



# INFOMAT

Januar 2009

## Kjære leser!

En undersøkelse gjort i USA sier at det beste yrket man kan ha er matematiker. Vi tar selvfølgelig slike ting med en stor klype salt, men uansett er det morsomt å ligge på toppen.

Matematikksenteret i Trondheim trenger ny leder. Ingvill Stedøy-Johansen sier takk for seg etter å ha gjort en kjempejobb med å bygge opp kompetansesenteret for matematikkundervisning i Norge. Ved første utlysning meldte det seg ingen søkere, så fristen for å søke er utvidet.

Steel-prisene for 2009 er delt ut og Richard Hamilton fikk prisen for "a seminal contribution to research" for sitt arbeid om trefoldigheter med positiv Ricci-krumning fra 1982. Perelman ble tilbudt Fields-medaljen i 2006 og vi støtter priskomiteén i å ære en av de som brøytet veien for Perelmans gjennombrudd.

hilsen Arne B.



## MATHEMATICIANS ON A ROAD TRIP

### VERDENS BESTE YRKE: MATEMATIKER !!!

En ranking i Wall Street Journal fra begynnelsen av januar forteller oss det vi allerede vet, vi har verdens beste yrke. Les hele artikkelen inne i bladet.

INFOMAT kommer ut med 11 nummer i året og gis ut av Norsk Matematisk Forening. Deadline for neste utgave er alltid den 10. i neste måned. Stoff til INFOMAT sendes til

**infomat at math.ntnu.no**

Foreningen har hjemmeside <http://www.matematikkforeningen.no/INFOMAT>

Ansvarlig redaktør er Arne B. Sletsjøe, Universitetet i Oslo.

# ARRANGEMENTER

## Matematisk kalender

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**2009**

**Mai:**

**4.-10.** *4th General conference on advanced mathematical methods in finance*, Ålesund

**Juni:**

**1.-4.** Abelsymposiet, *Combinatorial aspects of commutative algebra and algebraic geometry*, Voss

**8.-11.** *Britisk-Nordisk Matematikerkonf.*, Oslo

**22.-26.** *International conference on spectral and higher order methods*, Trondheim

**August:**

**10.-14.** *Homological and geometric methods in algebra*, Trondheim

**Oktober:**

**12.-17.** *An international Conference on Stochastic Analysis and Applications*, Hammamet, Tunisia (CMA).

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### 4TH GENERAL CONFERENCE ON ADVANCED MATHEMATICAL METHODS IN FINANCE Ålesund, 4.-10. mai 2009

**Plenary Speakers:**

**Fred Espen Benth** (Oslo), **Damiano Brigo** (UK), **Vasile Brianzanesu** (Romania), **Umut Çetin** (UK), **Ernst Eberlein**, (Tyskland), **Lane Hughston** (UK), **Claudia Klueppelberg**, (Tyskland), **Damien Lambertson** (Frankrike), **Tom Lindstrøm** (Oslo), **George C. Papanicolaou** (USA), **Goran Peskir** (UK), **Eckhard Platen** (Australia), **Marie-Claire Quenez Kammerer** (Frankrike), **Walter Schachermayer** (Australia), **Uwe Schmock** (Østerrike), **Christoph Schawab** (Sveits), **Halil Mete Soner** (Tyrkia), **Peter Spreij** (Nederland), **Lukasz Stettner** (Polen), **Johan Tysk** (Sverige), **Esko Valkeila** (Finland), **Michèle Vanmaele** (Belgia), **Thaleia Zariphopoulou** (USA), **Xunyu Zhou** (UK),

Frist for registrering, **15. mars 2009**.

**Organisasjonskomité:**

**Giulia Di Nunno**, **Helge Galdal**, **Bernt Øksendal**, **Yeliz Yolcu Okur** (alle Oslo)

## ABELSYMPOSIET 2009

**Voss, 1.-4. juni 2009**

Combinatorial aspects of commutative algebra and algebraic geometry

Foredragsholdere:

**Aaron Bertram**, **Mats Boij**, **Anders Buch**, **Aldo Conca**, **David Eisenbud**, **Sergey Fomin**, **William Fulton**, **Jürgen Herzog**, **Joel Kamnitzer**, **Dan Laksov**, **Diane MacLagan**, **Ezra Miller**, **Sam Payne**, **Irena Peeva**, **Frank-Olaf Schreyer**, **Jessica Sidman**, **Mike Stillman**, **Rekha Thomas**, **Ravi Vakil**, **Jerzy Weyman**, **Andrei Zelevinsky**

## BRITISK-NORDISKE MATEMATIKERKONGRESS

**Oslo, 8.-11. juni 2009**

**Plenumsforelesere:**

**Mikael Rørdam**, (Operator algebras), **Ib Madsen**, (Algebraic topology and K-theory), **Erkki Somersalo**, ("Mathematics and the brain"), **Niels Peter Jørgensen**, (Homological algebra), **Martin Bridson**, (Geometric group theory), **Dominic Joyce**, (Differential geometry), **Nils Henrik Risebro** (Differential equations), **Olle Häggström**, (Probability), **Frances Kirwan** (Algebraic geometry), **Hermann Thorisson** (Probability theory) **Carsten Thomassen**, (Graph theory)

## INTERNATIONAL CONFERENCE ON SPECTRAL AND HIGH ORDER METHODS

**Trondheim, 22.-26. juni 2009**

Mer informasjon på

<http://www.math.ntnu.no/icosahom/>



## HOMOLOGICAL AND GEOMETRIC METHODS IN ALGEBRA, Trondheim 10.-14. august 2009

Mer informasjon på  
<http://www.math.ntnu.no/mat/alg/ConfHGMA/>

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## Nye doktorgrader

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**Håkon Schad Bergsaker** forsvarer sin avhandling *Brave new geometry: foundations and calculations* for graden ph.d. ved Universitetet i Oslo, 30 januar 2009.



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## Fra instituttene

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### Fra Norges Handelshøyskole:

**Roman Kozlov** (38) er tilsatt fra 1. januar 2009 som førsteamanuensis i matematikk ved Norges Handelshøyskole. Kozlov har doktorgrad i numerisk analyse fra NTNU, og har de siste årene vært postdoktor ved Universitetet i Bergen.



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## STIPENDIATSTILLING I BRUK AV IKT I MATEMATIKKUTDANNINGEN

En fireårig stipendiatstilling er ledig ved Institutt for matematiske fag og Program for læring med IKT (LIKT) ved Norges teknisk-naturvitenskapelige universitet (NTNU).

Dette ph.d.-prosjektet skal omhandle læring med IKT i den grunnleggende matematikkundervisningen for studenter ved sivilingeniørutdanningen ved NTNU. Ph.d.-kandidaten skal forske på bruken av IKT i læring av grunnleggende matematikk for ingeniører. Aktuelle forskningsområder kan være 3D- databasert pedagogisk visualisering, bruk av simuleringer og programvare for matematikk i undervisningen, og/eller læringsutbytte sett fra et ingeniørperspektiv. Den som blir tilsatt, vil kunne ha

frihet til forme sin forskning innen de rammene som er beskrevet overfor. kandidaten.

**Søknadsfrist 30.01.09**



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## POSTDOKTORSTILLING INNEN MOBILE LÆRINGSMILJØ

Ved Program for læring med IKT (LIKT), er det ledig post.doc. stilling for en to-årsperiode. LIKT er en del av Tematisk Satsingsområde IKT, og har som forskningsfokus IKTs rolle og betydning for læring og undervisning. Målet med stillingen er å styrke forskningen på et av LIKTs forskningsområder; som omfatter bl.a. samhandling i trådløse bredbånds miljø, undervisningsmetodikk i geografisk spredte læringsmiljøer, læringsstøttesystemer (Learning Management Systems). Fagområdet er samhandlingsteknologi i digitale læringsmiljø, spesielt teknologi som støtter problembasert prosjektorientert læring for mobile og/eller nomadiske aktører.

**Søknadsfrist 30.01.09**



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## A LETTER TO PRESIDENTS OF NATIONAL EUROPEAN MATHEMATICAL SOCIETIES DECEMBER 24, 2008

### 1. 5ECM

2008 has been a very important year for the European Mathematical Society. On July 14-18 European Mathematics had its most important event the Fifth European Congress of Mathematics in Amsterdam. On behalf of our Society I would like to congratulate the organisers of the 5ECM Andre Ran, Herman te Riele and Jan Wiegerinck, the chairmen of the Prize and Programme Committees Rob Tijdeman and Alexander Schrijver as well as all the others who contributed to the success of the 5ECM.





## 2. European Research Council (ERC)

I would like to draw your attention to the ERC Advance grants that were recently advertised for which the deadline is at the end of March 2009. Please make sure that this information reaches your society members. It is important that the number of applications will be not less than last year.

## 3. Meeting of Presidents of National Mathematical Societies

A large number of the National Mathematical Societies were delighted with the initiative of the French Mathematical Society who hosted a first meeting of Societies' Presidents or their representative in Luminy in April 2008. This meeting was very fruitful and it has been suggested that we should do it every year. I am glad to tell you that the Banach Centre offers us to organise the next in Warsaw on May 9-10. As at the last meeting we shall start with lunch at about 12:30 on Saturday, May 9, and continue until lunch time on Sunday, May 10. We are very grateful to the Banach Centre for this initiative. Please let me

about 12:30 on Saturday, May 9, and continue until lunch time on Sunday, May 10. We are very grateful to the Banach Centre for this initiative. Please let me know as soon as possible if you or any other representative from your Society would be able to participate in the meeting.

## 4. European Science Foundation (ESF)

We have established excellent relations with both the ESF Physical and Engineering Science Committee (PESC) and the ESF Conference Centre. Our warmest congratulation to the President of the Finnish Mathematical Society, Professor Mats Gyllenberg who has recently been elected as the new chairman of PESC. Next year we will start a series of joint ESF-EMS conferences in Mathematics. According to our contract there will be up to 6 conferences a year during the next 5 years, organised at one of the ERCOM centres (please see the attached file 08-ems-ercom-TOR.pdf). ESF together with the CNRS has suggested that the EMS should lead a Forward Look project: "Mathematics & Industry". It has already been approved by the ESF and the Chairman of the EMS Applied

### NTNU – Det skapende universitet

Ved NTNU i Trondheim er den teknologiske kunnskapen i Norge samlet. I tillegg til teknologi og naturvitenskap har vi et rikt fagtilbud i samfunnsvitenskap, humanistiske fag, realfag, medisin, arkitektur og kunsthøgskolen. Samarbeid på tvers av faggrensene gjør oss i stand til å tenke tanker ingen har tenkt før, og skape løsninger som forandrer hverdagen.



## Leder ved Matematikkenteret – 1 års vikariat med mulighet for fast tilsetting

Nasjonalt senter for matematikk i opplæringen (Matematikkenteret) utvikler nye og bedre arbeidsmåter og læringsstrategier i barnehage, grunnskole, videregående skole, voksenopplæring. Senterets målgruppe er først og fremst lærere som underviser og lærerutdanning, læremiddelutviklere samt foreldre og allmennheten (Matematikkenteret har 17 ansatte i tillegg til ca 60 ressurser over hele landet). Senteret er lagt til NTNU.

### Arbeidsoppgaver

Matematikkenterets leder har personalansvar, samt ansvar for senterets virksomhet. Leder er senterets frontfigur og skal være synlig i all opplæringen er på dagsorden. Sentrale oppgaver vil være:

- Prosjektledelse
- Formidling av senterets virksomhet og syn på god læring og undervisning
- Fronte senterets syn på aktuelle skolesaker i media
- Motivere og inspirere sine medarbeidere og andre som samarbeider med senteret

Leder kan bruke inntil 50% av sin tid på forsknings- og/eller utviklingsarbeid som er knyttet til senterets virksomhet.

Ny utlysning, åpnet  
for å søke etter frist-  
ten, men vær rask!

og utviklingsorientert leder med inngående kjennskap til videregående skole og lærerutdanning. Søkere må ha doktorgrad i matematikdidaktikk. Det er ønskelig med god evne til skriftlig og muntlig kommunikasjon, og kunnskap på engelsk. Erfaring fra internasjonalt og spesielt utlandet er et pluss.

Stillingen er fast, ltr. 53-95. Normal avlønning vil være mellom 400 - 610.100 pr år. Fra beløpet trekkes 2 % lovfestet pensjonskaste.

Det er ønskelig med erfaring fra stillinger, spesielt innenfor matematikk. Søkere må være spesielt om å søke.

Nærmere opplysninger gis av faglig leder Ingvill M. Stedøy-Johansen, tlf. 73 59 18 81, epost: [ingvill@matematikkenteret.no](mailto:ingvill@matematikkenteret.no)

Synes du dette ser interessant ut, send søknaden din elektronisk via [www.jobbnorge.no](http://www.jobbnorge.no) merket med NTNU-nr. 24/2008 innen 01.12.2008.

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Math. Committee, Professor Mario Primicerio has already assembled a committee that has already begun work on this project. The first meeting took place in Pisa three of days ago.

## **5. Large European Research Infrastructures in Mathematics**

After some persuasion, Brussels has agreed to acknowledge infrastructures in Mathematics. Here is the new list of the main sections of European Research Infrastructures:

1. Social Science and Humanities
2. Environmental Science and Non-nuclear energy
3. Life Sciences
4. Physics, astronomy, nuclear- and particle physic
5. Analytical facilities and engineering
6. Mathematics, computer-related sciences data

The next EU call for funding European Research Infrastructures will be in September 2009. Each project has been promised a maximum of 10M. Brussels does not wish to have a bottom up approach, as in 2008. In order to ensure that the applications will be of high standard, Brussels has recently organised a meeting of experts who suggested titles for possible research infrastructures within their subjects.

At this meeting the following two infrastructures in Mathematics were identified.

1. Mathematics centres of competence, Mathematics data and other resources.
2. Mathematics service for Industry and society.

The first infrastructure is intended for the ERCOM (a committee within the EMS).

The second one is directed to Mathematics and Industry. The background for this title is our ESF EMS-CNRS Forward Look Project "Mathematics & Industry". Unfortunately neither Zentralblatt (ZBI) nor Digital Mathematical Library (DML) can be considered as research infrastructures. On the other hand both infrastructures are very important for the Mathematical community and therefore both ZBI and DML are welcomed as parts of the above mentioned projects.

## **6. Mathematical Weekends**

On February 29 - March 2, 2008, an EMS Mathematical Weekend was organised by the Danish Mathematical Society and the University of Copenhagen. We are most grateful to both for their contribution to European Mathematics. The EMS is also looking for a future venues for a Mathematical Weekend. Unfortunately, so far we have still not had any suggestions. Please discuss with your colleagues the possibility of having such an event in your country. Finally I would like to wish you a Merry Christmas and Happy New Year,

Ari Laptev  
EMS President

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## **LUIS CAFFARELLI RECEIVES 2009 AMS STEELE PRIZE FOR LIFETIME ACHIEVEMENT**

**Luis Caffarelli** of the University of Texas at Austin is receiving the 2009 AMS Leroy P. Steele Prize for Lifetime Achievement. Presented annually by the American Mathematical Society, the Steele Prize is one of the highest distinctions in mathematics.

"Luis Caffarelli is one of the world's greatest mathematicians studying nonlinear partial differential equations (PDE)," the prize citation states. "This is a difficult field: there are rarely exact formulas for solutions of nonlinear PDEs, and rarely will exact algebraic calculations yield useful expressions. Instead researchers must typically invoke functional analysis to build 'generalized' solutions for many important equations. What remains is the profound and profoundly technical problem of proving regularity for these weak solutions and, by universal acclaim, the greatest authority on regularity theory is Luis Caffarelli... [He] has collaborated widely and directed many PhD students. He is extraordinarily generous, in both his personal and professional lives."



The full citation for this prize and additional information can be found in the Prize Booklet. Find out more about AMS prizes at <http://www.ams.org/prizes-awards>.

## RICHARD HAMILTON RECEIVES 2009 AMS STEELE PRIZE FOR A SEMINAL CONTRIBUTION TO RESEARCH

**Richard Hamilton** of Columbia University is receiving the 2009 AMS Leroy P. Steele Prize for a Seminal Contribution to Research. Presented annually by the American Mathematical Society,



the Steele Prize is one of the highest distinctions in mathematics. Hamilton is honored for his paper *Three-manifolds with positive Ricci curvature*, *J. Differential Geom.* 17 (1982), 255-306. "The cited paper of Richard Hamilton introduced a profoundly original approach to the construction of natural metrics on manifolds," the prize citation states. "This approach is the Ricci flow, which is an evolution equation in the space of Riemannian metrics on a manifold." Hamilton's paper laid the basis for his further work on understanding the Ricci flow and how it could be used to solve two of the outstanding problems in mathematics in the twentieth century, the Poincaré Conjecture and Thurston's Geometrization Conjecture. Hamilton's work paved the way for Grigory Perelman's brilliant solution to these two conjectures, which brought worldwide acclaim to both mathematicians. The prize citation also notes that Hamilton's work has had a wide range of applications beyond these two conjectures. The citation concludes, "The cited paper truly fits the definition of a seminal contribution; that is, containing or contributing the seeds of later development."

The full citation for this prize and additional information can be found in the Prize Booklet. Find out more about AMS prizes at <http://www.ams.org/prizes-awards>.

**THE WALL STREET JOURNAL**  
WSJ.com

## DOING THE MATH TO FIND THE GOOD JOBS, MATHEMATICIANS LAND TOP SPOT IN NEW RANKING OF BEST AND WORST OCCUPATIONS IN THE U.S.

By SARAH E. NEEDLEMAN

Nineteen years ago, Jennifer Courter set out on a career path that has since provided her with a steady stream of lucrative, low-stress jobs. Now, her occupation -- mathematician -- has landed at the top spot on a new study ranking the best and worst jobs in the U.S.

"It's a lot more than just some boring subject that everybody has to take in school," says Ms. Courter, a research mathematician at mental images Inc., a maker of 3D-visualization software in San Francisco. "It's the science of problem-solving." The study, released Tuesday from CareerCast.com, a new job site, evaluates 200 professions to determine the best and worst according to five criteria inherent to every job: environment, income, employment outlook, physical demands and stress. (CareerCast.com is published by Adicio Inc., in which Wall Street Journal owner News Corp. holds a minority stake.)

The findings were compiled by Les Krantz, author of "Jobs Rated Almanac," and are based on data from the U.S. Bureau of Labor Statistics and the Census Bureau, as well as studies from trade associations and Mr. Krantz's own expertise.

According to the study, mathematicians fared best in part because they typically work in favorable conditions -- indoors and in places free of toxic fumes or noise -- unlike those toward the bottom of the list like sewage-plant operator, painter and bricklayer. They also aren't expected to do any heavy lifting, crawling or crouching -- attributes associated with occupations such as firefighter, auto mechanic and plumber.

The study also considers pay, which was determined by measuring each job's median income and growth potential. Mathematicians' annual income was pegged at \$94,160, but Ms. Courter, 38,



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says her salary exceeds that amount.

Her job entails working as part of a virtual team that designs mathematically based computer programs, some of which have been used to make films such as "The Matrix" and "Speed Racer." She telecommutes from her home and rarely works overtime or feels stressed out. "Problem-solving involves a lot of thinking," says Ms. Courter. "I find that calming."

Other jobs at the top of the study's list include actuary, statistician, biologist, software engineer and computer-systems analyst, historian and sociologist.

Mark Nord is a sociologist working for the Department of Agriculture's Economic Research Service in Washington, D.C. He studies hunger in American households and writes research reports about his findings. "The best part of the job is the sense that I'm making some contribution to good policy making," he says. "The kind of stuff that I crank out gets picked up by advocacy organizations, media and policy officials."

The study estimates sociologists earn \$63,195, though Mr. Nord, 62, says his income is about double that amount. He says he isn't surprised by the findings because his job generates little stress and he works a steady 7:30 a.m. to 4 p.m. schedule. "It's all done at the computer at my desk," he says. "The main occupational hazard is carpal tunnel syndrome."

On the opposite end of the career spectrum are lumberjacks. The study shows these workers, also known as timber cutters and loggers, as having the worst occupation, because of the dangerous nature of their work, a poor employment outlook and low annual pay -- just \$32,124.

New protective gear -- such as trouser covers made of fiber-reinforcement materials -- and an increased emphasis on safety have helped to reduce injuries among lumberjacks, says Paul Branch, who manages the timber department at Pike Lumber Co. in Akron, Ind. Still, accidents do occur from time to time, and some even result in death. "It's not a job everybody can do," says Mr. Branch.

But Eric Nellans, who has been cutting timber for the past 11 years for Pike Lumber, is passionate about his profession. "It's a very rewarding job, especially at the end of the day when you

see the work you accomplished," he says. Mr. Nellans, 35, didn't become discouraged even after he accidentally knocked down a dead tree and broke his right leg in the process four years ago. "I was back in the woods cutting timber in five weeks," he says.

Other jobs at the bottom of the study: dairy farmer, taxi driver, seaman, emergency medical technician and roofer.

Mike Riegel, a 43-year-old roofer in Flemington, N.J., says he likes working "outside in the fresh air." Since he runs his own business, which he inherited from his father, he can start and end his day early in hot weather or do the opposite when it's cold.

The study estimates roofers earn annual incomes of \$34,164, which Mr. Riegel says is consistent with what he pays new employees. Roofers also ranked poorly because of their hazardous working conditions. "You obviously can't be afraid of heights," says Mr. Riegel, who once fell two stories while working on a rooftop in the rain but luckily landed safely on a pile of soft dirt. "I missed some cement by 10 feet."



# THE ABEL SYMPOSIUM 2009



Combinatorial aspects of commutative algebra and algebraic geometry

June 1-4, 2009, Voss, Norway



## *Selected topics:*

- Schubert varieties
- Gromov-Witten invariants
- Intersection theory
- Hilbert functions and syzygies
- Toric geometry and toric algebra
- Tropical geometry

More details: <http://abelsymposium.no/2009>

## *Scientific committee:*

Aaron Bertram (Utah)  
David Eisenbud (Berkeley)  
Frank-O. Schreyer (Saarbrücken)  
Michael Stillman (Cornell)  
Ravi Vakil (Stanford)

## *Organizers:*

- Gunnar Fløystad (Bergen)
- Trygve Johnsen (Tromsø)
- Andreas L. Knutsen (Bergen)

## **Invited speakers:**

- Mats Boij (Stockholm) • Anders Buch (Rutgers) • Aldo Conca (Genova)
- Sergey Fomin (Ann Arbor) • William Fulton (Ann Arbor) • Jürgen Herzog (Essen)
- Joel Kamnitzer (Toronto) • Dan Laksov (Stockholm) • Diane MacLagan (Rutgers)
- Ezra Miller (Minnesota) • Sam Payne (Stanford) • Irena Peeva (Cornell)
- Jessica Sidman (Mount Holyoke) • Rekha Thomas (Seattle)
- Jerzy Weyman (Northeastern) • Andrei Zelevinsky (Northeastern)