

News

| Mathematical Activities

This section offers an account of mathematical activities in the Netherlands. Future activities are announced and past activities are reported on. Would you like to see your announcement or report in this section? Send your contribution (\pm 350 words, if possible with illustration) to news@nieuwarchief.nl. The news editor reserves the right to shorten or refuse contributions.

Editor: Yves van Gennip

Abel prize 2008 for Thompson and Tits

John Griggs Thompson of the *University of Florida* and Jacques Tits of the *Collège de France* have won the 2008 Abel Prize “for their profound achievements in algebra and especially for their shaping of modern group theory”.

The Abel Committee of the *Norwegian Academy of Science and Letters* states that “Thompson revolutionised the theory of finite groups by proving extraordinarily deep theorems that laid the foundation for the complete classification of finite simple groups, one of the greatest achievements of twentieth century mathematics”. Furthermore “Tits created a new and highly influential vision of groups as geometric objects. He introduced what is now known as a Tits building, which encodes in geometric terms the algebraic structure of linear groups.”

www.abelprisen.no



photo: University of Florida and Jean-François Dary/CNRS Images

2008 Abel Laureates John Griggs Thompson and Jacques Tits

Amsterdam student wins in Ostrava

Mathematics student Demeter Kiss of the *Vrije Universiteit* in Amsterdam has won the *Vojtech Jarnik* mathematics competition in Ostrava in the Czech Republic. In category II, the category for students who have finished their first two years at university, Kiss stayed three points ahead of the runner up. Another student from Amsterdam, Attila Herczegh, finished 9th in the same category, which saw a total of 66 contestants. This was the first year the *Vrije Universiteit* participated in this competition.

jarnik.osu.cz and www.scienceguide.nl

Liebe Maria

In early 2006 mathematics, physics, astronomy and computer science students of the student association *De Leidsche Flesch* surprised friends and foes by offering a letter to then-minister of Education Maria van der Hoeven complaining about the level of their high school mathematics education (*Nieuw Archief voor Wiskunde*, March 2006). It made quite a stir back then in the Netherlands, but as it turns out also hasn't gone unnoticed abroad.

Aloys Krieg, Ferdinand Verhulst and Sebastian Walcher wrote an article for the *Deutsche Mathematiker Vereinigung* (German Association of Mathematicians) about the Dutch educational situation and the student initiative that got known under the name of the accompanying website *Lieve Maria* (Dear Maria).

Krieg and Walcher, both from the *Rheinisch-Westfälische Technische Hochschule Aachen*, hope that the article, which at the time of writing

is still to appear in the *Mitteilungen der DMV*, will stimulate discussion within the *Deutsche Mathematiker Vereinigung* about mathematics education and possible changes therein in Germany. *Yves van Gennip*

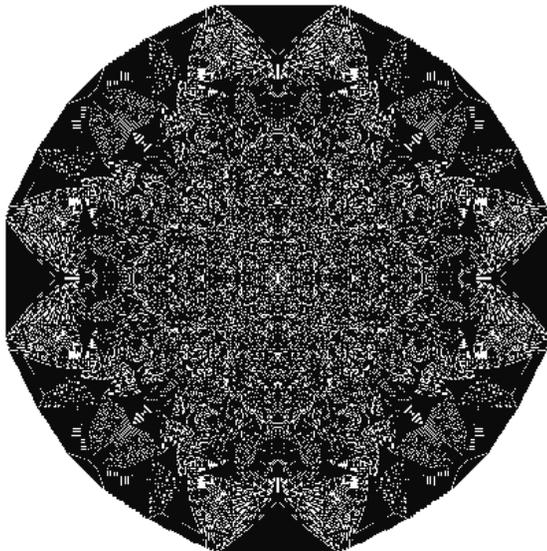
Does mathematics run into the sand?

Not only kids like to play in sandpiles, mathematicians also find many exciting things going on between the silica grains. Former mathematics teacher turned researcher Anne Fey-den Boer received her Ph.D. degree for her research on models of these sandpiles. She found that they exhibit various forms of self-organisation and patterns are formed that are stable over the course of time. Fractal patterns can also develop.

The model Fey uses is simple to explain. The pile is modelled as a grid where each grid point has a height. With the passing of time the height of a grid point increases until it passes a critical value after which the excess mass has to be divided over neighbouring grid points. However, the behaviour of this model shows very complex and wide-ranging behaviour.

Models like this are also used to describe the movement of the Earth's crust, stock market fluctuations and the formation of traffic jams and so a better understanding of their behaviour is relevant to many other fields of science and applications. Here mathematics does not run into the sand.

Bron: www.nwo.nl



Dispersion pattern of 366.600 particles from the origin

Math students wins ECHO Award

University of Amsterdam mathematics student Apo Cihangir has won the *ECHO Bèta Techniek Award*, a prize from the Dutch expertise center for diversity policy *ECHO* and the science and technology organisation *Platform Bèta Techniek* for talented foreign, non-western, students. He won the prize because of his study results, organisational talent and social involvement. He is involved with the *IMC Weekendschool*, which provides additional education for young teenagers from poor neighbourhoods.

Bron: www.science.uva.nl

Train of thought

Was the train you took to get from Schiphol airport to the 5ECM conference delayed? There is a good chance it was not, thanks to some mathematically inspired traffic management.

Andrea D'Ariano received a Ph.D. degree from the *Technische Universiteit Delft* last April for his research on automated systems for advising rail traffic managers. This research was fuelled by the wish of the *Nederlandse Spoorwegen* (Dutch Railways) to improve the punctuality its trains by streamlining the sequence of events during breakdowns and delays. Based on mathematical models and algorithms D'Ariano developed ROMA (Railway traffic Optimization Means of Alternative graphs), an automated system which can help rail traffic managers in making their daily decisions. Simulated studies showed that the use of ROMA led to less and shorter delays.

One drawback of ROMA is that detailed up-to-date traffic information must be available at all times, a demand that is not realistic at the moment, but which may become more feasible when trains start carrying their own GPS devices.

The research fits within the current trend of dynamical traffic management, which is applied on a small scale already at, for example, Schiphol station where it is decided only at the very last moment on which platform a train will enter the station. Have an undelayed trip home.

www.tudelft.nl

Award for networks

Johan van Leeuwen of the *Technische Universiteit Eindhoven* has won the *Doctoral Dissertation award for Operations Research in Telecommunications* for his research into mathematical models for dealing with the ever increasing information flow in networks, like the internet.

His dissertation *Queueing models for cable access networks* dates back to 2005; this year it was awarded the aforementioned award during the biennial INFORM-conference.

Bron: www.tue.nl/cursor

Study Group Mathematics with Industry 2008

On an early morning, Monday 28 January, about 80 mathematicians gathered at the University of Twente for a week of mathematical problem solving. First, Rector Magnificus Henk Zijm described each of the participating companies. This didn't cause him too many problems, as he has worked for five of them and is paying taxes to the sixth. He put a great emphasis on the importance of mathematical modeling. The opening was followed by a talk from STW representative Rik Janssen.

By then most participants were eager to learn about the six problems they would be working on during the week. First up was Yvo Boers, from Thales, who told us about the problem of placing non-perfect sensors in a domain in various situations. After a large number of questions and a well-deserved coffee break, Jeroen van der Scheer from the Water Board Regge and Dinkel explained the problems they face with the current climate change. Leo Kroon, from Dutch Railways NS, presented the next problem (how to park trains overnight) using many pictures and a computer game he had solved on the train that very morning.

After the excellent lunch Peter Steeneken and Jiri Stulemeijer explained the modelling wishes NXP had with respect to Micro Electro-Mechanical Switches. Then Kevin Dolan, representing Philips Medical Systems and AMC, left us all feeling slightly uncomfortable with his stories about needles being put into people's brains. I must admit, though, that the lively description of a dying neuron by his colleague Lo Bour helped achieve that feeling. Andreas ten Cate, Corus, fortunately presented a less invasive problem: how to efficiently model the changing composition of liquids during the solidification of molten mixtures. During the tea break various groups were formed. Some people immediately knew what problem they wanted to work on, some found

it harder to make up their minds, while others kept circulating throughout the week (although, we were assured, only very few attendants had this privilege).

During this week, the mathematicians have interpreted the problems, then deformed and simplified them, carried out experiments, and have come up with promising results and many starting points for future research. I was impressed by what can be achieved in just one week, and I am looking forward to the next edition, 26-30 January 2009 in Wageningen. I have no doubt that it will be as great as this one.

Daily reports, details of the problems, and the various occurrences of the Study Week in the national Press can be found at the SWI website: wwwhome.math.utwente.nl/~swi2008. SWI 2008 was sponsored by STW, NWO and also CWI, UT, CTIT and IMPACT. *Dan Roozmond*



photo: wwwhome.math.utwente.nl/swi2008

Mathematicians deciding how best to help Corus model the aluminium casting process

Trained for efficiency

The *Nederlandse Spoorwegen* (Dutch Railways) have won the 2008 *Franz Edelman Award for Achievement in Operations Research and the Management Sciences*, which is presented annually by the *Institute for Operations Research and the Management Sciences* (INFORMS) to recognise “outstanding examples of operations research-based projects that have transformed companies, entire industries, and people’s lives”.

Fellow finalists are the Federal Aviation Administration, StatoilHydro, the City of Stockholm, the U.S. Environmental Protection Agency and Xerox. They were beaten by the Dutch entry *The New Dutch Timetable: The O.R. Revolution*.

In 2006 the Dutch passenger railway network had a traffic volume of 15.4 billion (short scale) passenger kilometers, which was a significant increase from the 8.0 billion in 1970. The timetable had never been structurally altered in all those years however and more and more scheduling problems began to arise.

Operations researchers constructed four solvers (*CADANS*, *STATIONS*, *ROSA* and *TURNI*) to construct a new cyclical timetable that can be repeated every hour.

The new schedule was introduced in December 2006. The year 2007 had an all-time passenger record, with a 10–15% increase in passenger demand on the lines with the largest timetable improvements. The percentage of trains arriving within three minutes of the scheduled time increased from 84.8% in 2006 to 87.0% in 2007, which is again an all-time high. Customer surveys show a radical improvement in the public’s perception of the railways. The more efficient resource schedules and the increased number of passengers have already resulted in an annual additional profit of 40 million Euros. The new timetable also made a further increase in railway transport on the current network possible.

It is not easy to localise the role played by the new timetable in all these improvements, but one result is directly visible: the *Edelman Prize* that was awarded last April. *Bron: www.informs.org*

A world of mathematics

Employees and students of the *Technische Universiteit Eindhoven* have developed *Wiskunde Wereld* (Mathematics World), an activity for third year high school students in which they come into contact with eight different mathematical subjects. The goal is to give students a better idea of what mathematics is and how it is applicable to the world around us by letting them play mathematical games. *w3.win.tue.nl*

Petition for Ibni Oumar Mahamat Saleh

Chadian mathematician and politician Ibni Oumar Mahamat Saleh was arrested by members of the presidential guard on February 3. At the time of writing no confirmed news about his whereabouts or condition had been released. The Mathematical Societies of France *SMF*, *SMAI*, and *SfDS* initiated a ‘petition of the international mathematical community’ to be delivered to the presidents of the Republic of Chad and the French Republic asking for the truth about Ibni Oumar Mahamat Saleh to be disclosed.

Ibni Oumar Mahamat Saleh is Secretary-General of the opposition party *PLD*. People fear for his life after fellow opposition leader Ngarleij Yorongar, who was imprisoned along with him but was released, told that Ibni Oumar Mahamat Saleh was severely beaten and had probably died. *smf.emath.fr/en/PetitionSaleh*

Wolf prizes for Deligne, Griffiths and Mumford

The 2008 Wolf Foundation Prize in mathematics has been jointly awarded to Pierre R. Deligne, Phillip A. Griffiths and David B. Mumford for their pivotal work in algebraic geometry.

Deligne was awarded the prize “for his work on mixed Hodge theory; the Weil conjectures; the Riemann-Hilbert correspondence; and for his contributions to arithmetic”, Griffiths “for his work on variations of Hodge structures; the theory of periods of abelian integrals; and for his contributions to complex differential geometry”, and Mumford “for his work on algebraic surfaces; on geometric invariant theory; and for laying the foundations of the modern algebraic theory of moduli of curves and theta functions”. *www.wolffund.org.il*



Pierre Deligne, Phillip Griffiths and David Mumford, winners of the 2008 Wolf Prize (photos: Deligne Mumford: www.wolffund.org.il; GGriffiths: Cliff Moore)