INFOMAT

AUGUST-SEPTEMBER 2023

Årsmøte i Norsk Matematisk Forening

Hotel Terminus, Bergen
Fredag 15. september 2023

Program:

Inviterte forelesninger, Hotel Terminus, fra 11:15:

11:15-12:05: **Kris Shaw**, *TBA*
12:05-13:00: Lunch.
13:00-13:50: **Ragni Piene**, *Curve counting and generating functions*
13:50-14:40: **Kundan Kumar**, *Free Boundary Problems and contributions of Luis Caffarelli, Abel Laureate 2023*
14:40-15:10: Coffee break.
15:10-16:00: **Gereon Quick**, *On counting and adding points quadratically*
16:30- end : Generalforsamling NMF, Hotel Terminus, Bergen
18:00 Middag, Hotel Terminus, Bergen

Dokumenter for generalforsamlingen:
https://web.matematikkforeningen.no/2023/09/05/dokumenter-til-gf-nmf-15-9-2023/

INFOMAT kommer ut med 11 nummer i året og gis ut av Norsk Matematisk Forening. Deadline for neste utgave er alltid den 15. i neste måned. Stoff til INFOMAT sendes til

arnebs at math.uio.no

Foreningen har hjemmeside http://www.matematikkforeningen.no/
Ansvarlig redaktør er Arne B. Sletsjøe, Universitetet i Oslo

Matematisk kalender

2023

Desember:

7.-9. SCV CONFERENCE IN HONOUR OF BERIT STENSØNES, Oslo
< www.mn.uio.no/math/english/research/groups/several-complex-variables/events/conferences/SCV-Conference-2023/index.html>

2024

Juni:

26.-29. THE 10th INTERNATIONAL CONFERENCE ON MATHEMATICAL METHODS FOR CURVES AND SURFACES (MMCS10), Oslo

Juli:

26.-29. ECM2024, Sevilla
<www.ecm2024sevilla.com>

Nye doktorgrader

Erik Habbestad ved UiO forsvarte 15. august 2023 sin avhandling *C^*-algebras with quantum group symmetry -Noncommutative boundaries and equivariant subproduct systems* for graden PhD.

Veiledere har vært Professor Sergey Neshveyev (UiO) og Associate Professor Makoto Yamashita (UiO).

Sammendrag:

Mathematical objects often possess some sort of 'symmetry'. For instance, the circle has rotational symmetry; It 'looks the same' even if we rotate it around its center by some angle. Formally this type of symmetry is an example of a group action on a topological space.

Groups can also act on C^*-algebras (sometimes called 'quantum spaces'), which are objects that generalize topological spaces. However, in this setting it is interesting to in addition look at 'quantum symmetries'. These are encoded by quantum group actions, which is the overarching topic of the thesis.

On the one hand we consider C^*-algebras constructed from certain polynomials, via so-called subproduct systems. These turn out to posess quantum symmetry, something we use both to describe the C^*-algebras and to study equivariant KK-theory. The descriptions of the C^*-algebras also shed light on representation theory and connections to braided quantum groups.

On the other hand we can start with a quantum group, and consider so-called 'noncommutative boundaries'. Given a compact quantum group we show that its Drinfeld double always has a Furstenberg-Hamana boundary. This is a universal object which is often closely related to the Poisson boundaries.

Juvenal Murwanashyaka ved UiO forsvarte 29. august 2023 sin avhandling *Papers on Weak First-Order Theories and Decidability Problems* for graden PhD.

Veiledere har vært Professor II Lars Kristiansen (UiO), Professor Em. Dag Normann (UiO) og Professor Tom Lindstrøm (UiO).

Sammendrag:

This thesis is motivated by the following questions: Does there exist a weakest theory for which Gödel's first incompleteness theorem holds? Does there exist a weakest structure for which the analogue of Hilbert's 10th problem has a negative solution? We explore these questions by investigating different foundations for basic finitary mathematics and use interpretability to compare them.

The concept of interpretation provides a framework for comparing theories by abstracting away arbitrariness in the choice of non-logical symbols and basic principles. If two theories are interpretable in one another, then they are of the same strength: inferences in one can be translated into inferences in the other.

Mari Dahl Eggen ved UiO forsvarte 1. september 2023 sin avhandling *Stochastic differential equations with memory and relations - Modelling of stratospheric dynamics* for graden PhD.

Veiledere har vært Professor Fred Espen Benth (UiO), Associate Professor Sven Peter Näsholm,

(UiO/NORSAR) og Research Scientist Quentin Brissaud (NORSAR) .

Sammendrag:

The societal importance of weather drives a continuous effort to improve short- and long-term numerical weather prediction. A better knowledge of the conditions in the stratosphere, the atmospheric region from 10 to 50 kilometers altitude, could be key in enhancing long-term weather forecasts on the Earth´s surface. Due to sparseness of stratospheric wind observations, this thesis aims at contributing to the development of remote sensing techniques.

Infrasound is inaudible low-frequency sound generated by, for example, ocean waves. These sound waves undergo little damping and can travel for long distances through atmospheric waveguides that include the stratosphere. Infrasound that has passed through the stratosphere to be recorded at ground level carries information about the wind and temperature of this region. This implies that if the signal characteristics are sufficiently interpreted and described, ground-based measurements of infrasound could function as a form of stratospheric remote sensing.

In this thesis, mathematical modelling and machine learning techniques are developed to relate infrasound recordings to stratospheric weather dynamics. A derived model is verified by estimating stratospheric winds in the Arctic region solely from ground-based infrasound data. The results indicate a potential for using these low-frequency sound waves for near real-time probing of stratospheric winds.

Arrangementer

ECM2024

The 9th European Congress of Mathematics will be held 15-19 July 2024 in Sevilla (Spain). The call for satellite conference proposals is open until the end of July 2023.

The call for minisymposia is open until 15 November 2023.

The 10th International Conference on Mathematical Methods for Curves and Surfaces (MMCS10)

will take place I Oslo, Norway June 26 - June 29, 2024

The conference is part of a joint French-Norwegian conference series on curves and surfaces. In Norway previous meetings were held in Oslo 1988, Biri 1991, Ulvik 1994, Lillehammer 1997, Oslo 2000, Tromsø 2004, Tønsberg 2008, Oslo 2012, and Tønsberg 2016. In France the last meeting was in Arcachon in 2022.

Further details will follow soon.

SCV conference in honour of Berit Stensønes

The conference will take place in Oslo, December 7-9, 2023, and you may find more information about the conference here (to be updated with more practical information later):

https://www.mn.uio.no/math/english/research/groups/several-complex-variables/events/conferences/SCV-Conference-2023/index.html

Utlysninger

What is CIMPA?

CIMPA is a French association which is a UNESCO center and which receives financial support from Norway. For over 40 years, it has been working with developing countries to promote mathematical research. One of its main activities is to organize research schools, supervised on site by a scientific officer whose mission is funded by CIMPA.

How to become a scientific officer?

CIMPA invites applications for positions as scientific officer. As a CIMPA scientific officer, you

have the opportunity to discover and actively participate in mathematical research in developing countries, by contributing your expertise and support.

To better understand the responsibilities of this role, we invite you to download a brief description. To be eligible, you must hold a permanent position as a researcher.

Are you interested?

Please send an e-mail to the Director of CIMPA, director@cimpa.info, to express your interest. In this email, please give details of any experience or collaborations you may have had in the countries concerned. An online meeting will be organized in the autumn to discuss your application and answer any questions you may have.

Call for Nominations of Candidates for the Felix Klein Prize

Nowadays, mathematics often plays the decisive role in finding solutions to numerous technical, economical and organizational problems. In order to encourage such solutions and to reward exceptional research in the area of applied mathematics the EMS decided, in October 1999, to establish the Felix Klein Prize. The mathematician Felix Klein (1849-1925) is generally acknowledged as a pioneer with regard to the close connection between mathematics and applications, which lead to solutions to technical problems.

The Prize is to be awarded to a scientist, or a group of at most three scientists, under the age of 38 for using sophisticated methods to give an outstanding solution, which meets with the complete satisfaction of industry, to a concrete and difficult industrial problem.

The Prize Committee is responsible for solicitation and the evaluation of nominations. Nominations can be made by anyone, including members of the Prize Committee but only before the deadline; the Prize Committee chair will reveal the list to the committee only after the nominations are closed. It is the responsibility of the nominator to provide all relevant information to the Prize Committee, including a résumé and documentation of the benefit to industry and the mathematical method used. The nomination for the award must be accompanied by a written justification and a citation of about 100 words that can be read at the award date. The prize is awarded to a single person or to a small group and cannot be split.

The award comprises a certificate including the citation and a cash prize of €5000.

The Prize will be presented at the Ninth European Congress of Mathematics in Seville, July 15?19, 2024, by a representative of the endowing Fraunhofer Institute for Industrial Mathematics in Kaiserslautern and/or by the President of the European Mathematical Society. The recipients will be invited to present their work at the congress.

The money for the Prize fund is offered by the Fraunhofer Institute for Industrial Mathematics in Kaiserslautern.

Nominations for the prize should be submitted electronically to the chair of the Prize Committee, Professor Peregrina Quintela Estévez (University of Santiago de Compostela) peregrina.quintela@usc.es with the EMS Office in cc ems-office@helsinki.fi not later than December 31, 2023.

The Association for Mathematical Research Invites Membership

The Association for Mathematical Research was organized in 2020 as a nonprofit international organization with the mission of promoting mathematical research and scholarship. We hope you will consider joining us in pursuing our mission by becoming a member.

Over 250 founding members from across the globe joined in its initial formation, and total membership is now over 600. The founding was motivated by the changes and tumult of the pandemic years, which revealed new opportunities for creating and communicating mathematical ideas. Our goal is to use innovative technologies to keep researchers abreast of current work in mathematics and to help them to further their own research.

Membership is free at amathr.org/members. Members receive a periodic newsletter about the organization´s activities and the opportunity to serve on AMR committees and initiatives if they are so inclined. The organization is run entirely by

volunteers, with no staff anticipated in the near future.

Projects already under way include:
-freely downloadable books (www.amathr.org/books)
-open access journals (amathr.org/journals)
-research reviews (www.amathr.org/reviews)
-lecture series (www.amathr.org/lectures)

Other projects are in the organizational stage.

The research reviews, available at amathr.org/reviews give a sense of what we have in mind. Important mathematical results are rapidly disseminated to the community, through research summaries that can be accompanied by figures, illustrative videos, and links to lectures and references.

We hope to cooperate with and support established mathematical organizations. Please visit www.amathr.org to see our current activities. You can contact us by writing to contact@amathr.org. We look forward to working with you in the future.

Best wishes,

The AMR Board of Directors
Colin Adams, Williams College
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Nyheter

Siden 1972 har Odd Heir vært limet i Aschehougs matematikkserie: Nå hedres han og forfatterkollegene med Aschehougs Skolebokpris.

Årets Skolebokpris gis til John Engeseth, Håvard Moe, Tea Toft Norderhaug, Sigrid Melander Vie, Ørnulf Borgan, Inger Christin Borge, Hermod Haug og Odd Heir.

Helt fra 1969 har Aschehougs matematikkserie for videregående skole skapt en solid tradisjon - hvor seneste utgave kaprer 55 prosent markedsandel. Matematikk-forfatterne har stadig ønsket nye stemmer velkomne - med Odd Heir som fast, samlende bidragsyter siden 1972.

Jeg vil tro at vi alle er stolte og glade for den anerkjennelsen denne prisen gir oss - for det felles arbeidet som er nedlagt, sier Heir.

Forfattergruppen er tildelt prisen for Aschehougs matematikkserie til fagfornyelsen (LK20) for videregående skole.

Vi har alle har vært opptatt av å skape gode læremidler, både faglig og didaktisk, for både elever og lærere. Dessuten har forfattergruppa fungert godt sammen, noe som har bidratt til trivsel og en god sosial tilhørighet. Jeg vil også nevne det gode, positive samarbeidet med dyktige redaktører og andre ansatte i Aschehoug, sier Heir.

Hvordan ser du, med så solid fartstid, på det klassiske matematikkfagets posisjon i 2023?
Faget har nok endret seg, noe som delvis nye læreplaner og tilgang til digitale hjelpemidler har bidratt til. Bruk av digitale hjelpemidler for å skape forståelse og motivasjon for faget, kan ha ført til mindre tid til å regne for hånd. Men dette trenger ikke å ha svekket den klassiske matematikken. Det er jo i samsvar med et større fokus på forståelse i læreplanene.

Skolebokprisen blir tildelt av William Nygaards legat. I juryens begrunnelse heter det: *Forfattergruppa har skrevet bøker som tar med seg det beste fra tidligere utgaver i møtet med fagfornyelsen. Bøkene og de supplerende nettstedene støtter lærerne i undervisningen og viktigst av alt: de hjelper elevene til å forstå, lære seg og glede seg over matematikken.*