BRÅKET

Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

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 1 oktober kl. 13.00.

Money, jobs: Se sidan 9.

SEMINARIER

Fr 09−25 kl. 15.15−16.30. Seminarium i matematisk statistik. *(Observera dagen och tiden!)* **Professor Thomas Kaijser,** Matematiska institutionen, Linköpings universitet: *On partially observed Markov chains.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 28 sidan 9.

Ti 09−29 kl. 15.00−16.00. AlbaNova and Nordita Colloquium in Physics — Manne Siegbahn Memorial Lecture. *(Observera dagen!)* **Professor Fritz Bosch,** Darmstadt: *Experiments on the beta decay of highly-ionized atoms with challenging and puzzling results.* Oskar Kleins auditorium, Roslagstullsbacken 21, AlbaNova universitetscentrum. Se Bråket nr 29 sidan 7.

On 09−30 kl. 9.00. Presentation av kandidatarbete i matematisk statistik. Kaidi Oja: *Uppskattning av mörkertal i sjukanmälningar med hjälp av fångst-återfångstmetoden.* Handledare: **Mikael Andersson.** Sal 31, hus 5, Matematiska institutionen, SU, Kräftriket. Se sidan 4.

On 09−30 kl. 10.00. Presentation av magisterarbete i matematisk statistik. Emilie Jacobsson: *How to predict crashes in financial markets with the Log-Periodic Power Law.* Handledare: **Ola Hammarlid.** Sal 31, hus 5, Matematiska institutionen, SU, Kräftriket. Se sidorna 4−5.

INSTITUT MITTAG-LEFFLER SEMINAR

Ralf Schindler:

Woodin's axiom (*), bounded forcing axioms, and related issues

Abstract: The P-max extension of $L(R)$ does not satisfy BMM, and in fact under (*), BPFA is equivalent to BMM++. The forcing which verifies natural Π-2 statements under BMM + "NS is precipitous" is semi-proper if and only if all stationary set preserving forcings are semi-proper.

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

Seminarier (fortsättning)

On 09−30 kl. 10.15−11.15. Kombinatorikseminarium. Gregory G. Smith, Queen's University and KTH: *Eulerian numbers and Laurent polynomials.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

On 09−30 kl. 11.00. Presentation av magisterarbete i matematisk statistik. Kristoffer Spricer: *A Statistical Analysis of Heart Tissue Perforations.* Handledare: **Tom Britton.** Sal 31, hus 5, Matematiska institutionen, SU, Kräftriket. Se sidan 5.

On 09−30 kl. 13.15−14.15. Seminarium i analys och dynamiska system. Jan-Fredrik Olsen, Lund: *Hilbert spaces of Dirichlet series.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 6.

On 09−30 kl. 13.15−15.00. Algebra and Geometry Seminar. Balazs Szendroi, Oxford: *Virtual motives of the Hilbert scheme of points of threefolds.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 6.

On 09−30 kl. 14.00−15.00. Institut Mittag-Leffler Seminar. Jana Flaskova, University of West Bohemia, Plzeń: *Some ultrafilters on natural numbers.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 8.

On 09−30 kl. 15.15−17.15. DNA-L Seminar. Igor Wigman: *Ergodic billiards that are not quantum unique ergodic.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

On 09−30 kl. 15.30−16.30. Institut Mittag-Leffler Seminar. Thomas Streicher, Technische Universität Darmstadt: *Sheaf models for CZF refuting power set and full separation.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 8.

To 10−01 kl. 14.00−15.00. Institut Mittag-Leffler Seminar. Hugh Woodin, University of California, Berkeley: Π-2-2-*maximality and generic diamond.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 4.

To 10−01 kl. 15.30−16.30. Institut Mittag-Leffler Seminar. Ralf Schindler, Universität Münster: *Woodin's axiom (*), bounded forcing axioms, and related issues.* Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 1.

Fr 10−02 kl. 13.15−14.15. Graduate Student Seminar. Douglas Lundholm: *Spectral theory of the Weighted Supermembrane Toy Model.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 7.

Må 10−05 kl. 15.15−16.00. Seminarium i matematisk statistik. Filip Rudzki presenterar sitt examensarbete: *A Fault Isolation Model Utilising Weighted Information in Military Subsystems.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 7.

Ti 10−06 kl. 15.15−16.15. AlbaNova and Nordita Colloquium in Physics. *(Observera dagen!)* **Speaker to be announced:** *The Nobel Prize in Physics 2009.* Oskar Kleins auditorium, Roslagstullsbacken 21, AlbaNova universitetscentrum.

On 10−07 kl. 13.15. Algebra and Geometry Seminar. Carel Faber, KTH: *Title to be announced.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

On 10−07 kl. 16.00. KTH/SU Mathematics Colloquium. Norbert Peyerimhoff, University of Durham: *Expander graphs . . . .* 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.

Fortsättning på nästa sida.

Seminarier (fortsättning)

On 10 – 07 kl. 18.00 – 19.00. Offentlig föreläsning på Kungl. Vetenskapsakademien. **Professor Lene Westergaard Hau,** Harvard University, USA: *Wizardry with light: freeze, teleport, and go!* Beijersalen, Kungl. Vetenskapsakademien, Lilla Frescativägen 4A, Stockholm. Se sidorna 8 – 9.

To 10 – 08 kl. 18.00 – 20.00. Offentlig föreläsning på Kungl. Vetenskapsakademien: *Årets Nobelpris i fysik och kemi. Populärvetenskapliga presentationer av årets Nobelpris i fysik och kemi direkt från Nobelkommittéledamöterna själva.* Beijersalen, Kungl. Vetenskapsakademien, Lilla Frescativägen 4A, Stockholm.

KOMBINATORIKSEMINARIUM
Gregory G. Smith:
Eulerian numbers and Laurent polynomials

Abstract: Duistermaat and van der Kallen prove that there are no nontrivial Laurent polynomials all of whose powers have a zero constant term. Motivated by this result, Sturmfels asks for an effective version: Can we enumerate the Laurent polynomials that have the longest possible sequence of powers with zero constant terms? In this talk, we will show that the attractively simple answer is given by the Eulerian numbers. The proof involves reinterpreting the problem in terms of toric geometry.

Tid och plats: Onsdagen den 30 september kl. 10.15 – 11.15 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

DNA-L SEMINAR
Igor Wigman:
Ergodic billiards that are not quantum unique ergodic

Igor Wigman will speak about Hassel's construction of bouncing ball modes — namely eigenfunctions of the Laplacian that concentrate/localize on the rectangular part of a "stadium billiard".

For more information about this seminar series, see
http://www.math.kth.se/~kurlberg/dnal/. It is not strictly required, but we recommend people to have at least glanced at Terry Tao's blog entry "Hassell's proof of scarring for the Bunimovich stadium", see
http://terrytao.wordpress.com/2008/07/07/hassels-proof-of-scarring-for-the-bunimovich-stadium/.

From the abstract: Partially rectangular domains are compact two-dimensional Riemannian manifolds X, either closed or with boundary, that contain a flat rectangle or cylinder. In this paper we are interested in partially rectangular domains with ergodic billiard flow; examples are the Bunimovich stadium, the Sinai billiard or Donnelly surfaces. We consider a one-parameter family X_t of such domains parametrized by the aspect ratio t of their rectangular part. There is convincing theoretical and numerical evidence that the Laplacian on X_t with Dirichlet or Neumann boundary conditions is not quantum unique ergodic (QUE). We prove that this is true for all $t \in [1, 2]$ excluding, possibly, a set of Lebesgue measure zero. This yields the first examples of ergodic billiard systems proven to be non-QUE.

Tid och plats: Onsdagen den 30 september kl. 15.15 – 17.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

INSTITUT MITTAG-LEFFLER SEMINAR
Hugh Woodin:
Π-2-2-maximality and generic diamond

Abstract: "Generic diamond" is the assertion that the theory of $H(\omega\text{-}2)$ is absolute between V and $V[G]$ where G is a V-generic subset of ω-1. Suppose ϕ and ψ are Π-2-2-sentences each of which can hold is some generic extension of V in which generic diamond holds. Must ϕ and ψ be mutually consistent with generic diamond? The corresponding question for CH has been answered negatively by Aspero-Larson-Moore. Suppose the answer to this question is also negative. Then M-∞ does not exist where M-∞ is the "largest" Mitchell-Steel mouse. The same result is true with Π-2-2 replaced by Π-2-2(NS) where NS is the nonstationary ideal on ω-1.

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

PRESENTATIONER AV KANDIDAT- OCH MAGISTERARBETEN I MATEMATISK STATISTIK

Onsdagen den 30 september kommer ett kandidatarbete och två magisterarbeten i matematisk statistik att presenteras vid Matematiska institutionen, SU. Lokalen för alla presentationerna är sal 31, hus 5, Matematiska institutionen, SU, Kräftriket. De tre rapporterna kommer inom kort att finnas på sidan http://www2.math.su.se/matstat/reports/serieb.

Kl. 9.00 ges följande presentation (kandidatarbete):

Kaidi Oja:
Uppskattning av mörkertal i sjukanmälningar
med hjälp av fångst-återfångstmetoden

Handledare: **Mikael Andersson.**

Sammanfattning: För att begränsa förekomsten och vidare spridning av smittsamma sjukdomar måste enligt Smittskyddslagen alla anmälningspliktiga infektionssjukdomar rapporteras till Smittskyddsinstitutet (SMI). Enligt reglerna ska anmälan ske från laboratoriet och behandlande läkare till smittskyddsläkaren i respektive län och till SMI. Tyvärr görs inte detta alltid. I bästa fall görs åtminstone en anmälan, men tyvärr kan man misstänka att det finns ett mörkertal av diagnostiserade sjukdomsfall som inte rapporteras.

Syftet med detta arbete är att undersöka och jämföra olika statistiska metoder för att uppskatta mörkertalet i sjukanmälningar. Standard fångst-återfångstmetoden jämförs med bootstrap och bayesianska metoder.

Alla metoder ger ett bra resultat men vid små datamängder är bayesianska metoder att föredra. För närvarande finns det 58 anmälningspliktiga sjukdomar. I denna uppsats beräknas mörkertalen för 8 av dem: campylobakterinfektion, harpest, hepatit A, meningokockinfektion, salmonellainfektion, sorkfeber, pneumokockinfektion (penicillinresistent) och tuberkulos.

Kl. 10.00 ges följande presentation (magisterarbete):

Emilie Jacobsson:
How to predict crashes in financial markets
with the Log-Periodic Power Law

Handledare: **Ola Hammarlid.**

(The abstract is given on the next page.)

Abstract: Speculative bubbles seen in financial markets show similarities in the way they evolve and grow. This particular oscillating movement can be captured by an equation called Log-Periodic Power Law. The ending crash of a speculative bubble is the climax of this Log-Periodic oscillation.

The most probable time of a crash is given by a parameter in the equation. By fitting the Log-Periodic Power Law equation to a financial time series, it is possible to predict the event of a crash. With a hybrid Genetic Algorithm it is possible to estimate the parameters in the equation. Until now, the methodology of performing these predictions has been vague.

The ambition is to investigate if the financial crisis of 2008, which rapidly spread through the world, could have been predicted by the Log-Periodic Power Law. Analysis of the S&P 500 and the DJIA showed the signs of the Log-Periodic Power Law prior to the financial crisis of 2008. Even though the analysed indices started to decline slowly at first and the severe drops came much further, the equation could predict a turning point of the downtrend.

The opposite of a speculative bubble is called an anti-bubble, moving as a speculative bubble, but with a negative slope. This log-periodic oscillation has been detected in most of the speculative bubbles that ended in a crash during the twentieth century and also for some anti-bubbles that have been discovered. Is it possible to predict the course of the downtrend during the financial crisis of 2008, by applying this equation? The equation has been applied to the Swedish OMXS30 index, during the current financial crisis of 2008, with the result of a predicted course of the index.

Kl. 11.00 ges följande presentation (magisterarbete):

Kristoffer Spricer:
A Statistical Analysis of Heart Tissue Perforations

Handledare: **Tom Britton.**

Abstract: When implanting the lead, the electrical connector that leads the electrical impulses between the heart and the pacemaker, a severe complication can occur. On rare occasions, the tip of the lead goes all the way through the heart wall, perforating it fully. It is critical to understand what factors control these perforations so that they can be avoided. In 2007, Robin Hosselton carried out a largely experimental work, performing about 1400 perforations of porcine right ventricular cardiac tissue with the intention to understand the mechanisms of heart wall perforation better.

This thesis focuses on performing a full statistical analysis of the extensive data material with some key questions in mind. Specifically we show that a good model for the perforation data is the log-normal distribution. This finding has important implications for everyone performing this type of perforation tests, as it requires a logarithmic transformation of the data in order to draw the correct conclusions from experiments. We also show that the relationship between the perforation force and the lead tip diameter can be modelled using a linear function.

This has implications on using the tip pressure as a limiting value for lead design. A better parameter would be the force divided by the diameter, as this quotient does not so strongly depend on the diameter of the lead tip. Some additional analyses show that the tissue is not homogeneous, i.e. that it has stronger and weaker areas. Included is the definition of a correlation coefficient that can be used to characterize the tissue and also a demonstration of the use of a graphical visualization method.

These findings have implications both on how to perform perforation tests, but also on the modelling of soft biological tissue. Any proper model should show properties similar to those found in experiments such as the one performed by Robin Hosselton, and this statistical analysis makes it possible to incorporate the findings in useful perforation models.

SEMINARIUM I ANALYS OCH DYNAMISKA SYSTEM

Jan-Fredrik Olsen:
Hilbert spaces of Dirichlet series

Abstract: A Dirichlet series is a function of the type $\sum_{n \in \mathbb{N}} a_n n^{-s}$. A natural space of such functions, first considered by H. Hedenmalm, P. Lindqvist and K. Seip in 1997, is the Dirichlet-Hardy space

$$\mathscr{H}^2 = \left\{ \sum_{n \in \mathbb{N}} a_n n^{-s} : (a_n) \in \ell^2 \right\}.$$

By the Cauchy-Schwarz inequality, the functions in this space are analytic for $\operatorname{Re} s > 1/2$. A basic feature of this space is that the reproducing kernels are translates of the Riemann zeta function. Another indication that the space $\mathscr{H}^2$ is interesting follows from the observation by H. Bohr in 1913 that there is a natural correspondence between Dirichlet series and power series in infinitely many variables. This gives a natural identification of $\mathscr{H}^2$ with the Hardy space on the infinite-dimensional torus, $H^2(\mathbb{T}^\infty)$.

A result of importance, previously known by analytic number theorists and rediscovered by Hedenmalm, Lindqvist and Seip, says that functions in the Dirichlet-Hardy space are locally in L^2 on the abscissa $\operatorname{Re} s = 1/2$. Later, it was shown by J.-F. Olsen and K. Seip that the Dirichlet-Hardy space and the classical Hardy space of the half-plane $\operatorname{Re} s > 1/2$ have the same bounded interpolating sequences.

We discuss these two results, and their counter-parts for other Hilbert spaces of Dirichlet series, or equivalently, spaces of power series in infinitely many variables. Examples include the Bergman and Dirichlet spaces on the infinite-dimensonal torus, as well as the Drury-Arveson space on the infinite-dimensional unit ball.

Tid och plats: Onsdagen den 30 september kl. $13.15 - 14.15$ i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

ALGEBRA AND GEOMETRY SEMINAR

Balazs Szendroi:
Virtual motives of the Hilbert scheme of points of threefolds

Abstract: The Hilbert scheme of points of affine three-space has a description as a representation of a quiver with relations of a very special type, which can be used to realize the Hilbert scheme as a global degeneracy locus. This allows one to associate virtual motives to the Hilbert schemes, whose generating series can be computed using a calculation involving the motive of the space of pairs of commuting matrices. Generalizing this, the generating function of virtual motives of Hilbert schemes of points of an arbitrary smooth and quasi-projective threefold can be expressed as a motivic exponential of the generating series of motives of projective spaces, resulting in a formula resembling Goettsche's formula for an algebraic surface. A consequence is a formula for the generating series of the corresponding weight polynomials in terms of deformed MacMahon functions.

This is all joint work with Kai Behrend and Jim Bryan.

Tid och plats: Onsdagen den 30 september kl. $13.15 - 15.00$ i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

GRADUATE STUDENT SEMINAR

Douglas Lundholm:
Spectral theory of the Weighted Supermembrane Toy Model

Abstract: The so-called *supersymmetric matrix models* have been proposed to describe in a certain sense a unified picture of the fundamental physical interactions. In investigating the spectral features of these models, it has proved useful to consider a highly simplified model in two dimensions, called the *supermembrane toy model,* or the *supersymmetric $x^2 y^2$ potential.*

In this talk it will be shown that a modification of this model, involving an extension of its Hilbert space of physical states, opens up a new and promising approach to the investigation of ground states of the matrix models. The key to this approach is a proof that a certain matrix-valued Schrödinger operator has finitely many negative eigenvalues.

The talk will be given at a level suitable for Ph.D. students with no background in spectral theory. (If there is interest, the speaker would be happy to give a more detailed seminar in the future.)

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

SEMINARIUM I MATEMATISK STATISTIK

Filip Rudzki

presenterar sitt examensarbete:

A Fault Isolation Model Utilising Weighted Information
in Military Subsystems

Abstract: The purpose with this master thesis was to construct a model that through known information could do a fault isolation on a system. By utilising information as logs, signals, failure rates and other information such as Failure Modes, Effect and Criticality Analysis and applying this on the model, the time to find the failed component should decrease. The system of choice was the ramp on the CV 90, a infantry fighting vehicle. The fault isolation was performed by introducing Birnbaum's Measure which calculates the components probability to be critical to the system at a given time. The Criticality Importance was used to calculate the probability that the component is critical to the system when it is in a failed state. When using these methods a search scheme could be made where the most probable failed component has the highest value. Furthermore the availability of the system was studied to improve the understanding regarding importance of maintenance of the system. One suggestion mentioned in this thesis is the age replacement which includes failure times and fixed costs of a component. Another very important issue discussed in this thesis was the importance of a component, and not only the importance for the system, but which component ought to be improved regarding life length, repair time and failure rate, to make it more efficient. One of the largest problems was the lack of information and the inconsistence of values. A conclusion of the work performed is that if the available information were to be collected and stored in a structured way, the reliability models would be more accurate.

Tid och plats: Måndagen den 5 oktober kl. 15.15 – 16.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

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INSTITUT MITTAG-LEFFLER SEMINAR

Jana Flaskova:
Some ultrafilters on natural numbers

Abstract: The background for this talk form two concepts relating ultrafilters on natural numbers with "small" subsets of natural numbers: I-ultrafilters and 0-points. We will construct an ultrafilter whose properties match to some extent both concepts, namely an ultrafilter u such that for every one-to-one function f there is a set U in u such that $f[U]$ belongs to the summable ideal. The construction relies on elementary knowledge of calculus and elaborated combinatorics.

Tid och plats: Onsdagen den 30 september kl. 14.00 – 15.00 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

INSTITUT MITTAG-LEFFLER SEMINAR

Thomas Streicher:
Sheaf models for CZF refuting power set and full separation

Abstract: Categorical Logic, e.g. sheaf toposes, gives rise to a huge variety of models for IZF often validating interesting axioms incompatible with classical logic. IZF is known to be equiconsistent with ZF and thus fairly strong. The theory CZF as introduced by P. Aczel (and J. Myhill) is a much weaker system equiconsistent with Martin-Löf type theory. It lacks the powerset axiom, and separation is restricted to bounded formulas, but one has function sets as ensured by the Fullness Axiom. We show that in certain sheaf models restricting the powerset operation one can construct models of CZF which refute both the powerset axiom and the full separation scheme.

The talk is based on joint work with A. Simpson, University of Edinburgh.

Tid och plats: Onsdagen den 30 september kl. 15.30 – 16.30 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

OFFENTLIG FÖRELÄSNING
PÅ KUNGL. VETENSKAPSAKADEMIEN

Lene Westergaard Hau:
Wizardry with light: freeze, teleport, and go!

Lecturer: Lene Westergaard Hau obtained her Ph.D. from Aarhus University, Denmark, in 1991. That year she joined the Rowland Institute in Cambridge, Massachusetts, and has since 1999 been at Harvard University where she is the Mallinckrodt Professor of Physics and of Applied Physics. In 2001, she received the MacArthur "genius" award, and in 2008, Harvard University's top faculty award, the Ledlie Prize.

Abstract: Light pulses are slowed in ultra-cold atom clouds to bicycle speed: 24 km/hour, which is 50 million times lower than the light speed in vacuum. In the process the pulses spatially compress by the same large factor, from 1 km to only 0.02 mm at which point they fit entirely within the atom cloud. A light pulse can then be completely stopped for up to several milliseconds. In our latest experiments, we take matters further: we stop and extinguish a light pulse in one part of space and revive it in a completely different location. The experiments create a new paradigm for control and inter-conversion of light and matter, and the secret behind the trick will be revealed in the talk.

Tid och plats: Onsdagen den 7 oktober kl. 18.00 – 19.00 i Beijersalen, Kungl. Vetenskapsakademien, Lilla Frescativägen 4A, Stockholm.

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.

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

Money to apply for

11. Stiftelsen G. S. Magnusons fond utdelar stipendier inom matematik med bland annat följande ändamål: Stöd till doktorander, stöd till den som önskar ytterligare meritera sig efter doktorsexamen och bidrag för att kvarhålla forskare inom landet. Sista ansökningsdag är den 1 februari 2010. Web-info:
http://www.kva.se/Documents/Utlysningar/Stipendier/sarskilda/info_stip_Magnuson_sv_10.pdf.

12. Kungl. Vetenskapsakademien utlyser stipendier och anslag inom matematik enligt följande: Till doktorander utdelas stipendier med ett maximibelopp på 100 000 kr, och till forskare som avlagt doktorsexamen år 2004 eller senare utdelas forskningsanslag med ett maximibelopp på 300 000 kr. Anslag utgår under högst ett år. Sista ansökningsdag är den 1 februari 2010. Web-info:
http://www.kva.se/sv/utlysningar/stipendier-och-anslag/Matematik/.