BRÅKET
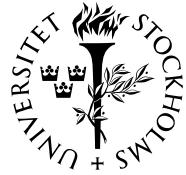
Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 22 **FREDAGEN DEN 6 JUNI 2003**

Geometric and Global Properties in PDE with applications

En workshop med denna titel äger rum vid KTH den 11–14 juni. Se sidan 5.

Nästa nummer av Bråket,

som utkommer den 13 juni, blir det sista före sommaruppehållet. Numret därefter utkommer (preliminärt) fredagen den 22 augusti.

SEMINARIER

Fr 06−06 kl. 10.15. Licentiatseminarium i matematisk statistik. Ola Hammarlid, SU: *When is a convex barrier passed?* Inbjuden diskussionsinledare: **Professor Allan Gut,** Uppsala universitet. Sal 14, hus 5, Matematiska institutionen, SU, Kräftriket. Se Bråket nr 20 sidan 10.

Fr 06−06 kl. 10.15. Presentation av magisteravhandling (Uppsala). Erik Melin: *Connectedness and continuity in digital spaces with the Khalimsky topology.* Sal 2144, Matematiska institutionen, Polacksbacken, Uppsala universitet.

Fr 06−06 kl. 13.15. Licentiatseminarium i matematisk statistik. Johan Lindbäck, SU: *A model for analysing temporal and spatial patterns of infectious diseases with an application to reported campylobacter infections.* Inbjuden diskussionsinledare: **Gianpaolo Scalia Tomba,** Roms universitet. Sal 14, hus 5, Matematiska institutionen, SU, Kräftriket. Se Bråket nr 20 sidan 8.

Disputation i optimeringslära och systemteori

Petter Ögren disputerar på avhandlingen *Formation and obstacle avoidance in mobile robot control* fredagen den 6 juni kl. 10.00 i Kollegiesalen, Administrationsbyggnaden, KTH, Valhallavägen 79. Se Bråket nr 20 sidan 11.

Disputation i matematik

Norayr Matevosyan disputerar på avhandlingen *Tangential touch between free and fixed boundaries* tisdagen den 10 juni kl. 13.00 i Kollegiesalen, Administrationsbyggnaden, KTH, Valhallavägen 79. Se Bråket nr 21 sidan 4.

Seminarier (fortsättning)

Fr 06−06 kl. 13.15−14.00. Presentation av examensarbete i matematik. Anders Edquist: *A tree implementation for modelling of interest rates and credit spread.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Ti 06−10 kl. 13.00. Seminarium i teoretisk datalogi. Joakim Jalden, Institutionen för signaler, sensorer och system, KTH: *On the complexity of sphere decoding in digital communications.* Rum 1537, Nada, KTH. Se Bråket nr 21 sidan 6.

Ti 06−10 kl. 13.00−14.00. Presentation av examensarbete i matematik. Jan Kontinen: *Den grekiska matematiken och samhällsutvecklingen.* Sal 16, hus 5, Matematiska institutionen, SU, Kräftriket. Se Bråket nr 21 sidan 6.

Ti 06−10 kl. 13.15. Seminar in Theoretical and Applied Mechanics. Kazuo Aoki, University of Kyoto: *Monte Carlo simulation of rarefied gas flows between two coaxial circular cylinders.* Rum S40, Institutionen för mekanik, KTH, Teknikringen 8, b.v. Se Bråket nr 21 sidan 7.

Ti 06−10 kl. 14.00−15.00. Mittag-Leffler Seminar. Guangyue Han, University of Notre Dame, Indiana, USA: *Multiple antenna communcation system and packing problem on Stiefel manifold.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 3.

Ti 06−10 kl. 15.15−16.00. Seminarium i finansiell matematik. *(Observera dagen!)* **Christèle Jörud** presenterar sitt examensarbete: *Technical Analysis in the Financial Market; Critical Approach and Practical Improvements.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

Ti 06−10 kl. 15.30−16.30. Mittag-Leffler Seminar. Clyde Martin, Texas Tech University, Lubbock, USA: *Smoothing splines are approximate linear filters.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 4.

On 06−11 kl. 13.15−15.00. Algebra- och geometriseminarium. Christin Borge: *Solving the modular isomorphism problem.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 3.

On 06−11 kl. 15.15. Seminarium i matematisk statistik. Gerald Kroisandt, Fraunhofer-Chalmers Institute, Göteborg: *Tutorial on risk measures with a view towards insurance companies.* Rum 306 (Cramérrummet), hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 6.

To 06−12 kl. 14.00−15.00. Presentation av examensarbete i matematik. Michael Paulsen: *Enumerativa egenskaper för konkava partitioner av heltal.* Sal 16, hus 5, Matematiska institutionen, SU, Kräftriket. Se sidan 4.

Fr 06−13 kl. 11.00−12.00. Optimization and Systems Theory Seminar. Magnus Egerstedt, Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, USA: *Autonomous formation switching for multiple mobile robots.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 21 sidan 7.

Må 06−16 kl. 11.00−12.00. Optimization and Systems Theory Seminar. *(Observera dagen!)* **Michael P. Friedlander,** Mathematics and Computer Science Division, Argonne National Laboratory, Illinois, USA: *An LCL algorithm for constrained optimization.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 6.

MITTAG-LEFFLER SEMINAR

Guangyue Han:
Multiple antenna communcation system
and packing problem on Stiefel manifold

Abstract: Unitary space-time modulation (USTM) using multiple antennas promises reliable communication at high transmission rates. The basic principles are well understood and certain criteria for designing good unitary constellations have been presented. In this talk the analysis of diversity function will be presented. Consequently diversity product and diversity sum will be derived. Since the diversity sum is essentially Euclidean distance on $U(n)$ which is a special case of Stiefel manifold, we will use Haar measure induced by the Euclidean space to deduce the theoretical upper bound of diversity sum and consequently the upper bound of diversity product.

Tid och plats: Tisdagen den 10 juni kl. 14.00 – 15.00 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

SEMINARIUM I FINANSIELL MATEMATIK

Christèle Jörud

presenterar sitt examensarbete:

Technical Analysis in the Financial Market;
Critical Approach and Practical Improvements

Abstract: The apparent conflict between practitioners and non-believers of the efficiency of technical analysis is a long-standing conundrum. This paper attempts to develop strategies using technical analysis that enables portfolio managers to improve their return on investments. The objectives of this study are to test the predictability of the most frequently used technical indicators and to find the optimal indicator solutions. We find strong evidence consistent with the hypotheses that technical indicators reveal information about an asset's price movement and that the use of technical indicators ameliorates the return on investment. In the light of the results, we help reconcile the traditional views with technical analysis and provide a general method on how to optimally apply the technical indicators on portfolios.

Tid och plats: Tisdagen den 10 juni kl. 15.15 – 16.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

ALGEBRA- OCH GEOMETRISEMINARIUM

Christin Borge:
Solving the modular isomorphism problem

Abstract: In November 2002, Arnfinn Laudal and I were able to show that (the isomorphism class of) a finite p-group G is determined by its group algebra over the field of p elements, hence solving the modular isomorphism problem. In this talk I will present the proof, which combines methods from non-commutative geometry with group theoretic results.

Tid och plats: Onsdagen den 11 juni kl. 13.15 – 15.00 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

PRESENTATION AV EXAMENSARBETE I MATEMATIK

Anders Edquist: A tree implementation
for modelling of interest rates and credit spread

Abstract: The value of a wide range of financial contracts depends on the interest rate and the credit risk. In this seminar a full implementation of a numerical tree model for valuation of credit risk and interest rate dependent contracts will be presented. The model is based upon the assumption that the dynamics of both the short rate and the default intensity follows the Hull-White equation.

Tid och plats: Fredagen den 6 juni kl. 13.15 – 14.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

MITTAG-LEFFLER SEMINAR

Clyde Martin:
Smoothing splines are approximate linear filters

Abstract: Control theoretic smoothing splines have been developed extensively in statistics and more recently as a tool in control. The idea is to find a "best" approximation to a set of noisy data points. In control theory applications the independent variable is assumed to be deterministic and the measured data are assumed noisy. In statistics both variables are considered to be random variables. In this talk we show that the smoothing splines are an approximation of a classical linear filter of the form $y(t) = \int k(s,t)f(s)ds$.

Tid och plats: Tisdagen den 10 juni kl. 15.30 – 16.30 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

PRESENTATION AV EXAMENSARBETE I MATEMATIK

Michael Paulsen:
Enumerativa egenskaper för konkava partitioner av heltal

Sammanfattning: I arbetet definieras ett Ferrersdiagram, $F(\lambda)$, där λ är en partition av n och n är ett ickenegativt heltal, sådant att $F(\lambda)$ blir ett ändligt ordningsideal och dess komplement ett oändligt monoidideal som svarar mot ett artinskt monomideal i $C[x,y]$. Hela höljet till monomidealet blir ånyo ett monomideal som i sin tur kommer att svara mot ett monoidideal vars komplement är ett Ferrersdiagram av en heltalspartition som då kallas konkav. I samband med detta definieras en likformigt fördelad slumpvariabel X_n för en given heltalspartition av n för skillnaden mellan sådana partitioner och dess konkava delar.

Vidare undersöks hur konkava partitioner faktoriseras enligt faktorisering av monomideal i (a_k, b_k)-block. Vi ger genererande funktioner för antalet konkava partitioner med ett begränsat antal delar samt presenterar statistik för hur stor andel av partitionerna av 1 t.o.m. 30 som är konkava, deras väntevärde, varians och faktorisering. Detta görs med hjälp av procedurer skrivna i datoralgebraprogrammet Maple. För partitioner av större heltal undersöks slumpmässiga partitioner med hjälp av programmet Algolib.

Tid och plats: Torsdagen den 12 juni kl. 14.00 – 15.00 i sal 16, hus 5, Matematiska institutionen, SU, Kräftriket.

Geometric and Global Properties in PDE with applications

A workshop with this title will be given at KTH from Wednesday, June 11, to Saturday, June 14, 2003. It is arranged by the Potential Analysis Group at the Department of Mathematics, KTH. All talks will take place in auditorium (hörsal) D3, KTH, Lindstedtsvägen 5, ground floor. Abstracts of the talks can be found on the homepage of the workshop: http://www.math.kth.se/~henriksh/general/conferences/conference2003/workshop03.html.

Wednesday, June 11

9.30 – 10.15 **L. Nirenberg,** New York: *On the distance function to the boundary, cut locus, and the singular set of solutions of some Hamilton-Jacobi equations.*

10.30 – 11.15 **L. Ambrosio,** Pisa: *Cauchy problem and transport equation for BV vector fields.*

11.45 – 12.30 **P. Markowich,** Vienna: *Highly Oscillatory PDE's.*

14.30 – 15.15 **N. Uraltseva,** St. Petersburg: *Parabolic free boundaries in presence of a fixed boundary.*

15.45 – 16.30 **D. A. Gomes,** Lisboa: *Partial differential equations and non-integrability of Hamiltonian systems.*

Thursday, June 12

9.30 – 10.15 **B. Kawohl,** Cologne: *Symmetries in anisotropic media.*

10.30 – 11.15 **L. Caffarelli,** Austin: *Title to be announced.*

11.45 – 12.30 **O. Savin,** Austin: *On a conjecture of DeGiorgi.*

14.30 – 15.15 **G. Weiss,** Tokyo: *Boundary monotonicity formulae and applications.*

15.45 – 16.30 **J. Andersson,** Stockholm: *Title to be announced.*

Friday, June 13

9.30 – 10.15 **Q. Han,** Notre Dame: *Local solutions of degenerate Monge-Ampère equations and applications in geometry.*

10.30 – 11.15 **X. Cabre,** Barcelona: *Layer solutions in a half space for boundary reactions.*

11.45 – 12.30 **S. Salsa,** Milan: *Two phase problems for variable coefficients operators.*

14.30 – 15.15 **T. Souganidis,** Austin: *Title to be announced.*

15.45 – 16.30 **C. Lederman,** Buenos Aires: *A free boundary problem from non-local combustion.*

Saturday, June 14

9.30 – 10.15 **J. F. Rodrigues,** Lisboa: *Remarks on the stability of the p-obstacle problem.*

10.30 – 11.15 **M. Feldman,** Madison: *Transonic shocks and free boundary problems.*

11.45 – 12.30 **J. L. Vazquez,** Madrid: *Title to be announced.*

14.30 – 15.15 **K. Lee,** South Korea: *Hölder regularity of solutions to degenerate elliptic and parabolic equations.*

SEMINARIUM I MATEMATISK STATISTIK

Gerald Kroisandt:
Tutorial on risk measures
with a view towards insurance companies

Abstract: We will start from the basic definition of a risk measure and investigate the different properties it should/could have. This leads us to the terms of coherent and convex risk measures. Then, we will look at coherent risk measures and their representation and what this means in practice, but also see that expected shortfall is the "mother" of all coherent risk measures. Another topic is an introduction into the concept of utility. We will not only derive a risk measure out of utility, but also a premium calculation principle.

If there is still time, we will consider risk measures arising from standard premium principles used in insurance companies.

Se http://www.math.su.se/gemensamt/kommunikationer.html.

Tid och plats: Onsdagen den 11 juni kl. 15.15 i rum 306 (Cramérrummet), hus 6, Matematiska institutionen, SU, Kräftriket.

OPTIMIZATION AND SYSTEMS THEORY SEMINAR

Michael P. Friedlander:
An LCL algorithm for constrained optimization

For optimization problems with nonlinear constraints, linearly constrained Lagrangian (LCL) methods sequentially minimize an augmented Lagrangian subject to linearized constraints. Convergence is rapid near a solution (as proved by Robinson and often observed with MINOS).

To induce global convergence and to unify the approaches used in LANCELOT and MINOS, we work with an elastic form of the linearized constraints (by adding an L1 penalty term to the augmented Lagrangian). Our stabilized LCL method possesses two important properties: The linearly constrained subproblems are always feasible, and they may be solved inexactly.

The current implementation is efficient on large problems, using MINOS to solve the subproblems. Only first derivatives are required. We present numerical results on the COPS and CUTE test problems.

Tid och plats: Måndagen den 16 juni kl. 11.00 – 12.00 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.