BRÅKET

Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 12 **FREDAGEN DEN 27 MARS 2009**

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 2 april kl. 13.00.

Disputation i optimeringslära och systemteori

David A. Anisi skall disputera vid KTH på avhandlingen *On Cooperative Surveillance, Online Trajectory Planning and Observer Based Control* onsdagen den 1 april kl. 10.00. Se sidorna 7 – 8.

Money, jobs: Se sidorna 9 – 10.

SEMINARIER

Fr 03 – 27 kl. 11.00 – 12.00. Optimization and Systems Theory Seminar. David A. Anisi, Optimeringslära och systemteori, KTH: *Cooperative Surveillance using Multiple Ground Vehicles.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

Ti 03 – 31 kl. 13.15. Plurikomplexa seminariet. Alexander Engström, KTH: *Polytopes and integer points — what is going on?* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 4.

Ti 03 – 31 kl. 14.00 – 15.00. Institut Mittag-Leffler Seminar. Johan Wästlund, Chalmers tekniska högskola, Göteborg: *Cancelling* $\infty - \infty$ *with games on graphs.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 4.

Fortsättning på nästa sida.

Disputation i mekanik

Allan Carlsson skall disputera vid KTH på avhandlingen *Near wall fibre orientation in flowing suspensions* fredagen den 27 mars kl. 10.15. Se sidan 8.

Disputation i numerisk analys

Marco Kupiainen skall disputera på avhandlingen *Compressible Turbulent Flows: LES and Embedded Boundary Methods* torsdagen den 2 april kl. 13.00 i sal F3, KTH, Lindstedtsvägen 26, b.v. Se Bråket nr 11 sidan 7.

Disputation i matematisk statistik

Andreas Lindell skall disputera på avhandlingen *Theoretical and Practical Applications of Probability: Excursions in Brownian Motion, Risk Capital Stress Testing, and Hedging of Power Derivatives* fredagen den 3 april kl. 13.00 i sal 14, hus 5, Matematiska institutionen, SU, Kräftriket. Se Bråket nr 11 sidan 5.

Seminarier (fortsättning)

Ti 03–31 kl. 14.00 – 15.00. Optimization and Systems Theory Seminar. *(Observera dagen och tiden!)* **Professor Randal Beard,** Department of Electrical and Computer Engineering, Brigham Young University, Utah, USA: *Vision based guidance for micro air vehicles.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Professor Beard skall vara opponent vid David A. Anisis disputation. Se sidorna 7–8.

Ti 03–31 kl. 15.30 – 16.30. Institut Mittag-Leffler Seminar. Kurt Johansson, KTH: *Universality in random matrix theory.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 5.

On 04–01 kl. 10.00. Presentation av kandidatarbete i matematisk statistik. Sun Lei: *Statistical analysis of the effects of membrane protein overexpression in Escherichia coli.* Handledare: **Jan-Olov Persson.** Sal 31, hus 5, Matematiska institutionen, SU, Kräftriket. Se sidan 5.

On 04–01 kl. 11.00. Presentation av magisterarbete i matematisk statistik. Erik Gustafsson: *Customer duration in non-life insurance industry.* Handledare: **Joanna Tyrcha.** Sal 31, hus 5, Matematiska institutionen, SU, Kräftriket. Se sidan 5.

On 04–01 kl. 13.15 – 14.15. Seminarium i analys och dynamiska system. Alan Sola, KTH: *Loewner evolutions driven by compound Poisson processes and random growth.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 9.

On 04–01 kl. 15.15. Seminarium i matematisk statistik. David Sirl, University of Nottingham: *Epidemics on random networks incorporating household structure.* Rum 306 (Cramérrummet), hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 9.

To 04–02 kl. 13.15 – 14.15. DNA-seminariet Uppsala-KTH (Dynamical systems, Number theory, Analysis). Giorgos Costakis, University of Crete: *Dynamics of linear operators in finite and infinite dimensions.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

To 04–02 kl. 14.00 – 15.00. Institut Mittag-Leffler Seminar. David Wilson, Microsoft Corporation, Redmond: *A sharp threshold for minimum bounded-depth and bounded-diameter spanning trees and Steiner trees in random networks.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 3.

To 04–02 kl. 15.15 – 16.15. AlbaNova and Nordita Colloquium in Physics. Professor James R. Drake, Alfvénlaboratoriet, KTH: *ITER and the development of fusion energy.* Oskar Kleins auditorium, Roslagstullsbacken 21, AlbaNova universitetscentrum. Se Bråket nr 11 sidan 6.

To 04–02 kl. 15.30 – 16.30. Institut Mittag-Leffler Seminar. Oliver Riordan, Oxford University: *Random graphs, the cut metric and branching processes.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 6.

Fr 04–03 kl. 13.15 – 14.15. Graduate Student Seminar. Dan Petersen, Matematik, KTH: *Title to be announced.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

Fortsättning på nästa sida.

Seminarier (fortsättning)

Fr 04–03 kl. 15.15 – 16.15. Matematiska kollokviet i Uppsala. *(Observera lokalen!)* **Ulf Persson,** Chalmers tekniska högskola, Göteborg: *Surfaces in your backyard — an introduction to the classification of surfaces.* Siegbahnsalen, Ångströmlaboratoriet, Uppsala universitet. Kaffe/te serveras utanför föreläsningssalen kl. 14.55. Se sidan 6.

On 04–08 kl. 13.15. Algebra and Geometry Seminar. Lars Halle: *Title to be announced.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

OPTIMIZATION AND SYSTEMS THEORY SEMINAR

David A. Anisi: Cooperative Surveillance using Multiple Ground Vehicles

Abstract: This talk considers the problem of concurrent task and path planning for a number of surveillance Unmanned Ground Vehicles (UGVs) such that a given polyhedral area is completely covered by the UGVs' sensors. Both the minimum time and the connectivity constrained formulations will be discussed.

The presented material constitutes one of three parts of my thesis *On Cooperative Surveillance, Online Trajectory Planning and Observer Based Control,* whose public defence will be held on Wednesday, April 1, 2009, at 10.00 in room E2, KTH, Lindstedtsvägen 3. See pages 7 – 8 in this issue of Bråket.

Tid och plats: Fredagen den 27 mars kl. 11.00 – 12.00 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

INSTITUT MITTAG-LEFFLER SEMINAR

David Wilson: A sharp threshold for minimum bounded-depth and bounded-diameter spanning trees and Steiner trees in random networks

Abstract: In the complete graph on n vertices, when each edge has a weight which is an exponential random variable, Frieze proved that the minimum spanning tree has weight tending to $\zeta(3) = 1/1^3 + 1/2^3 + 1/3^3 + \cdots$ as n goes to infinity. We consider spanning trees constrained to have depth bounded by k from a specified root. We prove that if $k > \log_2 \log n + \omega(1)$, where $\omega(1)$ is any function going to infinity with n, then the minimum bounded-depth spanning tree still has weight tending to $\zeta(3)$ as $n \to \infty$, and that if $k < \log_2 \log n$, then the weight is doubly-exponentially large in $\log_2 \log n - k$. It is NP-hard to find the minimum bounded-depth spanning tree, but when $k < \log_2 \log n - \omega(1)$, a simple greedy algorithm is asymptotically optimal, and when $k > \log_2 \log n + \omega(1)$, an algorithm which makes small changes to the minimum (unbounded-depth) spanning tree is asymptotically optimal. We prove similar results for minimum bounded-depth Steiner trees.

The talk is based on joint work with Omer Angel and Abie Flaxman.

Tid och plats: Torsdagen den 2 april kl. 14.00 – 15.00 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

PLURIKOMPLEXA SEMINARIET

Alexander Engström:
Polytopes and integer points — what is going on?

Abstract: There are natural connections between several subjects brought up at the pluricomplex seminar and discrete geometry. I will survey some fresh ideas (well — from the last 10 years) about polytopes and their representations not widely known outside the fields of convex and discrete geometry.

Tid och plats: Tisdagen den 31 mars kl. 13.15 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

INSTITUT MITTAG-LEFFLER SEMINAR

Johan Wästlund:
Cancelling $\infty - \infty$ with games on graphs

Abstract: Renormalization refers to a set of techniques originating in quantum electrodynamics, and sometimes explained as "cancelling $\infty - \infty$".

Methods involving such cancellations have been applied to random instances of optimization problems on graphs. In the 1980's, M. Mézard and G. Parisi obtained some spectacular results on minimum matching and the travelling salesman problem.

I will describe how some of their results on minimum matching can be justified by introducing a certain two-person game. Curiously, a "twisted" version of the game, where at each move the player not to move can forbid one move option, is related to the travelling salesman problem.

Tid och plats: Tisdagen den 31 mars kl. 14.00 – 15.00 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

OPTIMIZATION AND SYSTEMS THEORY SEMINAR

Randal Beard:
Vision based guidance for micro air vehicles

Abstract: This talk will focus on guidance strategies for micro air vehicles that use electro-optical camera as the primary guidance sensor. The talk will first provide an overview of the UAV testbed developed at Brigham Young University and briefly describe implementation issues. We will then discuss vision based tracking algorithms for ground based targets. The main idea is to explicitly maneuver the vehicle to maintain the target in the camera field-of-view. We will also discuss vision enabled precise landing and show results of a MAV landing in the back of a moving truck. We will discuss reactive and deliberative schemes for vision based collision avoidance algorithms. The reactive scheme pushes the target to a desired bearing in the body frame, similar to collision avoidance schemes used by humans. The deliberative scheme maps the world and plans paths in the vehicle navigation. Flight results will be shown for each of these methods.

Tid och plats: Tisdagen den 31 mars kl. 14.00 – 15.00 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

INSTITUT MITTAG-LEFFLER SEMINAR

Kurt Johansson:
Universality in random matrix theory

Abstract: I will give a survey of some aspects of the universality problem in random matrix theory, the fact that the limiting distributions and processes that come out from certain random matrix measures appear to be natural limit distributions.

Tid och plats: Tisdagen den 31 mars kl. 15.30 – 16.30 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

PRESENTATIONER AV KANDIDAT- OCH MAGISTERARBETEN I MATEMATISK STATISTIK

Onsdagen den 1 april kommer ett kandidatarbete och ett magisterarbete i matematisk statistik att presenteras vid Matematiska institutionen, SU. Lokalen för båda presentationerna är sal 31, hus 5, Matematiska institutionen, SU, Kräftriket. De två rapporterna kommer inom kort att finnas på sidan http://www2.math.su.se/matstat/reports/serieb.

Kl. 10.00 ges följande presentation (kandidatarbete):

Sun Lei:
Statistical analysis of the effects of membrane protein overexpression in Escherichia coli

Handledare: **Jan-Olov Persson.**

Abstract: In this thesis we use statistical methods to help to understand how overexpression of membrane-protein KDEL-receptor affects the proteome of the three host E.coli strains: BL21 (DE3), C41 (DE3), and C43 (DE3). We analyse 411 proteins by two-way ANOVA and identify 186 proteins with a strain or treatment effect, when controlling the false discovery rate at 5 %. Pairwise comparisons of the three strains at base level and stressed state respectively show that for C41 and C43, but not BL21, the majority of proteins are produced in the same amounts at both states. Chi-square q-q plots show that we should not assume a common error variance for the different proteins.

Kl. 11.00 ges följande presentation (magisterarbete):

Erik Gustafsson:
Customer duration in non-life insurance industry

Handledare: **Joanna Tyrcha.**

Abstract: The subject of this master thesis is the application of survival analysis to predict policy churns in a non-life insurance industry. Especially, models and methods are applied to estimate survival probabilities on customer-level in a competing risk setting, where churns occur of different types of causes. By following motor policy holders over a three-year period, probabilites are estimated which enable scoring of customers, especially those likely to churn within this time period. Cause-specific semiparametric hazard functions are modelled with Cox regression given customer data at the beginning of the study period. The models are estimated from data on private customers in the Danish insurance company Codan. The main conclusion is that time-fixed covariate and time-invariant effect models that are used for prediction here might be an over-simplification of churns on customer-level, as they disregard the impact of customers-specific events during follow-up. This suggests more flexible models when analysing churns.

INSTITUT MITTAG-LEFFLER SEMINAR

Oliver Riordan:
Random graphs, the cut metric and branching processes

Abstract: There is a great variety of random graph models, and many different questions one can ask about each model. One question that makes good sense in many cases (essentially all cases where the number of edges grows linearly with the number of vertices) is whether there is a 'giant component' containing a significant fraction of the vertices, and if so, how large is it? Many results of this type are known, often giving a very accurate description of the 'phase transition' where the giant component emerges, for some specific model. In this work with Bela Bollobas and Svante Janson we aim for a complementary result, with a relatively weak conclusion under very weak assumptions.

We assume independence between edges (without which it seems hard to say much in general). We also assume that the matrices of edge probabilities converge (to a kernel), but only in a very weak sense, namely in the cut metric. We show that under these conditions the size of the giant component is related to the branching process associated to the kernel. The results build on and generalize previous results of the authors that make stronger convergence assumptions, and results of Bollobas, Borgs, Chayes and Riordan with weak convergence assumptions but strong boundedness assumptions.

Tid och plats: Torsdagen den 2 april kl. 15.30 – 16.30 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

MATEMATISKA KOLLOKVIET I UPPSALA

Ulf Persson:
Surfaces in your backyard —
an introduction to the classification of surfaces

Abstract: The theory of compact complex curves (or Riemann surfaces) is well understood. They are classified up to homeomorphism (and diffeomorphism) by their genera g, and the complex structures form well-studied complex manifolds of dimension $3g-3$ ($g>1$). No mathematician can avoid meeting CP^1, the Riemann sphere ($g=0$) and C/Λ, elliptic curves (tori, $g=1$). The case of compact complex surfaces is far more complicated, and they were described by the Italian mathematician Enriques as the progeny of the Devil.

In the talk I will concentrate on describing a number of concrete examples of surfaces and explain how they fit into a more general pattern. While curves are in a sense very predictable, surfaces come with all kinds of combinations of invariants, and their study has much in common with the concern of the classical naturalist, marvelling at the great variety of living things.

If you have never met them before, you will among other things first encounter the so-called K-3 surfaces, maybe the most famous and interesting of all surfaces, in a variety of different shapes. K-3 surfaces are simply-connected surfaces and as such they form one important example of a large class of surfaces with ramifications beyond classical algebraic geometry.

Tid och plats: Fredagen den 3 april kl. 15.15 – 16.15 i Siegbahnsalen, Ångströmlaboratoriet, Uppsala universitet. Kaffe/te serveras utanför föreläsningssalen kl. 14.55.

DISPUTATION I OPTIMERINGSLÄRA OCH SYSTEMTEORI

David A. Anisi

skall disputera på avhandlingen

On Cooperative Surveillance, Online Trajectory Planning and Observer Based Control

onsdagen den 1 april 2009 kl. 10.00 i sal E2, KTH, Lindstedtsvägen 3, b.v. Till opponent har utsetts *professor Randal Beard,* Department of Electrical and Computer Engineering, Brigham Young University, Utah, USA.

Abstract of the thesis

The main body of this thesis consists of six appended papers. In the first two, different cooperative surveillance problems are considered. The second two consider different aspects of the trajectory planning problem, while the last two deal with observer design for mobile robotic and Euler-Lagrange systems respectively.

In Papers A and B, a combinatorial optimization based framework to cooperative surveillance missions using multiple Unmanned Ground Vehicles (UGVs) is proposed. In particular, Paper A considers the the Minimum Time UGV Surveillance Problem (MTUSP), while Paper B treats the Connectivity Constrained UGV Surveillance Problem (CUSP). The minimum time formulation is the following. Given a set of surveillance UGVs and a polyhedral area, find waypoint-paths for all UGVs such that every point of the area is visible from a point on a waypoint-path and such that the time for executing the search in parallel is minimized. The connectivity constrained formulation extends the MTUSP by additionally requiring the induced information graph to be kept recurrently connected at the time instants when the UGVs perform the surveillance mission. In these two papers, the NP-hardness of both these problems is shown and decomposition techniques are proposed that allow us to find an approximative solution efficiently in an algorithmic manner.

Paper C addresses the problem of designing a real time, high performance trajectory planner for an aerial vehicle that uses information about terrain and enemy threats, to fly low and avoid radar exposure on the way to a given target. The high-level framework augments Receding Horizon Control (RHC) with a graph based terminal cost that captures the global characteristics of the environment. An important issue with RHC is to make sure that the greedy, short term optimization does not lead to long term problems, which in our case boils down to two things: not getting into situations where a collision is unavoidable, and making sure that the destination is actually reached. Hence, the main contribution of this paper is to present a trajectory planner with provable safety and task completion properties.

Direct methods for trajectory optimization are traditionally based on a priori temporal discretization and collocation methods. In Paper D, the problem of adaptive node distribution is formulated as a constrained optimization problem, which is to be included in the underlying nonlinear mathematical programming problem. The benefits of utilizing the suggested method for online trajectory optimization are illustrated by a missile guidance example.

In Paper E, the problem of active observer design for an important class of non-uniformly observable systems, namely mobile robotic systems, is considered. The set of feasible configurations and the set of output flow equivalent states are defined. It is shown that the inter-relation between these two sets may serve as the basis for design of active observers. The proposed observer design methodology is illustrated by considering a unicycle robot model, equipped with a set of range-measuring sensors.

(Continued on the next page.)

Finally, in Paper F, a geometrically intrinsic observer for Euler-Lagrange systems is defined and analysed. This observer is a generalization of the observer proposed by Aghannan and Rouchon. Their contractivity result is reproduced and complemented by a proof that the region of contraction is infinitely thin. Moreover, assuming a priori bounds on the velocities, convergence of the observer is shown by means of Lyapunov's direct method in the case of configuration manifolds with constant curvature.

DISPUTATION I MEKANIK

Allan Carlsson

skall disputera på avhandlingen

Near wall fibre orientation in flowing suspensions

fredagen den 27 mars 2009 kl. 10.15 i sal E2, KTH, Lindstedtsvägen 3, b.v. Till opponent har utsetts *professor Helge I. Andersson,* Norges teknisk-naturvitenskapelige universitet (NTNU), Trondheim.

Abstract of the thesis

This thesis deals with fibre orientation in wall-bounded shear flows. The primary application in mind is papermaking. The study is mainly experimental, but is complemented with theoretical considerations. The main part of the thesis concerns the orientation of slowly settling fibres in a wall-bounded viscous shear flow. This is a flow case not dealt with previously, even at small Reynolds numbers. Experiments were conducted using dilute suspensions with fibres having aspect ratios of $rp = 7$ and 30. It is found that the wall effect on the orientation is small for distances from the wall where the fibre centre is located farther than half a fibre length from the wall. Far from the wall most fibres were oriented close to the flow direction. Closer to the wall than half a fibre length the orientation distribution first shifted to be more isotropic and in the very proximity of the wall the fibres were oriented close to perpendicular to the flow direction, nearly aligned with the vorticity axis. This was most evident for the shorter fibres with $rp = 7$. Due to the density difference between the fibres and the fluid, there is an increased concentration near the wall. Still, a physical mechanism is required in order for a fibre initially oriented close to the flow direction at about half a fibre length from the wall to change its orientation to be aligned with the vorticity axis once it has settled down to the wall. A slender body approach is used in order to estimate the effect of wall reflection and repeated wall contacts on the fibre rotation. It is found that the both, a wall reflection due to settling towards the wall, and contact between the fibre end and the wall, are expected to rotate the fibre closer to the vorticity axis. A qualitative agreement with the experimental results is found in a numerical study based on the theoretical estimation. In addition an experimental study on fibre orientation in the boundary layers of a headbox is reported. The orientation distribution in planes parallel to the wall is studied. The distribution is found to be more anisotropic closer to the wall, i.e. the fibres tend to be oriented closer to the flow direction near the wall. This trend is observed sufficiently far upstream in the headbox. Farther downstream no significant change in the orientation distribution could be detected for different distances from the wall.

SEMINARIUM I ANALYS OCH DYNAMISKA SYSTEM

Alan Sola:
Loewner evolutions driven by compound Poisson processes and random growth

Abstract: Motivated in part by certain Laplacian growth models in physics, we study the hulls obtained by driving the Loewner equation in the exterior disk by a class of unimodular compound Poisson processes involving two parameters. We scale the compact sets of the evolution by capacity, prove the existence of limit hulls, and show that the length of the boundaries of these limit hulls is finite. We also investigate the dependence of the hulls on the parameters of the driving process. This reports on joint work with Fredrik Johansson, also at KTH.

Tid och plats: Onsdagen den 1 april kl. 13.15 – 14.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I MATEMATISK STATISTIK

David Sirl:
Epidemics on random networks incorporating household structure

Abstract: Epidemic models which include some more realistic population structure than the classical homogeneous mixing have been the subject of much recent study. We analyse a new model combining two ways of incorporating such structure: grouping individuals into 'households' within which infection spreads more quickly than in the general population and using random graphs to model social networks. We obtain analytical results describing the behaviour of our model which are valid asymptotically as the population size tends to infinity and explore these results numerically. We also look at how to extend the model to investigate the effect of vaccination under several different vaccine allocation strategies.

Tid och plats: Onsdagen den 1 april kl. 15.15 i rum 306 (Cramérrummet), hus 6, Matematiska institutionen, SU, Kräftriket.

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://www2.math.su.se/~johannes/mj.html.
Unless stated otherwise, a given date is the last date (e.g. for applications), and the year is 2009. 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.

(Continued on the next page.)

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. Luleå tekniska universitet söker en forskarassistent i matematik med inriktning mot numerisk beräkningsteknik. Sista ansökningsdag är den 29 mars. Web-info: http://www.ltu.se/omltu/ledigajobb/d21826/d21828/1.46382.
12. Uppsala universitet söker en professor i statistik. Sista ansökningsdag är den 20 april. Web-info: http://www.personalavd.uu.se/ledigaplatser/340prof.html.
13. Uppsala universitet söker tre doktorander i statistik. Sista ansökningsdag är den 15 april. Web-info: http://www.personalavd.uu.se/ledigaplatser/579dorand.html.

Old information

Money to apply for

14. Vetenskapsrådet utlyser projektbidrag. Dessa ges under en bestämd period för forskning i syfte att lösa en definierad forskningsuppgift. Bidraget söks av enskild forskare och ges under längst fem år. Projektbidraget kan innefatta medel för löner för olika typer av anställningar, materiel, resor, publiceringskostnader m.m. samt utrustning till en kostnad lägre än 2 000 000 kr, exklusive indirekta kostnader. Minsta möjliga belopp att söka för projektbidrag är 100 000 kr per år, exklusive indirekta kostnader. Sista ansökningsdag är den 15 april. Web-info: http://www.vr.se/huvudmeny/sokabidrag/vetenskapsradetsutlysningar/utlysningsvy.4.aad30e310abcb9735780004381.html?resourceId=-1945&languageId=1.
15. Svenska matematikersamfundet utlyser resestipendier (Knut och Alice Wallenbergs stiftelses resefond och Mats Esséns minnesfond) avsedda för forskare som ej ännu avlagt doktorsexamen. Wallenbergsstipendierna (högst 3000 kr/person) är till för att utnyttjas som delfinansiering för konferensresor och kortare utlandsvistelser. Essénstipendierna (högst 6000 kr/person) är i första hand avsedda för deltagande i sommarskolor och liknande aktiviteter. Sista ansökningsdag är den 31 mars. Web-info: http://www.maths.lth.se/matematiklu/personal/dencker/resebidrag.html.

Jobs to apply for

16. Umeå universitet söker en universitetslektor i matematisk statistik. Sista ansökningsdag är den 3 april. Web-info: http://www8.umu.se/umu/aktuellt/arkiv/lediga_tjanster/312-103-09.html.
17. Vetenskapsrådet utlyser bidrag för anställning som forskarassistent. Sista ansökningsdag är den 15 april. Web-info: http://www.vr.se/huvudmeny/sokabidrag/vetenskapsradetsutlysningar/utlysningsvy.4.aad30e310abcb9735780004381.html?resourceId=-1839&languageId=1.
18. Institutionen för matematik vid KTH söker två doktorander i finansiell matematik/matematisk statistik. Sista ansökningsdag är den 30 april. Web-info: http://www.math.kth.se/finansdokt.html.