BRÅKET

Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 6 **FREDAGEN DEN 8 FEBRUARI 2002**

BRÅKET

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

Redaktör: Gunnar Karlsson

Telefon: 08-790 84 79

Adress för e-post: gunnark@math.kth.se

Bråket på Internet: http://www.math.kth.se/braaket.html eller http://www.math.kth.se/braket/

Postadress:
Red. för Bråket
Institutionen för matematik
KTH
100 44 Stockholm

- - - - - - -

Sista manustid för nästa nummer:
Torsdagen den 14 februari
kl. 13.00.

SEMINARIER

Fr 02–08 kl. 11.00 – 12.00. Optimization and Systems Theory Seminar. Professor György Michaletzky, Eötvös Loránd University, Budapest: *Risk-sensitive identification of ARMA processes.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 5 sidan 3.

Må 02–11 kl. 13.15 – 15.00. Algebra- och geometriseminarium. Torsten Ekedahl: *Moduli för abelska mångfalder.* (Fortsättning från seminariet den 4 februari.) Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se Bråket nr 5 sidan 3.

Må 02–11 kl. 13.15 – 15.00. Potentialanalysseminarium. Alex Vasil'ev, Valparaíso och Institut Mittag-Leffler: *Univalent functions with angular derivatives.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

Ti 02–12 kl. 10.15. Plurikomplexa seminariet. Professor Franc Forstneric, Madison/Ljubljana: *The Oka principle — recent progress.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se nedan.

Fortsättning på nästa sida.

PLURIKOMPLEXA SEMINARIET

Franc Forstneric: The Oka principle — recent progress

Abstract: Mappings of a complex manifold X into another complex manifold Y are said to satisfy the basic Oka principle (or the homotopy principle), if every continuous map is homotopic to a holomorphic map. The parametric Oka principle means that the inclusion of the space of holomorphic maps into the space of continuous maps is a weak homotopy equivalence. I will begin by surveying the historical development of this subject through the works of Oka, Grauert, Cartan, and others, and continuing via Gromov's seminal work of 1989 to the recent results on this subject.

Tid och plats: Tisdagen den 12 februari kl. 10.15 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

Seminarier (fortsättning)

Ti 02–12 kl. 13.15. Plurikomplexa seminariet. Professor Burglind Jöricke, Uppsala: *Hulls and analytic extension from non-pseudoconvex boundaries.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 4.

Ti 02–12 kl. 14.30 – 15.30. Mittag-Leffler Seminar. Kari Astala, Helsingfors: *On Beurling transforms and integral means.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

Ti 02–12 kl. 16.00 – 17.00. Mittag-Leffler Seminar. Gaven Martin, Auckland: *Rational maps of manifolds and the Lichnerowitz problem.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

On 02–13 kl. 10.30. Logikseminariet Stockholm-Uppsala. Viggo Stoltenberg-Hansen: *A comparison of approaches to exact real number computation, part II.* Sal 2:315, Matematiska institutionen, Polacksbacken, Uppsala universitet.

On 02–13 kl. 13.15. Seminarium i algebraisk geometri. Wojciech Chachólski: *Zariski's main theorem.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

On 02–13 kl. 13.15 – 14.15. Seminarium i analys och dynamiska system. Professor Gaven Martin, Auckland och Institut Mittag-Leffler: *The PDE's of conformal geometry and the Hilbert-Smith conjecture.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 5.

On 02–13 kl. 13.15 – 15.00. Seminarium i matematik och fysik vid Mälardalens högskola (Västerås). Anatoliy Malyarenko, Mälardalens högskola: *Conditional Value at Risk and credit risk optimization.* Lektionssal 1632, Mälardalens högskola, Västerås.

On 02–13 kl. 15.15 – 16.00. Seminarium i matematik och fysik vid Mälardalens högskola (Västerås). Richard Bonner, Mälardalens högskola: *Quantum finite automata.* Lektionssal Flex3, Mälardalens högskola, Västerås.

To 02–14 kl. 15.15. Matematiska institutionens kollokvium (Uppsala). Professor Franc Forstneric, Madison/Ljubljana: *Stein domains in complex surfaces.* Rum 2247, Matematiska institutionen, Polacksbacken, Uppsala universitet. Institutionen bjuder på kaffe, te och kakor kl. 14.45 i personalrummet. Efter föredraget ges möjlighet till diskussion och förfriskningar. Se sidan 4.

To 02–14 kl. 16.30. 2001 Manne Siegbahn Memorial Lecture. *(The lecture was postponed due to the events on September 11, 2001.)* **Professor Andrew E. Lange,** Department of Astronomy, California Institute of Technology, Pasadena, USA: *Imaging the embryonic universe: First resolved images of the cosmic microwave background.* Föreläsningssalen, Manne Siegbahn-byggnaden, Frescativägen 24, Stockholm. Se Bråket nr 5 sidan 4.

Fr 02–15 kl. 10.15 – 12.00. Seminarium i logik och filosofi. Professor Sven Ove Hansson, Filosofienheten, KTH: *Preferenslogik.* Sammanträdesrum 3424, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 4 (innanför pausrummet). Se sidan 6.

Fr 02–15 kl. 13.15 – 14.15. Seminarium i PDE och spektralteori. David Krejcirik, Czech Academy of Sciences: *Bound states in curved quantum layers.* Sammanträdesrum 3424, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 4 (innanför pausrummet). Se sidan 3.

Fortsättning på nästa sida.

Seminarier (fortsättning)

Fr 02–15 kl. 15.15. Populära kollokviet. Harold Shapiro: *A glimpse into operator theory.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Efter föredraget kommer att finnas dryck och förtäring. Se sidan 5.

Må 02–18 kl. 13.15. Potentialanalysseminarium. Natalia Abuzyarova: *On a property of subspaces admitting spectral synthesis.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Må 02–18 kl. 15.15 – 16.00. Seminarium i matematisk statistik. Sead Omérov presenterar sitt examensarbete: *Comparison of methods for computing total variation distance bounds for compound Poisson approximations of word counts.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 6.

Må 02–18 kl. 16.15 – 17.00. Seminarium i matematisk statistik. Henrik Hult: *Excursions in the Brownian motion and the Brownian bridge and relations to the two-parameter Poisson-Dirichlet distribution.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 6.

On 02–20 kl. 15.15 – 16.00. Seminarium i matematik och fysik vid Mälardalens högskola (Västerås). Fredrik Stenberg, Mälardalens högskola: *A long term financial advice.* Lektionssal N24, Mälardalens högskola, Västerås.

To 02–21 kl. 13.15. Seminarium i fysik. Konstantin Zarembo, Teoretisk fysik, Uppsala universitet: *Gauge theory/gravity correspondence.* Seminarierummet, Stockholms centrum för fysik, astronomi, bioteknik (SCFAB), hus 11, Roslagstullsbacken 11. Se sidan 5.

SEMINARIUM I ALGEBRAISK GEOMETRI

Wojciech Chachólski: Zariski's main theorem

Abstract: This is intended to be an expository talk. I will present a proof of Zariski's main theorem. The exposition will include a review of the normalization process. In particular I will describe the difference between finite and quasi-finite morphisms.

Tid och plats: Onsdagen den 13 februari kl. 13.15 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I PDE OCH SPEKTRALTEORI

David Krejcirik: Bound states in curved quantum layers

Abstract: We consider a quantum particle constrained to a tubular neighbourhood of constant width built over a curved non-compact surface embedded in R^3. We suppose that the latter is asymptotically planar, and that such a layer has a hard-wall boundary. Under these assumptions we find sufficient conditions which guarantee the existence of geometrically induced bound states.

This is a joint work with Pierre Duclos and Pavel Exner.

Tid och plats: Fredagen den 15 februari kl. 13.15 – 14.15 i sammanträdesrum 3424, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 4 (innanför pausrummet).

PLURIKOMPLEXA SEMINARIET

Burglind Jöricke: Hulls and analytic extension from non-pseudoconvex boundaries

Abstract: Let $\mathcal{D}$ be a bounded domain in $\mathbb{C}^2$ with C^2 boundary. It is not required that $\mathcal{D}$ is pseudoconvex. We treat single-valued analytic continuation of continuous CR functions on a connected part of the boundary $\partial\mathcal{D}$ to the domain $\mathcal{D}$ itself. Problems of this typ have been considered since more than 20 years under the name "removable singularities of CR functions". Under the non-pseudoconvexity assumption and rather weak conditions on the mentioned open part of the boundary, the problem becomes delicate. Our approach seems to be interesting in itself for it is based only on Kontinuitätssatz (for obtaining analytic continuation) and on a technique for monodromy considerations which uses in particular Stolzenberg's theorem on polynomial convexity of certain arcs.

Tid och plats: Tisdagen den 12 februari kl. 13.15 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

MATEMATISKA INSTITUTIONENS KOLLOKVIUM (UPPSALA)

Franc Forstneric: Stein domains in complex surfaces

Abstract: A complex manifold is said to be Stein if it is biholomorphic to a closed complex submanifold of an affine space. This class of manifolds has been playing a central role in complex analysis for at least half a century. We shall begin by surveying the main analytical and topological properties of Stein manifolds. The main part of the talk will be devoted to the problem of finding regular Stein neighbourhoods of embedded and immersed compact real surfaces in complex surfaces. By "regular" we mean in particular that the given real surface is a strong deformation retraction of its Stein neighbourhoods. We approach this problem by a combination of complex-analytical and topological methods. The latter include certain index inequalitites whose connection to the Seiberg-Witten theory has been discovered recently by S. Nemirovski. We shall give fairly precise results for surfaces in the complex projective plane CP^2. In particular, we find an immersed symplectic sphere in CP^2 with a Stein neighbourhood.

Tid och plats: Torsdagen den 14 februari kl. 15.15 i rum 2247, Matematiska institutionen, Polacksbacken, Uppsala universitet. Institutionen bjuder på kaffe, te och kakor kl. 14.45 i personalrummet. Efter föredraget ges möjlighet till diskussion och förfriskningar.

POTENTIALANALYSSEMINARIUM

Natalia Abuzyarova: On a property of subspaces admitting spectral synthesis

Abstract: Let H be the space of holomorphic functions in a convex domain G of the complex plane. And let W be a closed subspace of H that is invariant with respect to the operator of differentiation and admits spectral synthesis (i.e. is spanned by the set of exponential monomials from W). Then W can be represented as a solution set of two (possibly coinciding) homogeneous convolution equations.

Tid och plats: Måndagen den 18 februari kl. 13.15 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I ANALYS OCH DYNAMISKA SYSTEM

Gaven Martin: The PDE's of conformal geometry and the Hilbert-Smith conjecture

Abstract: The PDE's of conformal geometry are the higher-dimensional Beltrami systems which are the governing equations for the theory of quasiconformal mappings and aspects of the calculus of variations, in particular for nonlinear elasticity. In all applications we want to study these equations in a Sobolev setting with nonsmooth coefficients. There is little (i.e. nothing) known about existence in this generality, yet we show how our partial solution of Hilbert's 5th problem for topological transformations groups (the Hilbert-Smith conjecture) in the elliptic case can be used to deduce properties of solutions and establish such things as uniqueness.

The seminar is suitable for a general audience.

Tid och plats: Onsdagen den 13 februari kl. 13.15 – 14.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

POPULÄRA KOLLOKVIET

Harold Shapiro: A glimpse into operator theory

Abstract: The "operators" here spoken of will always be bounded linear operators on a Hilbert space. The talk will be introductory, assuming only that the audience is familiar with the definitions of Hilbert space, linear operators and their adjoints.

One of the main themes of operator theory is finding "models", of simple nature and on concrete Hilbert spaces, for abstract operators subject to restrictions, such as self-adjointness, unitary, etc. The *spectral theorem* yields the main classical results of this kind. In more recent developments, such as B. S. Nagy's *unitary dilation theorem,* operators of very general kind, not covered by the spectral theorem, are realized as "parts" of "nice" (unitary) operators on larger Hilbert spaces. These reults have many applications, a few of which I hope to describe in the talk.

Tid och plats: Fredagen den 15 februari kl. 15.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Efter föredraget kommer att finnas dryck och förtäring.

SEMINARIUM I FYSIK

Konstantin Zarembo: Gauge theory/gravity correspondence

Abstract: It has long been expected that strings somehow arise in gauge theories. The fact that string theory contains gravity was considered an obstacle to use strings as an effective description of gauge fields, up until the AdS/CFT correspondence was proposed. The AdS/CFT correspondence conjectures an exact equivalence of a gauge theory and gravity or string theory in one dimension higher. I will review the AdS/CFT duality, its consequences, and various tests of this conjecture.

Tid och plats: Torsdagen den 21 februari kl. 13.15 i seminarierummet, Stockholms centrum för fysik, astronomi, bioteknik (SCFAB), hus 11, Roslagstullsbacken 11.

SEMINARIUM I LOGIK OCH FILOSOFI

Sven Ove Hansson: Preferenslogik

Sven Ove Hansson är professor vid filosofienheten, KTH. Vid seminariet kommer även docent John Cantwell, forskare vid enheten, att närvara.

En av avsikterna med seminariet är att upprätta en kontakt mellan Institutionen för matematik och filosofienheten. Vid denna finns nu ett flertal doktorander. Ett av intresseområdena vid enheten är riskteori, vilket borde intressera många vid institutionen.

Tid och plats: Fredagen den 15 februari kl. 10.15 – 12.00 i sammanträdesrum 3424, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 4 (innanför pausrummet).

SEMINARIUM I MATEMATISK STATISTIK

Sead Omérov

presenterar sitt examensarbete:

Comparison of methods for computing total variation distance bounds for compound Poisson approximations of word counts

Abstract: Three significantly different methods are available for computing the upper bound for compound Poisson approximations of word counts. Here we first shortly describe these three methods, then analyse how the bounds differ in five pre-defined transition matrices, and finally perform simulation runs where various parameters are concurrently randomized. The results obtained, and the conclusions drawn, take into consideration that the three methods are not always simultaneously applicable.

The source code and the simulation runs are written in a way to make modifications and alternate simulation runs as simple as possible.

Tid och plats: Måndagen den 18 februari kl. 15.15 – 16.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I MATEMATISK STATISTIK

Henrik Hult:
Excursions in the Brownian motion and the Brownian bridge and relations to the two-parameter Poisson-Dirichlet distribution

Abstract: The two-parameter Poisson-Dirichlet distribution has been investigated by J. Pitman, M. Yor, and others. It is the distribution of a random vector $(V_1, V_2, \ldots)$ such that $V_1 > V_2 > \cdots$ and $V_1 + V_2 + \cdots = 1$. That is, it is the distribution of an ordered partition of the interval $[0, 1]$. It turns out that $\mathrm{PD}(1/2, 0)$ gives the distribution of a partition of $[0, 1]$ given by the excursions of a Brownian motion, and $\mathrm{PD}(1/2, 1/2)$ gives the distribution of a partition given by the excursions of a Brownian bridge. We will discuss these results and show how they can be derived as limits of a simple random walk.

Tid och plats: Måndagen den 18 februari kl. 16.15 – 17.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.
