



BRÅKET



Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 15

FREDAGEN DEN 22 APRIL 2005

BRÅKET

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

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KTH
100 44 Stockholm

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Sista manustid för nästa nummer:
Torsdagen den 28 april kl. 13.00.

Disputation i matematik

Tommy Ekola disputerar på avhandlingen *A Numerical Study of the Lorenz and Lorenz-Stenflo Systems* fredagen den 22 april kl. 10.00 i sal M3, KTH, Brinellvägen 64. Se Bråket nr 12 sidan 5.

NORDAN 2005

Denna konferens äger rum i Sigtuna under tiden 22–24 april. Se Bråket nr 14 sidan 8.

SEMINARIER

Fr 04–22 kl. 10.00–12.00. Högre seminarium i språkfilosofi och logik. Nellie Wieland, San Diego: *On explaining idiolectal error*. Rum D700, Filo-sofiska institutionen, SU. Se sidan 4.

Må 04–25 kl. 10.30–11.30. Seminar in Random and Deterministic Spectra. Andreas Enblom: *Ergodic self-adjoint operators*. Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

Må 04–25 kl. 13.15–14.15. Seminar in Analysis and its Applications. Gunilla Kreiss, Nada, KTH: *Stability of viscous shock waves*. Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 14 sidan 7.

Må 04–25 kl. 13.15–14.15. DNA-seminariet Uppsala-KTH (Dynamical systems, Number theory, Analysis). Eric Bedford, Indiana University: *Characterization of the horseshoes in the Henon family*. Sal MIC 3513, Matematiska institutionen, Polacksbacken, Uppsala universitet.

Eric Bedford besöker Uppsala universitet under tiden 25–26 april.

Ti 04–26 kl. 14.00–15.00. Mittag-Leffler Seminar. Bernard Leclerc, Université de Caen: *Preprojective algebras and cluster algebras*. Institut Mittag-Leffler, Auravägen 17, Djursholm.

Ti 04–26 kl. 15.30–16.30. Mittag-Leffler Seminar. Christophe Hohlweg, Fields Institute of Toronto: *The Solomon descent algebra*. Institut Mittag-Leffler, Auravägen 17, Djursholm.

On 04–27 kl. 13.00. Seminarium i statistik. Hans Nyquist: *Design av experiment, minikurs, del 1*. Sal B705, Statistiska institutionen, SU, Universitetsvägen 10B, plan 7, Frescati.

Fortsättning på nästa sida.

Money, jobs: Se sidan 7.

Seminarier (fortsättning)

On 04–27 kl. 13.15. Logikseminariet Stockholm-Uppsala. Hajime Ishihara, Japan Advanced Institute of Science and Technology: *Quasi-apartness and neighbourhood spaces (joint work with Ray Mines, Peter Schuster and Luminita Vita)*. Sal MIC 3513, Matematiska institutionen, Polacksbacken, Uppsala universitet. Se sidan 4.

Hajime Ishihara besöker Matematiska institutionen vid Uppsala universitet under tiden 26 april – 1 maj.

On 04–27 kl. 13.15–14.15. Seminarium i analys och dynamiska system. Professor Natan Kruglyak, Institutionen för matematik, Luleå tekniska universitet: *Covering theorems and singular integrals in limiting cases*. Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 5.

On 04–27 kl. 13.15–15.00. Algebra and Geometry Seminar. A. Iarrobino: *Betti strata*. Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

On 04–27 kl. 15.15. Seminarium i matematisk statistik. Philip O'Neill, University of Nottingham, Storbritannien: *MCMC for stochastic epidemic models*. Rum 306 (Cramérrummet), hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 5.

On 04–27 kl. 16.00–17.00. KTH/SU Mathematics Colloquium. Professor Henri Berestycki, École des Hautes Études en Sciences Sociales, Paris: *Reaction-diffusion equations and propagation phenomena*. Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Kaffe/te serveras kl. 15.30 i pausrummet, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 4. Se Bråket nr 14 sidan 4.

To 04–28 kl. 10.15. Logikseminariet Stockholm-Uppsala. Hajime Ishihara, Japan Advanced Institute of Science and Technology: *Computational complexity of the intermediate value theorem*. Sal MIC 2144, Matematiska institutionen, Polacksbacken, Uppsala universitet.

To 04–28 kl. 14.00–15.00. Mittag-Leffler Seminar. Klaas Slooten, Université de Marne-la-Vallée: *Reducibility of induced Hecke algebra representations*. Institut Mittag-Leffler, Auravägen 17, Djursholm.

To 04–28 kl. 15.30–16.30. Mittag-Leffler Seminar. Yuri Yakubovich, Utrecht University: *Slicing Young diagrams of partitions and compositions*. Institut Mittag-Leffler, Auravägen 17, Djursholm.

Må 05–02 kl. 13.15–14.00 (eller 14.15). Extra Algebra and Geometry Seminar. (Observera dagen och tiden!) Christian U. Jensen: *A survey concerning the inverse problem of Galois theory*. Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 6.

Må 05–02 kl. 13.15–14.15. DNA-seminariet Uppsala-KTH (Dynamical systems, Number theory, Analysis). Peter Forrester, University of Melbourne: *Sampling from eigenvalue distributions for matrix ensembles*. Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Må 05–02 kl. 14.00–16.00. Gästföreläsning i filosofi. David Pears: *The development of Wittgenstein's ideas about the pronoun "I"*. Rum D320, Filosofiska institutionen, SU.

Fortsättning på nästa sida.

Seminarier (fortsättning)

On 05–04 kl. 13.00. Seminarium i statistik. Boris Lorenc: *Establishment surveys from the perspective of socially distributed cognition.* Sal B705, Statistiska institutionen, SU, Universitetsvägen 10B, plan 7, Frescati. Se sidan 6.

On 05–04 kl. 13.15–14.15. Seminarium i analys och dynamiska system. M. Skriganov: *Harmonic analysis on totally disconnected groups and irregularities of point distributions.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se nedan.

On 05–04 kl. 16.00. KTH/SU Mathematics Colloquium. Professor Alexander Barvinok, University of Michigan at Ann Arbor: *Convex geometry of orbits.* Sal 14, hus 5, Matematiska institutionen, SU, Kräftriket. Se sidan 5.

ALGEBRA AND GEOMETRY SEMINAR**A. Iarrobino: Betti strata**

Abstract: Let R be a polynomial ring in r variables over a field K , let $H = (1, r, \dots, h_j)$, $h_j > 0$, be an O -sequence, a sequence of integers that occurs as the Hilbert function of some Artinian quotient $A = R/I$. Denote by β the sequence of graded Betti numbers compatible with H . Within the family $\text{GrAlg}(H)$ parametrizing graded ideals of the Hilbert function H , consider the Betti stratum — the subfamily $\text{GrAlg}_\beta(H)$ parametrizing those ideals with graded Betti numbers β .

We survey what is known about the Betti strata. When $r = 2$ these strata are smooth and satisfy a frontier condition, a result that uses a method of M. Boij, who showed the analogous result for height three Gorenstein ideals. When $r \geq 3$, there is much that is unknown. But in particular, the incomparable minimal Betti strata determine irreducible components of $\text{GrAlg}(H)$, according to work of A. Ragusa and Zappala, and examples of B. Richter and others. In higher dimensions, J. O. Kleppe gives examples of Betti strata that are themselves reducible, for codimension three.

Tid och plats: Onsdagen den 27 april kl. 13.15–15.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I ANALYS OCH DYNAMISKA SYSTEM**M. Skriganov:****Harmonic analysis on totally disconnected groups
and irregularities of point distributions**

Abstract: We shall study point distributions in the multi-dimensional unit cube, which possess the structure of finite abelian groups with respect to certain p -ary arithmetic operations. Such distributions can be thought of as finite subgroups of a compact totally disconnected group of Cantor type. We shall apply the methods of harmonic analysis on these groups to estimate very precisely the discrepancy for such distributions.

The paper is available on the site: <http://www.pdmi.ras.ru>.

Tid och plats: Onsdagen den 4 maj kl. 13.15–14.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

HÖGRE SEMINARIUM I SPRÅKFILOSOFI OCH LOGIK

Nellie Wieland:

On explaining idiolectal error

Abstract: It is a problem for any theory of language to explain just what counts as a linguistic error, deviation, or instance of incorrect use. This is particularly the case for a theory of language that takes the idiolect as its primary object of study. Here I describe several possible answers (from Barber 2001; Smith 2001; George 1990) to the question of what an error is within the prevailing idiolectal approach to the study of language. I conclude that these responses are not robust enough to distinguish error from similar linguistic phenomena such as deliberately using an expression in a new way or changing one's mind about the meaning of an expression, and these remain serious explanatory inadequacies. I suggest that linguistic theory needs a nuanced explanation of error, but that this may be impossible to provide in the current climate of divorcing the study of language from epistemology.

Tid och plats: Fredagen den 22 april kl. 10.00 – 12.00 i rum D700, Filosofiska institutionen, SU.

LOGIKSEMINARIET STOCKHOLM-UPPSALA

Hajime Ishihara:

Quasi-apartness and neighbourhood spaces

(joint work with Ray Mines, Peter Schuster and Luminita Vita)

Abstract: We extend the concept of apartness spaces to the concept of quasi-apartness spaces. We show that there is an adjunction between the category of quasi-apartness spaces and the category of neighbourhood spaces, which indicates that quasi-apartness is a more natural concept than apartness.

Tid och plats: Onsdagen den 27 april kl. 13.15 i sal MIC 3513, Matematiska institutionen, Polacksbacken, Uppsala universitet.

DNA-SEMINARIET UPPSALA-KTH

(DYNAMICAL SYSTEMS, NUMBER THEORY, ANALYSIS)

Peter Forrester:

Sampling from eigenvalue distributions for matrix ensembles

Abstract: The eigenvalue distributions of Gaussian random matrices and the random matrices from the classical groups play a fundamental role in the applications of random matrices. A basic question relates to the sampling from these distributions: how can it most efficiently be carried out? Rather than having to generate a random matrix of the sought type, and then computing its eigenvalues, it is now known that the characteristic polynomials in question satisfy simple recurrences with random coefficients. Thus the distributions can be sampled by computing the characteristic polynomials from the recurrences, and then computing its zeros. I will review these developments, and explain my own contribution. One aspect of the latter (in joint work with Eric Rains) relates to the eigenvalue distribution of certain rank 1 perturbations, or equivalently the zeros of some random rational functions.

Tid och plats: Måndagen den 2 maj kl. 13.15 – 14.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I ANALYS OCH DYNAMISKA SYSTEM

Natan Kruglyak:

Covering theorems and singular integrals in limiting cases

Abstract: A year ago I gave a talk concerning fairly new covering theorems. Now I plan to discuss recent applications of covering theorems to singular integral operators. Among these applications are stability of approximation under singular integrals in L^1 -norm, the Fefferman-Stein maximal theorem, and a lemma due to L. Carleson in a limiting case.

Tid och plats: Onsdagen den 27 april kl. 13.15–14.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I MATEMATISK STATISTIK

Philip O'Neill:

MCMC for stochastic epidemic models

Abstract: In this talk we present an overview of Markov chain Monte Carlo (MCMC) methods as applied to problems of statistical inference for infectious disease data. We operate within a Bayesian framework, and use stochastic transmission models that describe the underlying spread of infection. Applications described include estimation of vaccine efficacy; determining routes of infection; estimation of transmission rates; and others.

Tid och plats: Onsdagen den 27 april kl. 15.15 i rum 306 (Cramérrummet), hus 6, Matematiska institutionen, SU, Kräftriket.

KTH/SU MATHEMATICS COLLOQUIUM

Alexander Barvinok:

Convex geometry of orbits

Abstract: Suppose that a compact group acts in a finite-dimensional real vector space, we pick a point in the space and consider the convex hull of its orbit. A number of objects of a general mathematical interest appear this way, or as polar duals to such convex hulls. Examples include the set of everywhere non-negative polynomials, the convex hull of the Grassmannian in the theory of calibrated geometries and some polytopes of interest in combinatorial optimization. Although such convex bodies have a quite complicated combinatorial structure, a lot can be said about their metric properties. The key is a simple description of the minimum volume ellipsoid containing the orbit. The talk is based on a joint work with Grigoriy Blekherman. The aim of this talk is to show that interplay between analysis and algebra often is very fruitful. To construct a tempered fundamental solution to a differential operator $P(D)$ with constant coefficients means, via the Fourier transform, that the polynomial $P(\xi)$ is inverted in the space $S'(\mathbf{R}^n)$ of tempered distributions. To find such an inverse one uses algebraic results about the Weyl algebra A_n , which is the non-commutative algebra of differential operators with polynomial coefficients.

Some results due to Sato and Bernstein will be exposed together with some specific examples such as the construction of fundamental solutions to PDE's of real principal type with an optimal small analytic wave front set.

Tid och plats: Onsdagen den 4 maj kl. 16.00 i sal 14, hus 5, Matematiska institutionen, SU, Kräftriket.

EXTRA ALGEBRA AND GEOMETRY SEMINAR

Christian U. Jensen:

A survey concerning the inverse problem of Galois theory

Abstract: In a famous paper by Hilbert from 1892 the following problem (“the inverse problem of Galois theory”) was posed: Can any finite group G be realized as the Galois group of a Galois extension of the rational number field $\mathbf{Q}$? Hilbert used his irreducibility theorem to prove (among other things) that every symmetric group $\mathbf{S}_n$ and every alternating group $\mathbf{A}_n$ is realizable as a Galois group over $\mathbf{Q}$. For most later investigations Hilbert’s irreducibility theorem has been a highly important tool. Based on this theorem Emmy Noether formulated in 1915 a conjecture about the rationality of certain fix-point fields for groups operating on rational function fields over $\mathbf{Q}$, which would imply an affirmative answer to the inverse problem of Galois theory. In the lecture we give a survey of positive and negative results concerning these (and related) questions.

Tid och plats: Måndagen den 2 maj kl. 13.15–14.00 (eller 14.15) i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

SEMINARIUM I STATISTIK

Boris Lorenc: Establishment surveys

from the perspective of socially distributed cognition

Abstract: From its introduction into the survey field in the mid-1980’s, the cognitive view contributed considerably to understanding of the response process. Nowadays, the approach is an indispensable component of any serious surveying endeavour.

Yet, during the preceding two decades there emerged some difficulties in cognitive science as a discipline. These unresolved issues, like the concepts of representations and of ‘processing information’, led to creation of alternative approaches, beginning actually as early as the 1970’s. These came in various flavours, one of which is socially distributed cognition (Hutchins, 1995). It is to this specific approach that the attention in this seminar is focused, for two reasons:

- It has a potential to be a successful (and even necessary) complement to the usual study of cognitive processes related to responding.
- It is particularly applicable to organizational surveying, which thus far has stayed behind cognitive developments in individual responding.

A vehicle for demonstration was a Statistics Sweden census of pupils taking part in primary education in Sweden. The data collection process, knowledge of which the speaker gained through observation and interviews, turned out to be a socially distributed endeavour including several people, their skills and tools (paper, computers), and persevering through time by establishing social practices and by use of record data. An analysis of the “path” that pupils’ data — eventually reported to Statistics Sweden — need to traverse was performed in the spirit of socially distributed cognition, indicating variables where measurement errors would seem more prone to appear. A mathematical tool for the analysis of the paths is also sketched, and generalizations are given using the examples published in previous works.

Reference: HUTCHINS, E. (1995), *Cognition in the Wild*. Bradford: MIT Press.

Tid och plats: Onsdagen den 4 maj kl. 13.00 i sal B705, Statistiska institutionen, SU, Universitetsvägen 10B, plan 7, Frescati.

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 2005. 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.
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. Institutionen för matematik vid KTH ledigförklarar ett antal anställningar som doktorand, alternativt utbildningsbidrag, i matematik, speciellt en doktorand i komplexanalys eller komplexdynamik, 9 maj. Info: Kurt Johansson, 08-790 61 82, e-post kurtj@math.kth.se, Ari Laptev, 08-790 62 44, e-post laptev@math.kth.se, för komplexanalys/komplexdynamik: Mattias Jonsson, 08-790 71 73, e-post mattiasj@kth.se. Web-info: <http://www.math.kth.se/utlysning.tjanst/utlysning050405.html> och <http://www.math.kth.se/utlysning.tjanst/utlysning050408.html>.

Old information

Money, to apply for

12. 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 befördrar 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 kan sökas under hela året. Info: Anette Nyström, 08-790 70 59. Web-info: se punkt 4 ovan.

Jobs, to apply for

13. Institutionen för kemi och biomedicinsk vetenskap vid Högskolan i Kalmar söker en vikarierande universitetslektor/-adjunkt i matematik samt en vikarierande universitetslektor/-adjunkt i matematik med inriktning mot matematikens didaktik/utbildningsvetenskap, 26 april. Info: Håkan Hallmer, 0480-44 62 01, e-post hakan.hallmer@hik.se, Anders Tengstrand, 0480-44 64 70, e-post anders.tengstrand@hik.se. Web-info: <http://www.hik.se/nyheter/>. Se Bråket nr 13 sidorna 9–10.
14. Institutionen för matematik och matematisk statistik vid Umeå universitet söker doktorander i matematik och matematisk statistik, 25 april. Info: Anders Fällström, 090-786 53 76, e-post Anders.Fallstrom@math.umu.se. Web-info: <http://www.math.umu.se/Vacancies/index.html>.
15. Matematiska institutionen vid Uppsala universitet utlyser tre utbildningsbidrag i matematik eller matematisk logik och ett utbildningsbidrag i matematisk statistik, 2 maj. Info: Anders Öberg, 018-471 31 96, e-post Anders.Oberg@math.uu.se. Web-info: <http://www.math.uu.se/inform/utbbidrag.php>.