BRÅKET

Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 34 **FREDAGEN DEN 26 OKTOBER 2007**

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: gunnarkn@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

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Sista manustid för nästa nummer:
Torsdagen den 1 november kl. 13.00.

Disputation i reglerteknik

Jonas Mårtensson disputerar på avhandlingen *Geometric Analysis of Stochastic Model Errors in System Identification* onsdagen den 31 oktober kl. 10.00 i sal F3, KTH, Lindstedtsvägen 26, b.v. Se Bråket nr 33 sidan 9.

Money, jobs: Se sidan 7.

SEMINARIER

Fr 10–26 kl. 13.15–14.15. Graduate Student Seminar. Ole Andersson, Uppsala universitet och Matematik, KTH: *Metrics with positive scalar curvature.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Fr 10–26 kl. 14.30–15.30. Algebra and Geometry Seminar. *(Observera dagen, tiden och lokalen!)* **David Rydh:** *Submersions and effective descent of étale morphisms.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

Må 10–29 kl. 15.15–17.00. Seminarium i matematisk statistik. Martin Ohlson, Matematiska institutionen, Linköpings universitet och tekniska högskola: *The likelihood ratio statistic for testing spatial independence using a separable covariance matrix.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 33 sidan 7.

Ti 10–30 kl. 10.15. Plurikomplexa seminariet. Alexander Rashkovskii, Stavanger: *Tropical analysis of plurisubharmonic singularities.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 5.

Ti 10–30 kl. 15.30–16.30. Mittag-Leffler Seminar. Nicolai Krylov, University of Minnesota, Minneapolis, USA: *Analytic approach to SPDE's. The last of a series of three lectures.* Updated notes of the course (50 pages) can be downloaded at http://www.mittag-leffler.se/programs/0708f/files_lectures/krylov.pdf. Institut Mittag-Leffler, Auravägen 17, Djursholm.

Fortsättning på nästa sida.

Seminarier (fortsättning)

On 10–31 kl. 10.15–12.00. Kombinatorikseminarium. Alexander Engström, KTH: *The topological Tverberg theorem.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

On 10–31 kl. 11.00–12.00. Common SU KoF/KTH Theoretical Physics Seminar. Alfonso García-Parrado, Matematiska institutionen, Linköpings universitet: *Causal structure: a new viewpoint.* Sal FA31, Roslagstullsbacken 21, AlbaNova universitetscentrum. Se Bråket nr 33 sidan 10.

On 10–31 kl. 13.00–14.45. Algebra and Geometry Seminar. Mats Boij, KTH: *Graded Cohen-Macaulay modules with pure resolutions.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 3.

On 10–31 kl. 13.15–14.15. Seminarium i analys och dynamiska system. Ioannis Parissis, Georgia Tech: *Title to be announced.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

On 10–31 kl. 15.00. Docentföreläsning i matematisk statistik. *(Observera lokalen!)* **Esbjörn Ohlsson,** Länsförsäkringar AB: *Dynamic Financial Analysis — en introduktion.* Sal 14, hus 5, Matematiska institutionen, SU, Kräftriket. Se Bråket nr 33 sidan 8.

To 11–01 kl. 14.00–15.00. DNA-seminariet Uppsala-KTH (Dynamical systems, Number theory, Analysis). Morten Risager, University of Aarhus: *Selberg's eigenvalue conjecture and poles of Eisenstein series.* Häggsalen, Ångströmlaboratoriet, Uppsala universitet. Se sidan 5.

To 11–01 kl. 14.00–15.00. Mittag-Leffler Seminar. Igor Chueshov, Kharkov National University, Ukraine: *Monotone methods in random dynamics generated by SPDE's.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 4.

To 11–01 kl. 15.30–16.30. Mittag-Leffler Seminar. Robert Adler, Technion, Israel: *Random fields on manifolds, kinematic formulae, and integral geometry in Gauss space. A first lecture of a series of three.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 6.

Fr 11–02 kl. 13.15–14.15. Graduate Student Seminar. Martin Blomgren, Matematik, KTH: *Title to be announced.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

Må 11–05 kl. 15.15. Licentiatseminarium i matematisk statistik. Jens Svensson presenterar sin licentiatavhandling: *Some Asymptotic Results in Dependence Modelling.* Inbjuden diskutant: **Professor Allan Gut,** Matematisk statistik, Uppsala universitet. Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 5.

On 11–07 kl. 13.00. Seminarium i statistik. Gebre Ghilagaber: *Bayesian adjustment of anticipatory covariates in the analysis of retrospective data.* Sal B705, Statistiska institutionen, SU, Universitetsvägen 10B, plan 7, Frescati.

On 11–07 kl. 14.30–15.30. KCSE (KTH Computational Science and Engineering Centre) Seminar. Per Öster, PDC, KTH: *Grid computing — What and why?* PDC:s seminarierum, KTH, Teknikringen 14, plan 3.

Fortsättning på nästa sida.

Seminarier (fortsättning)

On 11–07 kl. 16.00. KTH/SU Mathematics Colloquium. Anders Karlsson, KTH: *Rigidity theory: old and new.* 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 sidan 6.

Fr 11–09 kl. 11.00 – 12.00. Optimization and Systems Theory Seminar. Maben Rabi: *Title to be announced.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

ALGEBRA AND GEOMETRY SEMINAR

David Rydh:
Submersions and effective descent of étale morphisms

Abstract: Submersions, or topological epimorphisms, are important in various contexts in algebraic geometry. Examples include quotients of schemes, homology of schemes, and integral closure of ideals. Closely related is a lying-over property for ordered pairs of points. An aesthetically pleasing structure result for submersions is obtained using the "flatification by blow-up" result of Raynaud and Gruson. Using this structure result I will show that submersions are morphisms of effective descent for étale morphisms. An application of this result is the universality of geometric quotients.

Tid och plats: Fredagen den 26 oktober kl. 14.30 – 15.30 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

ALGEBRA AND GEOMETRY SEMINAR

Mats Boij:
Graded Cohen-Macaulay modules with pure resolutions

Abstract: Working together with Jonas Söderberg on the Multiplicity Conjecture of Herzog, Huneke and Srinivasan lead us to formulate conjectures on the structure of Betti diagrams of graded Cohen-Macaulay modules up to multiplication by rational numbers. First, we conjectured that all Betti diagrams of graded Cohen-Macaulay modules are non-negative rational linear combinations of pure Betti diagrams, and one of the consequences of this is that the Multiplicity conjecture holds. This conjecture was proved to hold in low codimension by Söderberg in his thesis.

In the other direction, we conjectured that all possible pure diagrams actually occur as the Betti diagram of a Cohen-Macaulay module, at least if we consider sufficiently large integer multiples. Recently, Eisenbud, Fløystad and Weyman proved this conjecture in characteristic zero in a very beautiful way using equivariant $\mathrm{Gl}(n)$-modules. They also extend the conjecture by saying that eventually, all integer points on the ray generated by a pure diagram will occur as an actual Betti diagram.

I will give background to the conjectures and explain how the existence of pure resolutions was established.

Tid och plats: Onsdagen den 31 oktober kl. 13.00 – 14.45 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

GRADUATE STUDENT SEMINAR

Ole Andersson:
Metrics with positive scalar curvature

Abstract: We consider the problem of classifying manifolds that admit a metric whose associated scalar curvature is everywhere positive. A key result in the study of such manifolds is the Gromov-Lawson surgery lemma: surgery on a sphere of codimension at least three in a manifold which admits a metric with positive scalar curvature results in another manifold which admits a metric with positive scalar curvature. We use the Gromov-Lawson surgery lemma to show that a metric with positive scalar curvature can be extended, preserving positive scalar curvature, over the cobordism corresponding to a surgery on a sphere of codimension at least three. We apply this result to prove an existence result for metrics with positive scalar curvature.

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

KOMBINATORIKSEMINARIUM

Alexander Engström:
The topological Tverberg theorem

Abstract: The topological Tverberg theorem states that for any prime power q and continuous map from a $(d+1)(q-1)$-simplex to $\mathbb{R}^d$, there are q disjoint faces F_i of the simplex whose images intersect.

Usually there are many ways to choose the disjoint faces and still get intersecting images. One indication of this is that one can forbid certain pairs of vertices of the simplex to end up in the same face F_i and anyway manage to find disjoint F_i:s whose images intersect. If we start off with a graph T with the same vertex set as the simplex, and the topological Tverberg theorem works with no two vertices adjacent in T placed in the same face F_i, then T is a Tverberg graph.

Some Tverberg graphs are known from research by Hell, Schöneborn, and Ziegler. I will show that if the maximal degree of a graph is δ, and $\delta(\delta+1) < q$, then it is a Tverberg graph.

Tid och plats: Onsdagen den 31 oktober kl. 10.15 – 12.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

MITTAG-LEFFLER SEMINAR

Igor Chueshov:
Monotone methods in random dynamics generated by SPDE's

Abstract: The aim of this talk is to present an approach suitable for investigating a variety of qualitative aspects of the so-called order-preserving random dynamical systems. The main objects considered are equilibria and random attractors. As applications we discuss several classes of random and stochastic ODE's and PDE's which arise in many applications.

Tid och plats: Torsdagen den 1 november kl. 14.00 – 15.00 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

PLURIKOMPLEXA SEMINARIET

Alexander Rashkovskii:
Tropical analysis of plurisubharmonic singularities

Abstract: A natural tropical structure on singularities of plurisubharmonic functions will be discussed. We are mostly interested in the description for tropically linear functionals on the singularities. Some partial results will be presented.

Tid och plats: Tisdagen den 30 oktober kl. 10.15 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

DNA-SEMINARIET UPPSALA-KTH (DYNAMICAL SYSTEMS, NUMBER THEORY, ANALYSIS)

Morten Risager:
Selberg's eigenvalue conjecture and poles of Eisenstein series

Abstract: Selberg conjectured that the automorphic Laplacian related to a congruence group has no eigenvalues in the open interval $]0, 1/4[$. We will explain how this important conjecture surprisingly may be reformulated entirely in terms of existence of poles of Eisenstein series for system of Laplacians with characters. This is done using a combination of techniques from perturbation theory and non-vanishing of arithmetic L-functions.

Tid och plats: Torsdagen den 1 november kl. 14.00 – 15.00 i Häggsalen, Ångströmlaboratoriet, Uppsala universitet.

LICENTIATSEMINARIUM I MATEMATISK STATISTIK

Jens Svensson

presenterar sin licentiatavhandling:

Some Asymptotic Results in Dependence Modelling

Inbjuden diskutant: **Professor Allan Gut,** Matematisk statistik, Uppsala universitet.

Abstract: This thesis consists of two papers, both devoted to the study of asymptotics in dependence modelling. The first paper studies large deviation probabilities for a sum of dependent random variables, where the dependence stems from a few underlying random variables, so-called factors. Each summand is composed of two parts: an idiosyncratic part and a part given by the factors. Conditions under which both factors and idiosyncratic components contribute to the large deviation behaviour are found and the resulting approximation is evaluated in a simple special case. The results are then applied to stochastic processes with the same structure. Based on the results of the first part of the paper, it is concluded that large deviations on a finite time interval are due to one large jump that can come from either the factor or the idiosyncratic part of the process.

The second paper studies the asymptotic eigenvalue distribution of the exponentially weighted moving average (EWMA) covariance estimator. Equations for the limiting eigenvalue density and the boundaries of its support are found using the Marčenko-Pastur theorem.

Tid och plats: Måndagen den 5 november kl. 15.15 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

MITTAG-LEFFLER SEMINAR

Robert Adler:
Random fields on manifolds, kinematic formulae, and integral geometry in Gauss space. A first lecture of a series of three

Programme:

The aim of these three lectures will be to describe a new class of results in the theory of smooth Gaussian random fields, which have turned out not only to impact on this theory itself, but also on applications and on Differential Geometry.

The first lecture will be of an introductory nature, setting up the problem in standard Euclidean spaces and motivating it by simply understood but important problems in Astrophysics and Medical Imaging.

In the second and third lectures we shall move to the setting of Riemannian manifolds, which is where the new theory comes into full force. There we shall see how Gaussian random field theory yields an extension to Riemannian manifolds of the famous Kinematic Fundamental Formula of classical, Euclidean, Integral Geometry, an extension in which integration over the isometry group with respect to Haar measure is replaced by integration over a function space with respect to an appropriate Gaussian measure.

En passant, we shall also extend to general Riemannian manifolds yet another of the basic results of classical Integral Geometry, the so-called Crofton Formula.

We shall also see how these results shed new light on excursion probabilities for smooth Gaussian processes, and how, in essence, the proofs of these new results work.

Material for the lectures can be downloaded at http://www.mittag-leffler.se/internal/grf.pdf.

Tid och plats: Torsdagen den 1 november kl. 15.30 – 16.30 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

KTH/SU MATHEMATICS COLLOQUIUM

Anders Karlsson:
Rigidity theory: old and new

Abstract: It has been well-known since Riemann that there are continuous families of Riemann surfaces of genus g ("the moduli space of curves"). Around 1960 Selberg made the remarkable discovery that in higher dimensions ($\mathrm{SL}(n,R)$ instead of $\mathrm{SL}(2,R)$) this is no longer true. Works of Calabi-Vesentini, and especially Weil extended this showing that indeed $\mathrm{SL}(2,R)$ is the only exceptional case for local rigidity.

In the early 1970's the stronger rigidity theorems of Mostow and of Margulis were proved. In particular, Mostow found the startling result that in $\dim > 2$, the fundamental group actually determines the hyperbolic manifold.

I will outline some of the ideas behind these landmark achievements, as well as describe recent results of Gelander, Margulis and myself, concerning superrigidity for lattices of certain general type acting on uniformly convex spaces. The proof of our results is based on a study of generalized harmonic maps.

Tid och plats: Onsdagen den 7 november kl. 16.00 i 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.

MONEY, JOBS

Columnist: Johannes Lundqvist, Department of Mathematics, Stockholm University. E-mail: johannes@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/~johannes/mj.html.en.
Unless stated otherwise, a given date is the last date (e.g. for applications), and the year is 2007. 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://www2.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. Lunds universitet söker en biträdande universitetslektor i matematisk statistik med inriktning mot statistiska metoder inom livsvetenskaper. Sista ansökningsdag är den 14 december. Web-info: http://www.naturvetenskap.lu.se/upload/LUPDF/natvet/Utlysningar/071123_3463.pdf.

Old information

Money to apply for

12. Stiftelsen P. E. Lindahls fond utlyser två stipendier om vartdera 150 000 kronor för vetenskapliga studier eller fortsatt praktisk utbildning i naturvetenskapliga ämnen inom eller utom Sverige. Sökande skall ha avlagt doktorsexamen år 2002 eller senare eller vara behörig att antagas till forskarutbildning och får inte inneha tjänst hos stat eller kommun. Tidigare har prioritering givits till nydisputerade forskare samt seniora forskare som är i behov av bidrag till fortsatt utbildning, exempelvis i form av resa/vistelse vid annat universitet. Sista ansökningsdag är den 17 december. Web-info: http://www.kva.se/KVA_Root/swe/awards/scholarships/detail_scholarships.asp?grantsId=15.

Jobs to apply for

13. Umeå universitet söker en doktorand i matematisk ekologi (ledande till doktorsexamen antingen i tillämpad matematik eller teoretisk ekologi). Sista ansökningsdag är den 15 november. Web-info: http://www.math.umu.se/Aktuellt/Vacancies/DoktorandMatematiskEkologi2007.pdf.
14. Göteborgs universitet söker en doktorand i matematik med inriktning mot algebraiska strukturer i fysiken. Sista ansökningsdag är den 15 november. Web-info: http://ledig-anstallning.adm.gu.se/#.
15. Göteborgs universitet söker en doktorand i matematik med inriktning mot numerisk analys av atomära beräkningar. Sista ansökningsdag är den 15 november. Web-info: http://ledig-anstallning.adm.gu.se/#.
16. Lunds universitet söker en doktorand i matematisk statistik. Sista ansökningsdag är den 26 oktober. Web-info: http://www3.lu.se/info/lediga/admin/document/PA%202007-3454.pdf.