INFOMAT

Oktober 2017

EN LITEN OPPGAVE!

Plus Magazine (plus.maths.org) har i anledning av årets Heidelberg Laureate Forum 2017 intervjuet Fields-medalje-vinner Martin Hairer. I forbindelse med intervjuet presenterte Hairer journalisten for følgende problem:

"Imagine you have two envelopes. They both contain money, one twice as much as the other. You can pick one and keep the money inside. But just before you open your chosen envelope you are given the chance to change your mind. What should you do?

Write *x* for the amount that's in your chosen envelope. This means that the amount of money in the other envelope is either *2x* or *x/2*. The probability that it's *2x* is 0.5 and so is the probability that it's *x/2*. So the expected amount you'll get is

$$\frac{1}{2}\left(2x + \frac{x}{2}\right) = x + \frac{x}{4} = \frac{5x}{4}$$

Since that's bigger than *x*, you should swap envelopes. But what if you are given another chance to swap envelopes after you have changed your mind once? By the same reasoning as above you should swap back again. And then, by the same argument again, you should swap a third time, and so on, forever. You end up in an infinite loop of swapping and never get any money at all. Is there something wrong with the reasoning?"

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.

ARRANGEMENTER

Matematisk kalender

2017:
November:
8.-9. *FINEWSTOCH Networkshop II*, Oslo
9.-10. *Nasjonalt algebramøte*, Oslo
Desember:
4.-8. *Operatoralgebrakonferanse*, Oslo

NASJONALT ALGEBRAMØTE, Oslo, 9.-10. november 2017

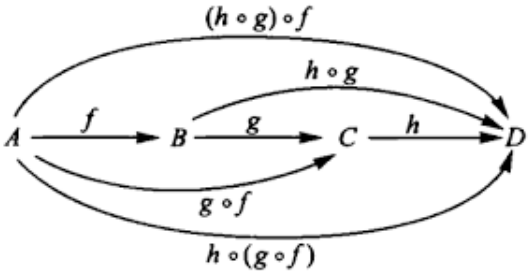
Årets nasjonale algebramøte finner sted 9.-10. november 2017 i Oslo, se webside: http://www.mn.uio.no/math/forskning/grupper/algebra/arrangementer/nasjonaltmote2017/

FINEWSTOCH Networkshop II, Oslo, 8.-9. november 2017

Welcome to the second FINEWSTOCH Networkshop. The workshop will bring together leading researchers in stochastics and probability theory to discuss recent developments with a particular focus on finance, insurance, energy and weather.
Time and place: Nov. 8, 2017 12:00 PM - Nov. 9, 2017 1:00 PM, Seminar room: "Gates of Eden", Matematisk Institutt, 2nd Floor, Sognsveien 77B, Ullevål Stadion
The FINEWSTOCH Networkshop II will consist of several invited talks, starting with a lunch on Wednesday November 8, 2017. We end the Networkshop with a lunch on Thursday November 9. Participation is free of charge, but registration is mandatory.
Invited speakers:
Nacira Agra, Oslo, ***Fabian Andsem Harang***, Oslo
Tore Selland Kleppe, Stavanger Stavanger, ***Annika Lang***, Chalmers, ***Frank Norbert Proske***, Oslo, ***Yinzhi Wang***, Oslo
Please register by sending an email to Salvador Ortiz-Latorre (salvadoo "at" math.uio.no) before November 1, 2017. Note that you must be registered to participate. A confirmation email will be sent to those registered. There is a limited number of seats. There is no registration fee.

FACETS OF IRREVERSIBILITY: INVERSE SEMIGROUPS, GROUPOIDS, AND OPERATOR ALGEBRAS, Oslo 4.-8. desember 2017.

Denne konferansen vil finne sted på Universitetet i Oslo den 4.-8. desember.
For mer informasjon, se websiden: http://www.mn.uio.no/facets/



Nye doktorgrader

Ing Zhao, NTNU, forsvarte 4. oktober 2017 sin avhandling S*ome interaction between function spaces of Dirichlet series and number theory* for graden Ph.D. ved NTNU. Veileder har vært Professor Kristian Seip, NTNU.

Sammendrag:

In this thesis we study function spaces of Dirichlet series $\mathcal{H}^p$. A common tool in this area is to associate these spaces with the classical Hardy spaces H^p via what is known as "Bohr's lift".

In paper I we consider an open problem regarding contractive inequalities on the Dirichlet series space side. This leads us to formulate a necessary inequality on the H^p side which we then discuss further; giving various equivalent forms which offer a more tractable approach. In paper III we prove an inequality of a similar flavour and give various consequences in coefficients estimates, general estimates of the norm of partial sum operators, as well as in the computation for the so-called pseudomoments of the Riemann zeta function.

We also extended the Gordon--Hedenmalm theorem to composition operators on certain Bergman spaces of Dirichlet series. We show that in the interesting case of characteristic zero, the average order of the weight of the image space has 1 more fold logarithm than that of the initial space.

TOM LEHRER: NEW MATH

Siden stofftilgangen til dette nummeret av INFOMAT var svært fattigslig, kaster vi oss ut i litt matematikk-kulturell nostalgi; Tom Lehrers New Math-schlager fra 1965. Tom Lehrer fyller for øvrig 90 år i april neste år.

Some of you who have small children may have perhaps been put in the embarrassing position of being unable to do your child's arithmetic homework because of the current revolution in mathematics teaching known as the New Math. So as a public service here tonight, I thought I would offer a brief lesson in the New Math. Tonight, we're gonna cover subtraction. This is the first room I've worked for a while that didn't have a blackboard,

Nyheter

so we will have to make do with more primitive visual aids, as they say in the ed biz. Consider the following subtraction problem, which I will put up here: 342 minus 173. Now, remember how we used to do that:

Three from two is nine, carry the one, and if you're under 35 or went to a private school, you say seven from three is six, but if you're over 35 and went to a public school, you say eight from four is six ...and carry the one, so we have 169.

But in the new approach, as you know, the important thing is to understand what you're doing, rather than to get the right answer. Here's how they do it now:

You can't take three from two,
Two is less than three,
So you look at the four in the tens place.
Now that's really four tens
So you make it three tens,
Regroup, and you change a ten to ten ones,
And you add 'em to the two and get twelve,
And you take away three, that's nine.
Is that clear?

Now instead of four in the tens place
You've got three,
'Cause you added one,
That is to say, ten, to the two,
But you can't take seven from three,
So you look in the hundreds place.

From the three you then use one
To make ten ones...
(And you know why four plus minus one
Plus ten is fourteen minus one?
'Cause addition is commutative, right!)
And so you've got thirteen tens
And you take away seven,
And that leaves five...

Well, six actually...
But the idea is the important thing!

Now go back to the hundreds place,

You're left with two,
And you take away one from two,
And that leaves...?

Everybody get one?
Not bad for the first day!

Hooray for New Math,
New-hoo-hoo Math,
It won't do you a bit of good to review math.
It's so simple,
So very simple,
That only a child can do it!

Now, that actually is not the answer that I had in mind, because the book that I got this problem out of wants you to do it in base eight. But don't panic! Base eight is just like base ten really - if you're missing two fingers! Shall we have a go at it? Hang on...

You can't take three from two,
Two is less than three,
So you look at the four in the eights place.
Now that's really four eights,
So you make it three eights,
Regroup, and you change an eight to eight ones
And you add 'em to the two,
And you get one-two base eight,
Which is ten base ten,
And you take away three, that's seven.
Ok?

Now instead of four in the eights place
You've got three,
'Cause you added one,
That is to say, eight, to the two,
But you can't take seven from three,
So you look at the sixty-fours...

"Sixty-four? How did sixty-four get into it?" I hear you cry! Well, sixty-four is eight squared, don't you see? "Well, ya ask a silly question, ya get a silly answer!"

From the three, you then use one
To make eight ones,
You add those ones to the three,
And you get one-three base eight,
Or, in other words,
In base ten you have eleven,
And you take away seven,
And seven from eleven is four!
Now go back to the sixty-fours,
You're left with two,
And you take away one from two,
And that leaves?

Now, let's not always see the same hands!
One, that's right.
Whoever got one can stay after the show and clean the erasers.

Hooray for New Math,
New-hoo-hoo Math!
It won't do you a bit of good to review math.
It's so simple,
So very simple,
That only a child can do it!

Come back tomorrow night we're gonna do fractions!

Hvis du vil høre sangen framført, så forsøk f.eks.
https://www.youtube.com/watch?v=UIKGV2cTgqA
God fornøyelse!