation of scales exists between the available (microscopic) model and the (macroscopic) level at which one would like to observe and analyze the system. For time-dependent multiscale problems of this type, Kevrekidis et al. developed a so-called "equation-free" framework, based on the idea of a so-called coarse-grained time-stepper. The patch dynamics scheme is a coarse-grained time-stepper which approximates the time evolution of a set of spatially distributed macroscopic variables for which the governing partial differential equation (PDE) is not (or only approximately) available; the scheme only performs appropriately initialized simulations using the available microscopic model in small portions of the space-time domain (the patches).

We analyze the patch dynamics scheme of Kevrekidis et al. for a class of parabolic homogenization problems. We show that the scheme approximates a finite difference scheme for the unavailable macroscopic equation when suitable boundary constraints are imposed on the microscopic simulations; something which is generally not possible in practice. Therefore, we introduce a modified scheme, which uses buffer regions around the patches. This allows to impose standard boundary conditions without affecting the microscopic solution inside the patches. We prove convergence for diffusion homogenization problems, and show numerically that the scheme can also be used for hyperbolic and higher order problems. We also formulate and analyze a finite volume variant.

Once a coarse-grained time-stepper has been constructed, it can readily be used as input for time-stepper based numerical bifurcation algorithms. We construct a Newton–GMRES method for the coarse-grained computation of travelling waves of lattice Boltzmann models. We accelerate the convergence of the GMRES iterations by means of a preconditioner, which is based on an approximate macroscopic PDE.

We conclude with some numerical experiments in which the microscopic model is a stochastic particle-based model. We show that, in this case, one can only obtain accurate results when appropriate variance reduction techniques are used. This issue will require further investigation.

Verification and control of o-minimal hybrid systems and weighted timed automata

Thomas BRIHAYE, UMH, June 02, 2006, 14:00 (Salle M. Curie, Grands Amphis, UMH)

This PhD thesis is at the hinge between *computer science* and *mathematical logic*, in particular we study mathematical aspects of *verification*. The document is divided into two parts: the first part study the *o-minimal hybrid systems* and the second is dedicated to the study of *weighted timed automata*.

Verification aims to verify that a given real life system satisfies a given property. For instance when considering air traffic management one would like to avoid airplane to crash. In order to automatically check that a given system verifies a given property, formal abstraction of both real life systems and properties have been introduced.

Hybrid systems are mathematical models of real life systems, of which both o-minimal hybrid systems and weighted timed automata are examples. Roughly speaking hybrid systems are finite state machines interacting with continuous dynamics. Hybrid systems have numerous applications they allow to model air traffic management, power plant,... Together with these models various (temporal) logics have been considered (first-order logic, CTL, μ-calculus,...) which capture properties of the systems which we are interested in. Let $\mathcal{H}$ be a class of hybrid systems and Φ be a class of properties (expressed in a given logic), one can naturally ask the following question. Given $H \in \mathcal{H}$ and $\varphi \in \Phi$ do we have that

$$H \models \varphi\ ?$$

This question is known as the *model-checking question*. Hybrid systems are models for closed systems, where every transition is controlled. If we want to distinguish between actions of a *controller* and actions of an *environment* we have to consider *hybrid games*, *i.e.* hybrid systems with controllable and uncontrollable actions. In this context the natural question to consider is the *control question*. Given an hybrid game G and a property φ, controlling the hybrid game means building another system C (which can only use controllable actions), called the *controller*, such that $G \parallel C$ (the system G guided by the controller C) satisfies the property φ. In words we ask for the existence of a controller (a.k.a. *strategy*) which forces the hybrid game to satisfy the property φ.

In the first part of the document we prove the existence of finite *bisimulation* for the class of o-minimal hybrid systems. Our results extends the one obtained by Lafferriere, Pappas and Sastry in 2000. The key ingredient is an original encoding of trajectories through words. Our technique has been recently used by Korovina and Vorobjov in order to compute a sharp bound on the size of the coarsest finite bisimulation of *pfaffian hybrid systems*. We also discuss effectiveness of our construction and give subclasses of o-minimal hybrid systems for which the construction of the finite bisimulation is effective encompassing similar results by Lafferriere, Pappas and Yovine. We also provide a systematic study of the word encoding technique which allows to present a new symbolic *bisimulation algorithm*. We end this part with the study of *o-minimal hybrid games* by identifying subclasses of hybrid games for which the control question is decidable. Our technique applies to timed automata, and we recover among our results the decidability of timed games obtained by Asarin, Maler and Pnueli in 1995.

We start the second part of the thesis by computing the exact complexity of the *optimal reachability problem on weighted timed automata*; we prove the PSPACE-COMPLETENESS of this problem. This problem has been proved decidable independently by Alur and al. and Larsen and al. in 2001. In 2004 the exact complexity of the problem was announced by Alur and Madhusudan in a survey paper on timed automata but a complete proof never appeared. Then we study the model-checking of the *Weighted CTL* logic ($WCTL$ for short). Our motivation was the important open problem of model-checking timed automata extended with stopwatches used as observers (proposed by Alur, Courcoubetis and Henzinger in 1993). We prove the general undecidability of this problem. We thus define $WCTL_r$ (a restriction of $WCTL$) for which we obtain both decidability and undecidability results (depending on whether the time is discrete or dense and on the dimension of the automata we are considering). Finally we end this part with the optimal reachability on *weighted timed games* problem. In this context one searches to find a controller that minimizes the *cost* of reaching some *goal location* however the environment behaves. Only partial decidability results were known in this context. In 2004 Alur and al. study the k-bounded optimal game reachability problem. The same year Bouyer and al. independently proved that they can calculate the optimal cost of such a game under a technical (*strict non-zenoness of cost*) condition. On one hand we prove the general undecidability of the problem, on the other hand we prove that the same problem is decidable when restricting to one dimensional weighted timed game (with stopwatch observers).

Bislim point-line geometries of gonality 3

Valerie VER GUCHT, UGent, June 16, 2006

I have written this thesis during my assistantship at UGent University, under the good care of my supervisor prof. dr. Hendrik Van Maldeghem. The plan is to defend it on the 16th of June 2006 at 5 pm in the Krijgslaan 281, S25, Gent — to be confirmed.

In *incidence geometry* the classification of certain types of geometries (i.e., geometries satisfying common axioms) is a central problem. In most cases, however, one needs additional assumptions, and often some transitive action is hypothesized, because the standard examples usually have a large group of collineations. One of the most popular hypotheses is without doubt the assumption of *flag transitivity*. One of the reasons is that a geometry can be reconstructed in a canonical way using a flag-transitive group and the various stabilizers of the elements of a fixed flag. Many results thus characterizing classical and sporadic simple groups are available, see A. Pasini, *Diagram Geometries*, for examples. Note, though, that in many cases flag transitivity is not (yet) enough to classify. A good example is the class of finite projective planes, where a full classification of the flag-transitive ones is so far only possible if one hypothesizes a non trivial flag stabilizer. In this thesis we are concerned with *point-line geometries* of small order and gonality: every line contains three points, every point is on three lines (the so-called *bislim* geometries) and the geometry has triangles but no digons (i.e. has *gonality* 3). Known examples of bislim geometries of gonality 3 are: the Fano geometry, the Möbius-Kantor geometry, the Pappus geometry, the Desargues geometry and the Coxeter geometry.

The starting point of this PhD, is to classify all (not necessarily finite) bislim *flag-transitive* point-line geometries of gonality 3. We conclude that either it belongs to a certain infinite class described by Coxeter a long time ago, or is one of three well defined sporadic ones, namely, the Möbius-Kantor geometry on 8 points, the Desargues geometry on 10 points, or a unique infinite example related to the tiling of the real Euclidean plane in regular hexagons (the honeycomb geometry).

We define the *local structure* in a point of a bislim geometry Γ of gonality 3 and say Γ to be *geometrically point homogeneous* if all points of Γ have the same local structure. We show that there are only 11 possible non-isomorphic local structures (out of 78 if the geometry is not necessarily geometrically point homogeneous).

Then we deal with two variants of the initial classification problem: first the condition of flag transitivity is replaced by the less sharp condition of *point homogeneity*; and secondly by the condition of *point transitivity*. Along the way, we discover some new geometries and give their constructions and groups.

An algebraic approach to the perfect Ree-Tits generalized octagons and related geometries

Kris COOLSAET, Ghent University, July 4, 2006

I have written this thesis under the guidance of Prof. Dr. Hendrik Van Maldeghem. The plan is to defend it on the 4th of July 2006 at 5 pm in the Krijgslaan 281, S25, Gent — to be confirmed.

Of all generalized polygons related to algebraic groups the generalized octagons have probably been studied the least. Perhaps one of the reasons is the fact that only a single (infinite) family of examples is known and that these *Ree-Tits* octagons, and their embeddings in a projective space, are not easily constructed.

The standard way to define a Ree-Tits octagon is as a coset geometry of a Ree group. This group is constructed by 'twisting' the Chevalley group of type F_4 over a suitable field K of characteristic 2. What is however missing for the Ree-Tits octagon, and exists for all other classical generalized polygons, is an explicit embedding into some projective space.

The main objective of the PhD thesis was to establish a construction of such an embedding into a 25-dimensional projective space, where the points (lines) of the Ree-Tits octagon are a subset of the points (lines) of the space. We have established explicit 'formulae' which can be applied to the projective coordinates of a point to determine whether or not it is a point of the octagon. And likewise, we have provided a means to determine from the projective coordinates of two points of the octagon, whether they are collinear in the octagon, and more generally, what is their mutual distance.

The PhD thesis looks at the octagon (and the metasymplectic space to which its points and lines belong) from three different perspectives : groups, geometries and algebras, concentrating on the latter. We proceed in three stages: first we provide an in-depth treatment of the Lie algebra (and group) of type E_6 over a general field, then we consider the subalgebra of type F_4 in general characteristic and in the special case of characteristic 2, and finally we define the *octagonal elements* of this algebra, which serve as points of the Ree-Tits octagon.

4 Miscellaneous

4.1 From UMH

Le séminaire interuniversitaire de **logique mathématique** tient ses séances hebdomadaires le jeudi à 11h et à 14h30; le programme est disponible à l'adresse **http://math.umh.ac.be/logic/seminars.htm**

4.2 From UHasselt

The Department of Mathematics at Hasselt University announces the following tenured position:

Professor of Algebra (mandate WNI/2006/005)

Teaching tasks
In cooperation with the lecturing staff, the candidate is responsible for teaching mathematics within the Bachelor programs of (mainly) the Faculty of Exact Sciences.

Research tasks
The research activity will be situated in the algebra research group. This research group has an extensive expertise in non-commutative algebra and non-commutative algebraic geometry. The candidate is expected, through research in these, and possibly closely related subjects, to strengthen the research group.

Profile
As far as teaching is concerned the candidate must be a skilled lecturer and should communicate well with students and colleagues of the lecturing staff. He/she should make a priority of high class teaching and integrate rapidly with the teaching concepts in use at Hasselt University. He/she is expected in his/her teaching to pay sufficient attention to concrete applications of mathematics in other sciences as well as in society in general. Prior experience in teaching is a benefit. The candidate should either have a good command of the Dutch language or be willing to acquire the necessary language skills on a short time scale.

The candidate should have a verifiable research experience (through publications in international refereed journals) in non-commutative algebra. Familiarity with geometrical methods and the use of computer algebra software are a benefit. In addition the candidate is expected to have broad mathematical interests among which are awareness of applications of mathematics.

Requested qualifications
Doctoral degree in mathematics or equivalent.

Additional information
Prof. dr. Freddy Dumortier, +32 11 26 82 39, freddy.dumortier@uhasselt.be
Prof. dr. Erna Nauwelaerts, +32 11 26 82 29, erna.nauwelaerts@uhasselt.be
Prof. dr. Michel Van den Bergh, +32 11 26 82 27, michel.vandenbergh@uhasselt.be

Application Interested candidates are requested to send a written application consisting of a recent curriculum vitae and a description of their area of expertise. Applications forms can be downloaded (wordform / pdf.file) and be returned to: Hasselt University, Rectoraat, Campus Diepenbeek, Agorlaan - gebouw D, B-3590 Diepenbeek, Belgium, rectoraat@uhasselt.be.

Applications should be received by Thursday, June 1st 2006 at the latest.

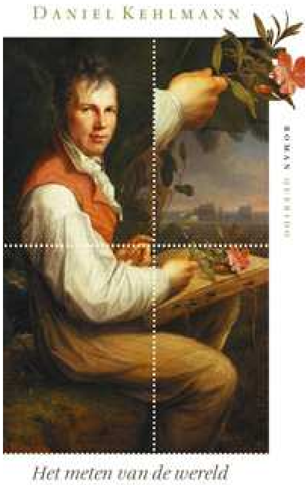
5 Maths and art, fiction, jokes, quotations...

From Neumann :

Young man, in mathematics you don't understand things, you just get used to them.

An engineer, a physicist and a mathematician are staying in a hotel.
The engineer wakes up and smells smoke. He goes out into the hallway and sees a fire, so he fills a trash can from his room with water and douses the fire. He goes back to bed.
Later, the physicist wakes up and smells smoke. He opens his door and sees a fire in the hallway. He walks down the hall to a fire hose and after calculating the flame velocity, distance, water pressure, trajectory, etc. extinguishes the fire with the minimum amount of water and energy needed.
Later, the mathematician wakes up and smells smoke. He goes to the hall, sees the fire and then the fire hose. He thinks for a moment and then exclaims, "Ah, a solution exists!" and then goes back to bed.

Daniel Kehlmann *Het meten van de wereld*, Querido, Amsterdam, 2006 (289 p.) ISBN 90-214-7030-6. *Die Vermessung der Welt*, Rowolt, Rembek, 2005.

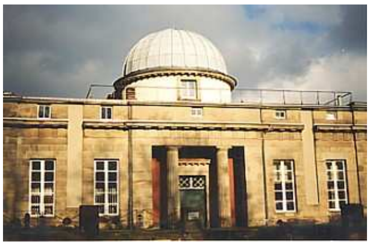


This book has been a hit in Germany since it appeared in September 2005, and the Dutch translation that appeared shortly after in February 2006, has also triggered some very positive reviews. This may be surprising, given that the novel is about two scientists: Alexander von Humboldt and Carl Friedrich Gauß. The title refers to the fact that both of them contributed, each in his own particular way, to the boost of scientific exploration of the world around the turn of the eighteenth-nineteenth century. Science brought order and structure in a chaotic world. Delambre and Méchain were measuring the meridian from Dunkerque to Barcelona for Napoleon to install the metric system (see review of *The measure of the world* by Denis Guedj in this Newsletter, issue 45, November 2003, which may not be confused with the present title). Diderot and d'Alembert were publishing their *Encyclopédie*, and Kant published his *Kritik der reinen Vernunft*.

Humboldt and Gauss were two, very German, exponents of this time. They are sketched as two totally different caricatures of the typical German character. Probably, this is what made this novel such a success: the humor in describing the total lack of humor or the ability of seeing the relativity of themselves and the world around them of the idiosyncratic scientists.

C.F. Gauß 1777-1855

The first part of the book describes in alternating chapters the two characters in their own doings. Humboldt is the one passionate about collecting, observing, classifying, cataloging everything and everyone he meets on his way. He arranges for himself and his companion Aimé Bonpland a mission to South-America. Like Don Quichote and Sancho Panza they conquer the South-American jungle. Humboldt is a passionate collector of data and knowledge, restless and fearless. He is totally detached from human feelings and especially those concerning female beings, except when considered as a study object, but on the other hand, he gets very sentimental over his dog that is lost in the jungle. Bonpland is his antipode, a lover of alcohol and women with some down to earth common sense. On this journey, Humboldt collects and categorizes everything and takes notes: flowers, plants, rocks, insects, people, temperature, magnetism, wind,. . . . He measures whatever can be measured. He undertakes an expedition to uncover a channel connecting the Orinoco and the Amazon river. He climbs volcanos, crawls into grottos, travels through the jungle, he tastes curare to prove that it can kill an animal but does not hurt when swallowed. The fact that he makes this journey through the jungle in a uniform of a Russian mine inspector is funny as such, but there are many other hilarious situations. For example when he corrects the calculations of the captain when they cross the Atlantic, his surprise that he can not find a guide when he takes some ancient Indian corpses along on his journey, or his total bluntness when he has to deal with women, or when he meets another bewildered German deep in the jungle and they decide not to spend too much time together: they had seen enough Germans already.



Observatory in Göttingen where Gauß was director

While Humboldt takes himself too seriously in a very German way, and he does not understand the others, he remains polite and tries to be friendly, Gauß on the other hand, being a mathematical genius, is obsessed by mathematics but also science in general. He turns out to be an impatient, grumbling, man but unlike Humboldt he is attached to women even though he does not understand them either. He hardly realizes that he is married and he is surprised that his wife had given childbirth when he comes home. During the wedding night he interrupts love making to scribble his idea about least squares down on a piece of paper. He has a very big ego, is dogmatic and without feeling. He is very unwilling to leave his home and feels like being physically tortured, and sick whenever he has to travel in a coach. So both figures somehow measure the world: Humboldt by traveling around the globe, and Gauss from his ivory tower, without ever leaving home. Humboldt wrote a report of his expedition with 34 volumes, Gauß wrote his *Disquisitiones arithmeticæ*.

It is at the occasion of a congress in Berlin in 1828 that the two men do meet, both old and famous. Science has lived beyond them. When Humboldt, visits Russia as an older man, he measures the width of the river Volga with his sextant: 5240.7 feet he concludes. Of course, they reply him, it is 5240.9 feet to be precise, but, given this old fashioned method of yours, you did amazingly well.

The end of the book is about Eugene, Gauß's oldest son with his second wife. Eugene was imprisoned because he had taken part in a secret meeting where presumably F.L. Jahn, author of the *Deutsche Turnkunst* (Gauß thows this book out of the window) was supposed to lecture. When Humboldt did not understand that some official was suggesting to bribe him to set Eugene free, Gauß bluntly said it, upon which the official denied, and pretended to be offended. Anyhow, Gauß, not making any compromise brings it to an argument, and not knowing how to tread his son anyway (he wrote poems and such crap), makes it worse for Eugene and eventually leaves him to what he has put himself into. It turns out that it is Humboldt who arranges Eugene's escape to America, which, as so many other things refer to current issues, in this case, where science has escaped to.

Daniel Kehlmann

Daniel Kehlmann, (born in München, 1975) studied philosophy and literature. He lived for a longer time with the idea to write something about Gauss, but it was only after a visit to Mexico, where reading about the adventures of Humboldt, he learned that Gauß and Humboldt had met in 1828, and it was only then that the current project took form. He extends the caricature of the German nature to himself by using an indirect style: there are no direct dialogues, and he lets his main characters display their disgust for novelists and story tellers. For instance Gauss is not taking the philosopher Kant very highly.

It is a novel in the first place, so do not read it for its historical content, which no doubt is probably correct, but to me it was a rather amusing comedy sketching an idiosyncratic caricature of what German scientists as supposed to be.

Adhemar Bultheel

Eindelijk ook in het nederlands!

Proof (2001) van David Auburn

Door: Het Raamtheater
Regie: Julienne De Bruyn
Regie-assistentie: Katri Vereecken
Vertaling: Walter Tillemans
Decor: John Bogaerts
Toneelmeester: Nestor Poma
Met: Katrien De Becker, Frans Maas, Noémi Schlosser en Bert Vannieuwenhuyse
Speeldagen: nog tot 28 mei.
wo-do-vr-za om 20u en op zondag 28 mei 2006 (daarentegen NIET op do. 11 en 18 mei)
Plaats: Raamtheater op 't Zuid
Adres: De Vrièrestraat 36 , 2000 Antwerpen
Telefoon nr: 03/233 91 48
Url: `http://www.raamtheater.be`

'Net voor ze 25 wordt, krijgt Catherine af te rekenen met de dood van haar vader, de briljante maar labiele Robert die ze jarenlang verzorgd heeft. Bovendien komt haar zuster Claire, waar ze jaren niets van gehoord heeft, plots op de proppen en wordt ze door Hal belaagd met attenties. Hij is een oud-student van Robert die bruikbaar materiaal hoopt te vinden in de stapel notaboeken die haar vader nagelaten heeft. Catherine probeert Hals blijken van affectie te verwerken en Claire raad te geven bij de plannen die ze met haar leven heeft. Maar vooral is ze bezig met de vraag hoeveel van het genie -en de krankzinnigheid- ze van haar vader geërfd heeft.'

'Proof gaat over familierelaties en verantwoordelijkheid, over liefde en schuld, kwetsbaarheid en vertrouwen, dood en verlies. Het behandelt grote vragen, maar houdt alles op een menselijke schaal, met veel gevoel voor humor. Auburn kreeg een Pulitzerprijs voor dit stuk.' (website Raamtheater)

Inhoudelijk loopt het stuk wat in de sporen van 'A beautiful mind' en is spijtig genoeg een bevestiging van gangbare clichés die over wiskundigen de ronde doen: grote wiskundige genieën leven op de rand van krankzinnigheid, wiskunde is een mannenwereld waar vrouwen nagenoeg geen kans maken, etc.

A. Bultheel

DE VLAAMSE VERENIGING WISKUNDELERAARS organiseert op zaterdag 1 en zondag 2 juli 2006 het dertiende meerdaags congres te OOSTENDE - Congreshotel Royal Astrid

Voor de locatie heeft het bestuur gekozen voor het congreshotel Royal Astrid, Wellingtonstraat 1, 8400 Oostende. Wij beschikken daar over een zaal in aula-vorm voor de plenaire voordrachten, over ruime lokalen voor de workshops. De deelnemers die kiezen voor een overnachting verblijven in verzorgde tweepersoonskamers met douche-wc.

Dit hotel is prachtig gelegen vlakbij de Wellingtonrenbaan en het strand van Oostende.

Het hotel is goed bereikbaar met het openbaar vervoer (trein, tram stopt juist voor het hotel). Parkeergelegenheid is er echter bijna niet.

Alle info en inschrijvingen: www.vvwl.be

First Annoucement and call for communications

Evolution Equations 2006: in the memory of G. Lumer

28 August-1st September 2006

Mons (Belgium) and Valenciennes (France)

URL address: http://www.univ-valenciennes.fr/lamav/eveq06

The aim of this conference is to bring together leading scientists from Mathematical Analysis, working on evolution equations and related topics. This conference is organized in the memory of our distinguished colleague and friend Günter Lumer that passed away in June 2005.

Invited speakers:
The following invited speakers have already confirmed their participation:

A. Aibeche, Sétif, Algeria; F. Ali Mehmeti, Valenciennes, France; H. Amann, Zürich, Switzerland; W. Arendt, Ulm, Germany; B. Bäumer, Otago, New-Zeeland; J. von Below, Littoral, France; J. van Casteren, Antwerpen, Belgium; Ph. Clément, Delft, The Nederlands; G. Cœuré, Lille, France; G. Da Prato, Pisa, Italy; O. Diekmann, Utrecht The Nederlands; R. Dorroh, LSU, USA; J.-P. Gossez, ULB, Belgium; B. Gramsch, Mainz, Germany; K. P. Hadeler, Tübingen, Germany; M. Hieber, Darmstadt, Germany; M. Iannelli, Trento, Italy; V. Keyantuo, Puerto Rico, Puerto Rico; H. König, Saarbrücken, Germany; P. Malliavin, Paris, France; J. Mawhin, UCL, Belgium; R. Nagel, Tübingen, Germany; F. Neubrander, LSU, USA; L. Paquet, Valenciennes, France; B.-W. Schulze, Potsdam, Germany; J. Schmets, Liège, Belgium; R. Van Keer, Gent, Belgium; L. Weis, Karlsruhe, Germany.

Organizing Committee:
Prof. J. von Below, ULCO, France; Prof. C. Finet, UMH, Belgium; Prof. J.-P. Gossez, ULB, Belgium; Prof. J. Loris-Teghem, UMH, Belgium; Prof. J. Mawhin, UCL, Belgium; Prof. C. Michaux, UMH, Belgium; Prof. S. Nicaise, UVHC, France; Prof. J. van Casteren, UA, Belgium; Prof. R. Van Keer, UGent, Belgium

Scientific Committee:
Prof. H. Amann, Zürich, Switzerland; Prof. W. Arendt, Ulm, Germany; Prof. M. Hieber, Darmstadt, Germany; Prof. S. Nicaise, Valenciennes, France; Prof. R. Nagel, Tübingen, Germany; Prof. F. Neubrander, Louisiana, USA

Call for communications:
You are invited to submit a proposal for a short lecture of 20 minutes. An abstract of one page maximum will be join to the submission. All communications related to G. Lumer's works will be welcome. Please send your proposal via the website of the conference (http://www.univ-valenciennes.fr/lamav/eveq06) or to S. Nicaise (snicaise@univ-valenciennes.fr).

Serge Nicaise

LAMAV
Université de Valenciennes et du Hainaut Cambrésis
Le Mont Houy, B.P. 311
F-59313 Valenciennes Cédex 9, France
Tél.: 03.27.51.19.27
Fax: 03.27.51.14.08
e-mail: snicaise@univ-valenciennes.fr

Vrije Universiteit Brussel

FWO VLAANDEREN

New Techniques in Hopf Algebras and Graded Ring Theory

Brussels, September 19-23, 2006

First announcement

Scientific Commitee: S. Caenepeel (Brussels), A. Marcus (Cluj-Napoca), C. Năstăsescu (Almería and Bucharest), F. Van Oystaeyen (Antwerp)

Organizing Commitee: S. Caenepeel (Brussels), F. Van Oystaeyen (Antwerp)

Local Commitee: S. Caenepeel, K. Janssen, J. Vercruysse

Invited speakers: S. Montgomery (Los Angeles), H.-J. Schneider (Munich), Y. Bespalov (Kiev), G. Böhm (Budapest), T. Brzeziński (Swansea at Wales), A. Marcus (Cluj-Napoca), C. Năstăsescu (Bucharest), J. Gómez Torrecillas (Granada), A. Stolin (Göteborg), L. Kadison (Göteborg), A. Van Daele (Louvain).

Preregistration is possible by sending an email to scaenepe@vub.ac.be; please mention if you plan to present a lecture of 30 minutes. The second announcement, with registration form and information on hotel accomodation will be sent around June 15.

More information will appear on http://homepages.vub.ac.be/ scaenepe