BRÅKET

Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 37 **FREDAGEN DEN 21 NOVEMBER 2003**

BRÅKET

Veckobladet från Institutionen för matematik vid Kungl Tekniska Högskolan och Matematiska institutionen vid Stockholms universitet

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Sista manustid för nästa nummer:
Torsdagen den 27 november kl. 13.00.

Money, jobs: Se sidorna 5 – 6.

SEMINARIER

Fr 11–21 kl. 10.00–12.00. Högre seminariet i språkfilosofi och logik. Arvid Båve presenterar ett utkast till kapitel 3, *The problem of formulation,* av sin kommande avhandling om *deflationistisk uppfattning av sanningsbegreppet.* Rum D700, Filosofiska institutionen, SU, Universitetsvägen 10D, Frescati.

Fr 11–21 kl. 12.00–13.00. GRU-seminarium i matematik: *Resultat av det diagnostiska provet.* Sammanträdesrum 3424 (innanför pausrummet), Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 4. Se Bråket nr 36 sidan 3.

Må 11–24 kl. 13.15–14.00. Seminar in Analysis and its Applications. Marcus Better presenterar sitt examensarbete: *Restriction of Fourier transform and related problems.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Må 11–24 kl. 14.15–15.15. Seminar in Analysis and its Applications. *(Observera tiden!)* **Torbjörn Kolsrud:** *Lagrangian approach to evolution equations: Symmetries and conservation laws.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 36 sidan 5.

Fortsättning på nästa sida.

KOMBINATORIKSEMINARIUM

Dmitry Kozlov:
Topological obstructions to graph colourings

Abstract: I will introduce a class of complexes whose algebro-topological invariants give rise to lower bounds for chromatic numbers of graphs. I will survey the facts which we know about these complexes and sketch a proof of a theorem which in particular implies Lovasz's conjecture.

Tid och plats: Onsdagen den 26 november kl. 10.15 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

Seminarier (fortsättning)

Må 11–24 kl. 16.15–17.00. Seminarium i finansiell matematik. *(Observera tiden!)* **Lars Ek** presenterar sitt examensarbete: *Automatic reserving of small claims: A comparison of two different approaches of small claims reserving methodology.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 5.

Ti 11–25 kl. 14.00–15.00. Mittag-Leffler Seminar. Sverre Smalø, Trondheim: *The finitistic dimension conjecture.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

Ti 11–25 kl. 15.30–16.30. Mittag-Leffler Seminar. Birge Huisgen-Zimmermann, Santa Barbara: *Degenerations of finite-dimensional representations, and moduli spaces. Part II.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

On 11–26 kl. 10.15. Kombinatorikseminarium. Dmitry Kozlov, KTH: *Topological obstructions to graph colourings.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 1.

On 11–26 kl. 10.30. Logikseminariet Stockholm-Uppsala. Olof Lindroth: *A random formula lower bound for ordered-DLL extended with local symmetries.* Sal 2214, Matematiska institutionen, Polacksbacken, Uppsala universitet.

On 11–26 kl. 13.00. Seminarium i statistik. Marie Wiberg, Umeå universitet: *Statistiska aspekter på datorbaserade kunskapsprov.* Sal B705, Statistiska institutionen, SU, Universitetsvägen 10B, plan 7, Frescati.

On 11–26 kl. 13.15–14.15. Seminarium i analys och dynamiska system. Kari Astala, Helsingfors: *Calderon's problem in inverse tomography and complex analysis.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

On 11–26 kl. 13.15–15.00. Algebra- och geometriseminarium. Gerard van der Geer, Universiteit van Amsterdam: *Curves over finite fields and congruences between modular forms.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 4.

On 11–26 kl. 15.15. Licentiatseminarium i matematisk statistik. *(Observera lokalen!)* **Annica Dominicus** presenterar sin licentiatavhandling med titeln: *Latent variable models for longitudinal twin data with dropout and death.* Inbjuden diskussionsinledare: **Anders Skrondal,** Norges folkhälsoinstitut. Sal 14, hus 5, Matematiska institutionen, SU, Kräftriket. Se Bråket nr 36 sidan 5.

To 11–27 kl. 14.00–15.00. Mittag-Leffler Seminar. Idun Reiten, Trondheim: *Abelian categories, almost split sequences and comodules.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

Må 12–01 kl. 14.15. Seminarium i teoretisk datalogi. Lars Engebretsen: *More efficient queries in PCP's for NP and improved approximation hardness of maximum CSP (joint work with Jonas Holmerin).* Rum 1537, Nada, KTH, Lindstedtsvägen 3, plan 5. Se sidan 3.

On 12–03 kl. 13.00. Seminarium i statistik. Michael Carlson, Statistiska institutionen SU: *Röjanderisker vid användning av mikrodata — en tillämpning från RFV.* Sal B705, Statistiska institutionen, SU, Universitetsvägen 10B, plan 7, Frescati.

Fortsättning på nästa sida.

Seminarier (fortsättning)

On 12–03 kl. 13.15–14.15. Seminarium i analys och dynamiska system. Gaven Martin, New Zealand: *Title to be announced.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

On 12–03 kl. 16.00–17.00. Stockholms matematiska kollokvium. Gaven Martin, New Zealand: *Title to be announced.* Lokal meddelas senare.

SEMINARIUM I TEORETISK DATALOGI

Lars Engebretsen:
More efficient queries in PCP's for NP
and improved approximation hardness of maximum CSP
(joint work with Jonas Holmerin)

Abstract: In the PCP model, a verifier is supposed to probabilistically decide if a given input belongs to some language by posing queries to a purported proof of this fact. The probability that the verifier accepts an input in the language given a correct proof is called the completeness c; the probability that the verifier rejects an input not in the language given any proof is called the soundness s. For a verifier posing q queries to the proof, the amortized query complexity is defined by $q/\log_2(c/s)$ if the proof is coded in binary. It is a measure of the average "efficiency" of the queries in the following sense: An ideal query should preserve the completeness and halve the soundness. If this were the case for all queries, the amortized query complexity would be exactly one.

Samorodnitsky and Trevisan (STOC 2000) gave a q-query PCP for NP with amortized query complexity $(1 + 2/\sqrt{q} + \epsilon)$ for any constant $\epsilon > 0$. In this seminar, we examine to what extent their result can be sharpened. In particular, we consider the dependency between the probability that a proof of an incorrect statement is accepted and the number of queries posed to the proof oracle.

Our main result is a PCP for NP that queries q positions in the proof and has amortized query complexity $(1 + \sqrt{2/q} + \epsilon)$. As an immediate corollary, we also obtain an improved hardness of approximation result for the Maximum q-CSP problem. As can be seen, our improvements are in the lower order term. It is, however, not possible to improve the amortized query complexity much more unless $\mathrm{P} = \mathrm{NP}$; a consequence of a result due to Trevisan (Algorithmica, 21(1), 72–88, 1998) is that unless $\mathrm{P} = \mathrm{NP}$ no PCP verifier for NP that queries q positions in the proof can have amortized query complexity $1 + 1/(q - 1)$.

Our improved construction uses the layered label cover problem recently introduced by Dinur et al. (STOC 2003); based on such a label cover problem we devise a new "outer verifier" that allows us to construct an "inner verifier" that uses the query bits more efficiently than earlier verifiers.

Tid och plats: Måndagen den 1 december kl. 14.15 i rum 1537, Nada, KTH, Lindstedtsvägen 3, plan 5.

SEMINAR IN ANALYSIS AND ITS APPLICATIONS

Marcus Better

presenterar sitt examensarbete:

Restriction of Fourier transform and related problems

Sammanfattning: Jag kommer att tala om problemet att definiera restriktionen av Fouriertransformen av en funktion i $L^p(\mathbb{R}^n)$ till en delmångfald S av $\mathbb{R}^n$ av lägre dimension. Sedan kommer jag att diskutera vad som händer om $\mathbb{R}^n$ ersätts med en n-dimensionell torus. Slutligen kommer jag att ta upp några samband med andra problem såsom Bochner-Riesz-summabilitet.

Tid och plats: Måndagen den 24 november kl. 13.15 – 14.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I ANALYS OCH DYNAMISKA SYSTEM

Kari Astala:

Calderon's problem in inverse tomography and complex analysis

Abstract: Consider the equation $\mathrm{Div}(a(x)\mathrm{Grad}\, u) = 0$, in a domain $V \subset R^n$ which is bounded and has connected complement. We assume that $a(x) \in L^\infty$ is real-valued and is bounded away from 0. In 1980 A. P. Calderon posed the question if the boundary measurements or the operator Λ_a, mapping the Dirichlet boundary values of u to the Neumann boundary values $\partial_n u$, determines the coefficient $a(x)$ inside the domain V. This inverse problem is also known as the Electrical Impedance Tomography. In this talk we give a positive answer to Calderon's question in dimension two; the work is joint with Lassi Päivärinta (Helsinki). The proof is based on arguments using complex analysis, PDE's and quasiconformal methods.

Tid och plats: Onsdagen den 26 november kl. 13.15 – 14.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

ALGEBRA- OCH GEOMETRISEMINARIUM

Gerard van der Geer:

Curves over finite fields and congruences between modular forms

Abstract: Unlike modular forms in one variable, Siegel modular forms for higher genus are rather mysterious due to the lack of explicit examples. In joint work with Carel Faber we showed how one can use genus 2 curves over finite fields to get information about Siegel modular forms for genus 2. This information is precise enough to obtain convincing evidence for congruences between genus 1 and genus 2 modular forms that were conjectured by Harder. The talk will be an introduction to this topic.

Tid och plats: Onsdagen den 26 november kl. 13.15 – 15.00 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

SEMINARIUM I FINANSIELL MATEMATIK

Lars Ek

presenterar sitt examensarbete:

Automatic reserving of small claims: A comparison of two different approaches of small claims reserving methodology

Abstract: In the two main systems in Scandinavia (Norway and Sweden), automatic reserving is used for claims under a certain pre-settled claim cost. However, the details are different. In Norway, all claims have an assigned claim type with some or lots of supplementary information. Then a split is made of claim types and subtypes which overall gives about 150 different classes. In Sweden, a different way of dividing the claims into claim types is used. First, all claims are divided into product groups, subproducts, and then into claim types, which gives several thousand different classes.

The methods of doing the estimation of the reserve are also different in the two systems. The Swedish method is a yearly-based mean claim method, which calculates the reserve differently depending on if the claim has incurred during the present accounting year or during earlier accounting years. In the first case, the reserve is calculated collectively as the total claim cost of the year minus made payments. For earlier years, the reserve is calculated individually for every claim as the mean claim for the actual year times a diminution function.

The Norwegian method ignores the split between accounting years and allots a pre-estimated mean reserve to every open claim. The size of the reserve depends on the age of the claim. The total reserve is then calculated as the sum of all the reserves of the open claims.

The Norwegian method of reserving shows capable results when used on an independent set of data. Compared to the Swedish system, the Norwegian system, with fewer classes and a different reserving method, offers less maintenance work, clearer definitions of what the reserves shall cover, and possibilities to display results and methods graphically.

Tid och plats: Måndagen den 24 november kl. 16.15 – 17.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

MONEY, JOBS

Columnist: Hans Rullgård, Department of Mathematics, SU. E-mail: hansr@math.su.se.

Info = information. This will be given and repeated until obsolete. Rely on other sources as well.
BBKTH = Bulletin Board at the Department of Mathematics, KTH.
BBSU = Bulletin Board at the Department of Mathematics, SU.
The following information, with links, is also available at http://www.math.su.se/~hansr/mj.html.
Unless stated otherwise, a given date is the last date (e.g. for applications), and the year is 2003. A number without an explanation is a telephone number.

Standard information channels

1. A channel to information from Vetenskapsrådet: http://www.vr.se/naturteknik/index.asp.
2. A channel to information from the European Mathematical Society: http://www.emis.de.
3. A channel to information from the American Mathematical Society: http://www.ams.org.
4. KTH site for information on funds: http://www.kth.se/aktuellt/stipendier.
5. Stockholm University site for information on funds: http://www.su.se/forskning/stipendier/databas.php3.
6. Umeå site for information on funds: http://www.umu.se/umu/aktuellt/stipendier_fond_anslag.html.
7. Job announcement site: http://www.maths.lth.se/nordic/Euro-Math-Job.html. This is run by the European Mathematical Society.

(Continued on the next page.)

8. Stiftelsen för internationalisering av högre utbildning och forskning (STINT) site for information on funds: http://www.stint.se.
9. Nordisk Forskerutdanningsakademi (NorFA) site for information on funds: http://www.norfa.no.
10. Svenska institutet (SI) site for information on funds: http://www.si.se.

New information

Jobs, to apply for

11. Sektionen naturvetenskap, idrott och matematik vid Högskolan i Jönköping söker en universitetslektor i matematik med didaktisk inriktning, 19 december. Info: Björn Hellquist, 036-15 77 54. Web-info: http://www.hlk.hj.se/hem_jobb_lektor200311.htm.

Old information

Money, to apply for

12. Karl Engvers Stiftelse. Stiftelsens ändamål är att främja vetenskaplig forskning vid KTH genom att i första hand dela ut medel till forskare och lärare vid KTHs institutioner att användas till resor och deltagande i konferenser samt för presentationer av egna forskningsresultat. I andra hand får stiftelsens medel användas till andra projekt som drivs av studenter eller forskarstuderande vid högskolan. Ansökan inlämnas senast den 3 december till Registrator, KTH, Valhallavägen 79, 100 44 Stockholm. Web-info: se punkt 4 ovan.
13. Sweden-Japan Foundation (SJF) utlyser stipendier för studier, forskning samt examensarbete och praktik på högskolenivå i Japan. Stipendierna är främst avsedda för studier inom teknik, naturvetenskap, ekonomi, juridik, medicin och handel. Beslut fattas vid tre tillfällen per år. Sista ansökningsdagar är 1 mars, 1 september samt 1 december. Ansökan skall ske på särskild blankett. Info: 08-611 68 73, e-post info@swejap.a.se. Web-info: http://www.swejap.a.se.
14. Från Knut och Alice Wallenbergs Stiftelse ställs anslag till rektors för KTH förfogande för att ”i första hand användas till bidrag för sådana resor som bäst befordrar ett personligt vetenskapligt utbyte till gagn för svensk forskning. Bidrag skall främst beviljas till yngre forskare. Medel kan även — efter rektors bedömning — undantagsvis disponeras för utländska gästforskare.” Bidrag till resor inom Norden beviljas i regel inte. Bidrag kan sökas när som helst under året. Info: Anette Nyström, 08-790 70 59. Web-info: se punkt 4 ovan.