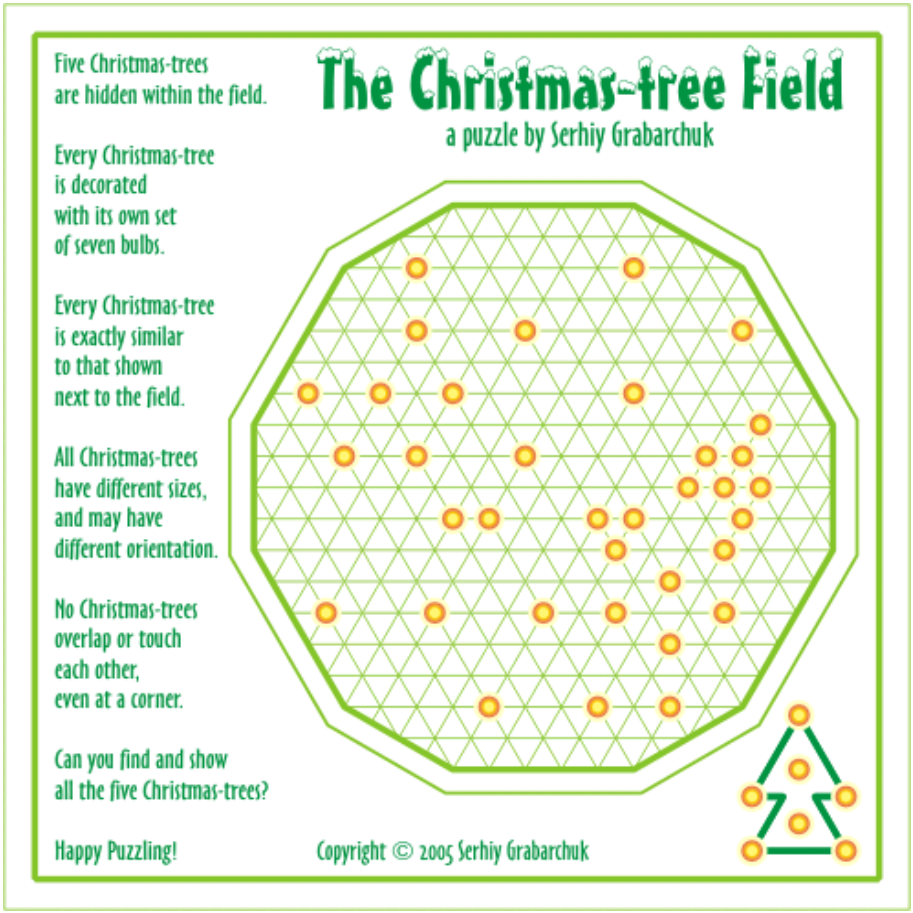
INFOMAT

DESEMBER 2021



INFOMAT ØNSKER ALLE EN RIKTIG GOD JUL OG ET GODT NYTT ÅR

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

På grunn av den pågående pandemien kan flere av arrangementene bli utsatt eller avlyst. Følg med på web-sidene.

2022

Mars:

23. Abelpriskunngjøring, Oslo
<abelprisen.no>

Mai:

23.-25. Abelprisutdeling, Oslo
<abelprisen.no>

30.-1. juni Conference on Climate, Weather and Carbon Risk in Energy and Finance, Oslo
<https://www.mn.uio.no/math/english/research/projects/spatus/events/conferences/conference-on-climate-weather-and-carbon-risk-in-e/index.html>

Juni:

12.-19. Seminar Sophus Lie, Nordfjordeid
<https://www.mathematik.uni-marburg.de/ agricola/SSL2021/>

Ledige stillinger

LEDIGE STILLINGER VED HØGSKULEN PÅ VESTLANDET

Det er 3 ledige stillinger som førsteamanuensis/førstelektor i matematikk/matematikkdidaktikk ved Høgskulen på Vestlandet, 2 i Bergen og 1 på Stord. Mer på
<https://www.finn.no/job/fulltime/ad.html?finnkode=239152224>
og
<https://www.finn.no/job/fulltime/ad.html?finnkode=239151909>

Kunngjøringer

THE 9TH HEIDELBERG LAUREATE FORUM

The 9th Heidelberg Laureate Forum (HLF) will take place in Heidelberg, Germany between September 18–23, 2022.

At the HLF, all winners of the Fields Medal, the Abel Prize, the ACM A.M. Turing Award, the Nevanlinna Prize, and the ACM Prize in Computing are invited to attend. In addition, young and talented computer scientists and mathematicians are invited to apply for participation. The previous HLFs have been an exceptional success. The HLF serves as a great platform for interaction between the masters in the fields of mathematics and computer science and young talents. Over the course of the week-long conference, young researchers will be given the exclusive possibility to profoundly connect with their scientific role models and find out how the laureates made it to the top of their fields. As described by a young researcher, *The balance between scientific sessions and informal meetings, as well as discussions on the most up-to-date subjects was just perfect! As a young researcher, this was an experience I'll not ever forget, and I believe the contacts I made will have a positive impact on my future career.*

Applications for participation at the 9th HLF are open in three categories: Undergraduate/Pre-Master, Graduate PhD, and PostDocs. The application period for the 9th HLF runs from November 11, 2021, until February 11, 2022.

Young researchers at all phases of their careers (Undergraduate/Pre-Master, Graduate PhD, or PostDocs) are encouraged to complete and submit their applications by February 11 (midnight CET).

The IMU Adhering Organizations and national mathematical societies can also nominate young researchers. Nominated persons get "priority treatment", but, since there may be too many nominations, they have no acceptance guarantee.

See the webpage https://application.heidelberg-laureate-forum.org for the online application and

nomination forms. The deadline for application is **February 11, 2022.**

All applications that are completed and submitted by the deadline are meticulously reviewed by an international committee of experts to ensure that only the most qualified candidates are invited. There are 100 spaces available for each discipline of mathematics and computer science. All applicants will be notified by the end of April 2022 whether or not they are invited. If meeting in person is not safely possible, a digital alternative will be developed that creates spaces for effective, sustainable interaction.

CURRENT CIMPA CALLS

Call for CIMPA-ICTP Fellowships 2022 "Research in Pairs"

Presentation: The CIMPA-ICTP fellowships program "Research in Pairs" makes it possible for researchers in mathematics based in a developing country to come to Europe to collaborate with a colleague for a period of at least 6 weeks. During this period, it is expected that these two people will work together on a well-substantiated research project, mainly in the institute of the European colleague. The maximum amount of support is 10,000 euros.

Deadline: Applications for a visit between March and the end of December 2022 are open until 31st of December 2021.

To find out more: https://www.cimpa.info/en/node/7159

Propose a CIMPA Course!

Presentation: The CIMPA offers a programme of CIMPA Courses for the most mathematically or economically deprived areas. The CIMPA Courses program consists in funding the visit of a lecturer to teach a master or research level course in Mathematics within the geographic areas of activities of CIMPA (Africa, Central or South America, Asia). All requests for funding will be for a course with a well-defined topic, for a period of 1 to 4 weeks.

Deadline: This call for projects is permanent, CIMPA course projects can be submitted throughout the year.

To find out more: https://www.cimpa.info/en/node/50

Propose a CIMPA Course online!

Presentation: An (open) online CIMPA course is online teaching at master or research level in Mathematics for selected students from developing countries.

It exists in two formats:

A course for students from one (or several) institute located in a developing country which locally coordinates the project; An ?open? format for a basic Master course in the direction of a broader audience. CIMPA will organize a call for applications to students from developing countries to attend the course. The teacher will then make a selection. The laureates will be able to interact remotely with the teacher during several weeks, ask questions about the lectures and do exercises.

Deadline: This call for projects is permanent, CIMPA course projects can be submitted throughout the year.

To find out more: https://www.cimpa.info/en/node/6574

KANDIDATER TIL STYRET I EMS

At the meeting of the Council of the European Mathematical Society to be held in Bled in summer 2022 there will be elections to the following positions in the Executive Committee:

*President;
*One vice president;
*Treasurer;
*A possible election of Members-at-large may follow, if the above positions are filled with candidates from the current EC.

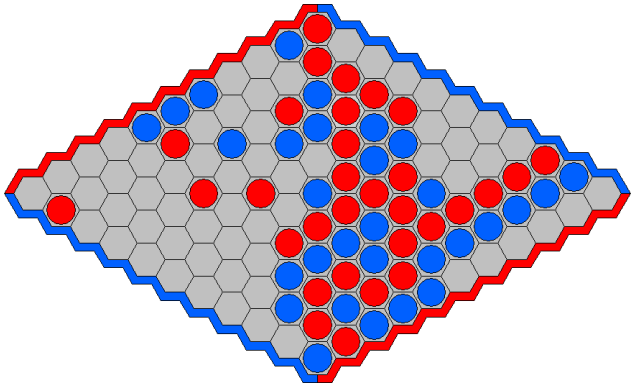
Those elected will take office on the 1st of January 2023.

According to statutes, member societies and also representatives of individual members can make suggestions for these positions. Please send your nominations (nomination letter, candidate's CV and statement in PDF format) by December 31, 2021 to the EMS Office (ems-office@helsinki.fi).

Jule-kuriosa

EN MATEMATISK JULEAKTIVITET

Siden det nærmer seg jul tar vi med et forslag til juleaktivitet for hele familien, brettspillet **Hex**. Spillet ble oppfunnet av Piet Hein i 1942, og i følge han selv, uavhengig gjen-oppfunnet av John Nash jr. i 1948. Spillet foregår på et rombisk brett dekket av sekskanter (derav navnet Hex) og er et strategispill for to spillere. Spillerne velger etter tur felt hvor de plasserer en av sine brikker, gjerne farget i to ulike farger. Spillet går ut på å etablere en sammenhengende vei fra sidekant til sidekant, rød spiller fra rød kant til rød kant, blå spiller fra blå til blå.



Flere matematikere har vist interesse for spillet på grunn av dets dype strategiske natur, og de interessante koplingene til matematisk teori. Bl.a. viste Nash at spillet ikke kan ende i uavgjort, et resultat som er ekvivalent til Brouwers fikspunkt-teorem i planet. Det innebærer at spillet må få en vinner, men det er generelt ikke avklart hva som er en vinnerstrategi. For små brett, opp til 8×8 ruter er situasjonen avklart, delvis ved bruk av regnemaskinkraft, men for større brett er dette et åpent spørsmål. For et 11×11-brett finnes det 2.4×10^{56} mulige stillingerpå brettet. Til sammenlikning kan det nevnes at i sjakk finnes det kun 4.6×10^{46} mulige stillinger.

Siden spiller 1 har fordelen med å startet vil denne spilleren rent teoretisk vil ha en vinnerstrategi. Det er satt fram en formodning om at vinnerstrategien starter med en mest mulig senter-plassering av den første brikken. Men for å motvirke spiller 1 sin fordel bruker man gjerne en *bytte-regel*, som sier at etter at førstemann har gjort sitt trekk, kan andremann velge om de skal beholde eller bytte brikker. Dermed er det ikke nødvendigvis så lurt å gjøre et smart førstetrekk.

God fornøyelse!

2021 BØD PÅ NY REKORD I ANTALL SIFFER i π

I 1909 kom Ramanujan med en formel som gjorde han i stand til å beregne π med stor nøyaktighet:

$$\frac{1}{\pi} = \frac{2\sqrt{2}}{9801} \sum_{k=0}^{\infty} \frac{(4k)!}{(k!)^4} \cdot \frac{(1103 + 26390k)}{396^{4k}}$$

En ny formel, i samme form, ble lansert av Chudnovsky-brødrene i 1988:

$$\frac{1}{\pi} = 12 \sum_{k=0}^{\infty} \frac{(-1)^k (6k)!}{(3k)!(k!)^3} \cdot \frac{(545140134k + 13591409)}{(640320)^{3k+\frac{3}{2}}}$$

Dette er en svært effektiv formel for å beregne π, selv med kun ett eller to ledd vil nøaktigheten være god nok til de aller fleste formål. Formelen har blitt brukt som utgangspunkt for å stadig øke antall kjente siffer i π og i august 2021 ble det annonsert at et team i Sveits (DAViS) hadde beregnet π med 62.8×10^{12} siffer. Beregningen tok 108 dager og 9 timer og knuste den gamle rekorden både i antall siffer og i hastigheten på beregningen.