# BRÅKET

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

**NR 33** **FREDAGEN DEN 22 OKTOBER 1999**



**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 28 oktober
kl. 13.00.


**Rolf Schock-priset i matematik**

för år 1999 har tilldelats *professor Yuri Manin.* Se sidan 7.

**Money, jobs, conferences**

Se sidorna 8 – 10.

## SEMINARIER

**Fr 10–22 kl. 9.00–10.00. Kollokvium i fysik. Dr Apollo Go,** EP Division, CERN: *Faster than the speed of light? Testing EPR vs. quantum mechanics in particle physics.* Sal F 01, Fysiska institutionen, KTH, Lindstedtsvägen 24, b.v. Se sidan 7.

**Må 10–25 kl. 13.15–15.00. Algebra and Geometry Seminar. Richard Ehrenborg:** *Generic canonical forms for polynomials and tensors.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101. Se sidan 3.

**Må 10–25 kl. 15.15. Seminarium i matematisk statistik. Hanspeter Schmidli,** Department of Theoretical Statistics, Aarhus University: *Queueing and risk models perturbed by Lévy processes.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 31 sidan 8.

**Ti 10–26 kl. 10.15. Plurikomplexa seminariet. Natalia Buruchenko,** Krasnojarsk: *Homology reduction of cycles in the complement of an algebraic hypersurface.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101. Se sidan 4.

**Ti 10–26 kl. 13.15. Plurikomplexa seminariet. Frank Kutzschebauch,** Uppsala: *Actions of holomorphic automorphisms of $\mathbb{C}^n$ on countable subsets.* Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101. Se sidan 5.

**Ti 10–26 kl. 13.15–14.30. Seminarium i studier av artificiella neuronsystem. Jeanette Hellgren-Kotaleski** och **Pål Westermark,** SANS, NADA, KTH: *Modelling of cellular processes. Stimulus-secretion coupling in pancreatic beta-cells.* Rum 1537, NADA, KTH, Lindstedtsvägen 3, plan 5. Se sidan 3.

**Fortsättning på nästa sida.**

**Seminarier (fortsättning)**

**Ti 10–26 kl. 13.15–15.00. Seminarium i PDE och spektralteori. Didier Robert,** Nantes: *The semi-classical Van-Vleck formula. Application to the Aharonov-Bohm effect.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

**Ti 10–26 kl. 13.15. Seminarium i fysik. Hans Hansson:** *Partially polarized Quantum Hall states.* Rum 4809, Fysikum, SU. Se sidan 6.

**Ti 10–26 kl. 14.15–15.15. Mittag-Leffler Seminar. Darya Apushkinskaya,** St. Petersburg: *Survey of results on nonlinear Venttsel problems.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

**On 10–27 kl. 10.15–12.00. Combinatorics Seminar. Margaret Readdy:** *Systems of parameters for cubical complexes.* Rum 21, hus 5, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101. Se sidan 6.

**On 10–27 kl. 10.30–11.30. Analysseminarium. Johan Andersson,** SU: *A Poisson summation formula for $SL(2, Z)$.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 32 sidan 5.

**On 10–27 kl. 11.15. Seminarium i fysik. Professor Per Carlson,** Fysiska institutionen, KTH: *The CAPRICE atmospheric muon measurements.* Rum 4731, Fysikum, SU, Vanadisvägen 9. Se sidan 4.

**On 10–27 kl. 13.15. Dynamiska systemseminariet. John Noble:** *The directed polymer in a random environment and Burgers' equation with gradient noise.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 6. Internet-adressen till information om seminariet är http://www.math.kth.se/math/research/dynsyst.

**On 10–27 kl. 15.00. Seminarium i teoretisk datalogi. Stefan Arnborg,** NADA, KTH: *Bayes rules!* (Samarbete med Gunnar Sjödin, SICS.) Rum 1537, NADA, KTH, Lindstedtsvägen 3, plan 5. Se Bråket nr 32 sidan 6.

**To 10–28 kl. 14.15–15.15. Mittag-Leffler Seminar. Alano Ancona,** Paris: *Comparison of Green's functions and perturbations of second order elliptic operators.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

**To 10–28 kl. 15.45–16.45. Mittag-Leffler Seminar. Vladimir Maz'ya,** Linköping: *Boundary regularity of elliptic PDE.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

**Fr 10–29 kl. 9.00–10.00. Kollokvium i fysik. Professor Stig Stenholm,** Fysiska institutionen, KTH: *Optics with a single photon.* Sal F 01, Fysiska institutionen, KTH, Lindstedtsvägen 24, b.v. Se sidan 5.

**Fr 10–29 kl. 12.15. Algebraic Geometry Seminar. Speaker to be announced:** *De Jong's work on alterations.* (Fortsättning från seminarierna den 14 och den 21 oktober. För ytterligare upplysningar, kontakta Carel Faber, carel@math.kth.se.) Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

**Må 11–01 kl. 15.15–17.00. Seminarium i matematisk statistik. Lars Holst:** *Några "snapshots" om inbäddning.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 32 sidan 7.

**Fortsättning på nästa sida.**

**Seminarier (fortsättning)**

**Ti 11–02 kl. 13.30 – 14.30** och **15.00 – 16.00. Föreläsning av Rolf Schock-pristagaren i matematik. Professor Yuri Manin,** Max-Planck institutet för matematik, Bonn: *Counting rational points and rational curves: From Waring's problem to quantum cohomology.* Beijersalen, Kungl. Vetenskapsakademien, Lilla Frescativägen 4, Stockholm. Se sidan 7.

**On 11–03 kl. 10.15 – 12.00. Combinatorics Seminar. Michael Shapiro:** *Title to be announced.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

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## ALGEBRA AND GEOMETRY SEMINAR

**Richard Ehrenborg:**
**Generic canonical forms for polynomials and tensors**

*Abstract:* We will discuss generic canonical forms for polynomials and how they relate to apolarity of polynomials. By generalizing the concept of apolarity, we obtain a method to verify that a form is a generic canonical form in the case of general tensors and skew-symmetric tensors. As an application, we discuss the rank of multi-dimensional matrices.

*Tid och plats:* Måndagen den 25 oktober kl. 13.15 – 15.00 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101.

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## SEMINARIUM I STUDIER AV ARTIFICIELLA NEURONSYSTEM

**Jeanette Hellgren-Kotaleski, Pål Westermark:**
**Modelling of cellular processes.**
**Stimulus-secretion coupling in pancreatic beta-cells**

*Abstract:* Cellular function is at any moment both implemented by and controlled by the intracellular network of chemical reactions, cell signalling, and the interactions on the gene level. Over the last decade there have been tremendous advances with quantitative experimental techniques in cell physiology, signal transduction, as well as concerning gene expression and biosequences. Given the complexity of the intracellular processes, detailed mechanisms where also the dynamics is taken into account can be understood only by computational modelling, using fairly realistic molecular-level models, which integrate the network of relevant intracellular reactions with cellular and organelle geometry, diffusion of second messengers, distribution of elements of signalling pathways, etc.

The present seminar will focus on computational modelling of the intracellular biochemical machinery, controlling stimulus-secretion coupling in insulin producing beta-cells in the pancreas. This in a field, in which enough detailed knowledge of the cell's molecular mechanisms is beginning to make it possible to mathematically model the events underlying oscillations in both the cell membrane potential as well as calcium levels, the latter which correlate with insulin secretion.

*Tid och plats:* Tisdagen den 26 oktober kl. 13.15 – 14.30 i rum 1537, NADA, KTH, Lindstedtsvägen 3, plan 5.

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## PLURIKOMPLEXA SEMINARIET

### Natalia Buruchenko: Homology reduction of cycles in the complement of an algebraic hypersurface

*Abstract:* The purpose of the talk is to describe some conditions for an extension of Poincaré's theorem to the multidimensional case. Poincaré proved that each two-dimensional cycle in the complement of an algebraic curve in $\mathbb{C}^2$ is homologous to a tube over some one-dimensional cycle in the set of regular points of the curve. We will give an example of a cycle in the complement of an algebraic hypersurface in $\mathbb{C}^3$ for which the statement of Poincaré's theorem does not hold.

In the lecture we will also describe hypersurfaces in $\mathbb{C}^n$ for which the Poincaré result does hold, and describe the relation between the validity of Poincaré's theorem for homogeneous hypersurfaces in $\mathbb{C}^{n+1}$ and their projections to $\mathbb{P}^n$.

*Tid och plats:* Tisdagen den 26 oktober kl. 10.15 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101.

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## SEMINARIUM I PDE OCH SPEKTRALTEORI

### Didier Robert: The semi-classical Van-Vleck formula. Application to the Aharonov-Bohm effect

*Abstract:* At the very beginning of the quantum theory, Van-Vleck (1928) proposed a nice approximation formula for the integral kernel of the time-dependent propagator of the Schrödinger equation. This formula can be deduced from the Feynman path integral by a formal stationary phase argument. After works by Maslov and Hörmander on Fourier-integral operators, it is possible to give a rigorous mathematical proof of the Van-Vleck formula. Here we give a more direct and elementary proof, using propagation of coherent states. We apply this result to give a mathematical proof for the Aharonov-Bohm effect observed on the time-dependent propagator. This effect concerns a phase factor depending on the flux of a magnetic field, which can be non-trivial even if the particle never meets the magnetic field.

*Tid och plats:* Tisdagen den 26 oktober kl. 13.15 – 15.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

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## SEMINARIUM I FYSIK

### Per Carlson: The CAPRICE atmospheric muon measurements

*Abstract:* The CAPRICE experiments have measured the flux of atmospheric muons from the ground to the top of the atmosphere. These measurements are very important for understanding the atmospheric neutrino production. The experimental difficulty lies in the identification of muons in a large background of e.g. protons. The methods to safely identify the muons will be described, and the muon flux will be compared with simulations.

*Tid och plats:* Onsdagen den 27 oktober kl. 11.15 i rum 4731, Fysikum, SU, Vanadisvägen 9.

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## PLURIKOMPLEXA SEMINARIET

### Frank Kutzschebauch: Actions of holomorphic automorphisms of $\mathbb{C}^n$ on countable subsets

*Abstract:* The aim of this talk is to give an overview of the paper *Holomorphic maps from* $\mathbb{C}^n$ *to* $\mathbb{C}^n$ by Rosay and Rudin. The interesting (and often surprising) phenomena considered there include:

1. For any two countable *dense* subsets $E_1$ and $E_2$ of $\mathbb{C}^n$ there is a holomorphic automorphism $\alpha$ of $\mathbb{C}^n$ with $\alpha(E_1) = (E_2)$.
2. For *discrete* (hence countable) subsets the situation is completely different: We call a set $E \subset \mathbb{C}^n$ tame if there is a holomorphic automorphism $\alpha$ of $\mathbb{C}^n$ with

   $$\alpha(E) = \{(z_1, \ldots, z_n) \in \mathbb{C}^n \mid z_1 \in \mathbb{N},\ z_2 = \cdots = z_n = 0\}.$$

   A lot of discrete sets are tame (for example a cocompact lattice is!) but there are also those that are not tame, namely such that are a) unavoidable by nondegenerate entire maps, b) rigid, i.e., no permutation can be realized by an automorphism of the ambient space $\mathbb{C}^n$.
3. There are holomorphic maps $F : \mathbb{C}^n \to \mathbb{C}^n$ with Jacobian identically equal to 1, so that the image $F(\mathbb{C}^n)$ has finite volume. One should mention how far we are in complex analysis from the algebraic world — there is definitely no holomorphic Jacobian conjecture!
4. Interesting Fatou-Bieberbach domains, i.e., domains in $\mathbb{C}^n$ which are biholomorphic to $\mathbb{C}^n$ itself, arising as regions attracted to a fixed point.

The talk will present Part 2 (hopefully in detail) and point out some further developments in complex analysis using the results and techniques of Rosay-Rudin.

*Tid och plats:* Tisdagen den 26 oktober kl. 13.15 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101.

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## KOLLOKVIUM I FYSIK

### Stig Stenholm: Optics with a single photon

*Abstract:* Optics has usually been based on the theory of electromagnetic radiation, treating the optical elements as boundary conditions and passive media. In modern quantum optics, the internal dynamics of both media and radiation is approached as parts of the quantum evolution of the combined atom – radiation system. The ensuing effects determine the quantum noise of the systems, but it should also give the operation of the optical elements in the way known from classical theories. However, to follow the time evolution of a complicated quantum system offers a computational challenge beyond the capacity of modern computers. In the present work, we model optical devices by treating single-photon states and two-level atoms in an exact manner. Such a restricted system describes well linear effects in optics, but, in addition, offers the possibility to follow the emergence of the classical behaviour from the microscopic model. The results are presented as "movies", which display in detail how the optical elements operate on a microscopic basis.

*Tid och plats:* Fredagen den 29 oktober kl. 9.00 – 10.00 i sal F 01, Fysiska institutionen, KTH, Lindstedtsvägen 24, b.v.

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## SEMINARIUM I FYSIK

**Hans Hansson:**
**Partially polarized Quantum Hall states**

*Abstract:* I will explain how to construct Chern-Simions-Ginzberg-Landau field theories for polarized Quantum Hall states, and in particular discuss a newly developed model with two gauge fields that can describe partially polarized states.

*Tid och plats:* Tisdagen den 26 oktober kl. 13.15 i rum 4809, Fysikum, SU.

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## COMBINATORICS SEMINAR

**Margaret Readdy:**
**Systems of parameters for cubical complexes**

*Abstract:* The Hetyei ring of a cubical complex is the cubical analogue of the Stanley-Reisner ring of a simplicial complex. My work is motivated by finding a cubical analogue of Kind and Kleinschmidt's beautiful result for determining a system of parameters for the Stanley-Reisner ring of a shellable simplicial complex and finding an explicit basis for the ring from the shelling. In the case when the cubical complex is edge-orientable, that is, a cubical analogue of being completely balanced, I determine a system of parameters. My research indicates that a combinatorial construction for the basis comes from shelling the complex. This theory generalizes to non-pure shellable cubical complexes. Many important examples arise from meet-distributive semi-lattices.

This is work in progress.

*Tid och plats:* Onsdagen den 27 oktober kl. 10.15 – 12.00 i rum 21, hus 5, Matematiska institutionen, SU, Kräftriket, Roslagsvägen 101.

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## DYNAMISKA SYSTEMSEMINARIET

**John Noble:**
**The directed polymer in a random environment and Burgers' equation with gradient noise**

*Abstract:* In the first part of the seminar, the results concerning the continuous space/ time directed polymer model, which were stated in the previous seminar on the subject (8th September), are discussed more fully. The proof of the 4/3 superdiffusive exponent for $d = 1 + 1$ is outlined and, in so doing, the behaviour of the thermal fluctuations is analysed.

In the second part of the seminar, the 'directed polymer' analysis is then used to characterize the invariant measure for the Burgers' equation with gradient noise in terms of the viscosity. These results strongly suggest that there is no solution for the Euler equation (inviscid Burgers' equation) with gradient noise.

*Tid och plats:* Onsdagen den 27 oktober kl. 13.15 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

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## KOLLOKVIUM I FYSIK

### Apollo Go: Faster than the speed of light?
### Testing EPR vs. quantum mechanics in particle physics

*Abstract:* According to quantum mechanics, if a pair of particles is created in an interaction, the two-particle wave function retains its non-separable nature even if the particles are space-like separated. This feature leads to puzzling non-local correlations between the two particles, known as the EPR paradox, first pointed out by Einstein, Podolsky and Rosen in 1935. After an overview of the EPR paradox, I will discuss the experimental test on an EPR-type strangeness correlation in the $K^0$ – anti-$K^0$ meson pair using the CPLEAR detector at CERN. The result is compared to the non-separability predicted by Quantum Mechanics and to the spontaneous wave function factorization at the creation. Further experimental tests using the $B^0$ – anti-$B^0$ meson pair will also be discussed.

*Tid och plats:* Fredagen den 22 oktober kl. 9.00 – 10.00 i sal F 01, Fysiska institutionen, KTH, Lindstedtsvägen 24, b.v.

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## FÖRELÄSNING AV ROLF SCHOCK-PRISTAGAREN I MATEMATIK

### Yuri Manin:
### Counting rational points and rational curves:
### From Waring's problem to quantum cohomology

*Professor Yuri Manin,* Max-Planck institutet för matematik i Bonn, har av Kungl. Vetenskapsakademien tilldelats 1999 års Rolf Schock-pris i matematik.

*Abstract:* Consider a homogeneous equation of degree $d$ with integer coefficients $F(x_0, \ldots, x_r) = 0$, and put the following question: How many integer solutions does it have in the box $|x_i| \leq B$, when $B$ is large? A similar question can be asked about the variety of solutions whose coordinates are homogeneous polynomials in two variables of bounded degree. An elementary heuristic argument relying upon a probabilistic reasoning in the first case, and count of constants in the second case, suggests that the answer must depend on the sign of the number $k = r + 1 - d$: there must be "many" solutions for $k > 0$, "few" for $k < 0$, and that some interesting boundary effects might take place for $k = 0$.

In fact, $k$ is simply the degree of the anticanonical class of the projective manifold $F = 0$ if it is nonsingular, and it turns out that many results of number theory and algebraic geometry fit into this crude heuristic scheme, if one makes some subtle changes in the basic definitions and questions.

The first part of the talk will discuss the number-theoretical program, which can be considered as an extension of the classical work using the circle method.

The second part of the talk will be dedicated to the counting of rational curves. Motivated by the quantum string theory, this subject has developed into a rich and beautiful theory centred around quantum cohomology and the mirror conjecture.

*Tid och plats:* Tisdagen den 2 november kl. 13.30 – 14.30 och 15.00 – 16.00 i Beijersalen, Kungl. Vetenskapsakademien, Lilla Frescativägen 4, Stockholm.

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## MONEY, JOBS, CONFERENCES

*Columnist:* Pär Holm, Department of Mathematics, SU. E-mail: pho@matematik.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.
Unless stated otherwise, a given date is the last date (e.g. for applications), and the year is 1999. A number without an explanation is a telephone number.

### Standard information channels

1. A channel to information from TFR: http://www.tfr.se.
2. A channel to information from NFR: http://www.nfr.se.
3. A channel to information from the European Mathematical Society: http://www.emis.de.
4. A channel to information from the American Mathematical Society: http://www.ams.org.
5. KTH site for information on funds, etc., weekly: http://www.admin.kth.se/info/kth-kalendern/stipendier.html.
6. Stockholm University site for information on funds: http://www.sb.su.se/stipendier/.
7. Umeå site for information on funds: http://www.umu.se/umu/veckoprogram/aktstip99.html.
8. Job announcement site: http://www.maths.lth.se/nordic/Euro-Math-Job.html. This is run by the European Mathematical Society.
9. KTH site for information on research: http://www.admin.kth.se/CA/extrel/index/forsk.html.

### New information

*Money, to apply for*

10. Forskningsråden NFR, TFR och MFR beräknas även år 2000 erhålla särskilda medel för gästprofessurer för kvinnor. NFR tar nu emot förslag till innehavare av gästprofessurer för kvinnor inom naturvetenskap och matematik under läsåret 2000/01, förslagen skickas före 20 november. Info: Gunnar Leman, 08-454 42 08. Web-info: se punkt 2 ovan.

*Jobs, to apply for*

11. Institutionen för teknik i Trollhättan vid Högskolan Trollhättan/Uddevalla söker en professor i tillämpad matematik, 15 november. Info: Göran Olsson, 0520-47 50 03, Goran.Olsson@adm.htu.se, eller Svante Nyström, 0520-47 50 34, Svante.Nystrom@thn.htu.se. Web-info: http://www.htu.se/nyheter/.

### Old information

*Money, to apply for*

12. Naturvetenskapliga forskningsrådet (NFR) utlyser populärvetenskapliga priser om 25 000 kr för popularisering av naturvetenskaplig grundforskning, ett forskarpris och ett journalistpris. Forskarpriset går till en aktiv forskare inom naturvetenskap eller matematik som på ett populärt sätt har informerat om ett NFR-stött projekt. De nominerade bidragen skall vara producerade/ha ägt rum under 1998/1999. Sista dagen för nominering är den 1 november. Info: se punkt 2 ovan.
13. Kungl. Vetenskapsakademien (KVA) utlyser medel för forskarutbyte för två till sex månaders vistelse i Bulgarien, Estland, Japan, Kina, Lettland, Litauen, Rumänien, Ryssland, Slovakien, Tjeckien, Ukraina och Vitryssland för studier/forskning inom bl.a. matematik, 1 november. Info: Sascha Lamm Edblad, Forskarutbytes- och stipendieenheten, Kungl. Vetenskapsakademien, Box 50005, 104 05 Stockholm, 08-673 95 00. Telefontid: måndagar – fredagar kl. 11.00 – 12.00, sascha@kva.se. Web-info: http://www.kva.se/sve/pg/stipendier/index.html.
14. Anslag ställs, från Knut och Alice Wallenbergs Stiftelse, till rektors för KTH förfogande för att "i första hand användas till bidrag för sådana resor, som bäst befordrar ett personligt vetenskapligt utbyte till gagn för svensk forskning. Bidrag skall främst beviljas till yngre forskare." Ansökan om resebidrag skall ställas till rektors kansli. Bidrag kan sökas när som helst under året. Info: se punkt 5 ovan.

(Continued on the next page.)

15. Nordisk Forskerutdanningsakademi (NorFA) finansierar nordiskt samarbete inom forskning och forskarutbildning genom dels personliga stipendier (mobilitetsstipendier och för deltagande i nationella forskarutbildningskurser), dels anslag till institutioner (forskarutbildningskurser, nordiska nätverk, gästprofessurer och workshops). Info: http://www.norfa.no.
16. Svenska Institutet (SI) utlyser kontinuerligt stipendier och bidrag för studier och forskning utomlands: stipendier för Europastudier, internationella forskarstipendier, Östersjöstipendier, Visbyprogrammet, m.m. Aktuell information om SI:s samtliga stipendiemöjligheter och ansökningshandlingar finns på SI:s hemsida: http://www.si.se.
17. Stiftelsen för internationalisering av högre utbildning och forskning (STINT) utlyser medel för att främja samarbete med universitet och högskolor i Republiken Korea (Sydkorea), Taiwan, Hongkong, Indonesien och Egypten. Ansökningar skall inlämnas minst 6 – 8 veckor före verksamhetsstarten, och medlen kan sökas löpande under året. Info: STINT, Skeppargatan 8, 114 52 Stockholm, 08-662 76 90. Web-info: www.stint.se.
18. Wenner-Gren Stiftelserna utlyser gästföreläsaranslag för gästföreläsningar. Anslag sökes av svensk forskare som önskar inbjuda utländsk forskare. Ansökan kan inlämnas när som helst under året. Web-info: http://www.wenner-grenstift.a.se.
19. NUTEK stipends for stay in research institutions (not universities) in Japan. Short or long periods. For persons with or almost with doctoral degree. Info: Kurt Borgne, 08-681 92 65, kurt.borgne@nutek.se. You can apply any time.

*Jobs, to apply for*

20. Statistiska institutionen vid Göteborgs universitet söker en universitetslektor i statistik, 22 oktober. Info: Marianne Frisén, 031-773 12 55. Web-info: http://cent.hgus.gu.se/stat/Lektorat.pdf.
21. Matematiska institutionen vid Uppsala universitet utlyser två universitetslektorat i matematisk statistik, 1 november. Info: Lars-Åke Lindahl, 018-471 32 06, Lars-Ake.Lindahl@math.uu.se. Web-info: http://www.personalavd.uu.se/annonser/univlmatstateng.html.

*Conferences, etc.*

22. Workshop on Hilbert's 10th problem, Relations to Arithmetic and Algebraic Geometry, November 2 – 5, University of Gent, Belgium. URL: http://cage.rug.ac.be/~hilbrt10/hilbert10.html.
23. 13th AAECC Symposium on Applied Algebra, Algebraic Algorithms, and Error-Correcting Codes, November 14 – 19, Hawaii, USA. URL: http://www.irit.fr/ACTIVITES/AAECC/aaecc13.htm.
24. XX:ème Rencontre Franco-Belge de Statisticiens, November 25 – 26, Université Libre de Bruxelles, Brussels, Belgium. URL: http://isro.ulb.ac.be.
25. Mathematical and Computational Methods in Music, December 2 – 4, University of Vienna, Austria. URL: http://tyche.mat.univie.ac.at/~diderot/.
26. PanAmerican Workshop on Applied and Computational Mathematics, December 12 – 17, Valparaiso y Vinc del Mar, Chile. URL: http://www.sci.sdsu.edu/math_cs/PanAm98.html.
27. Workshop on Computational Algebraic Analysis, January 5 – 7, 2000, MSRI, Berkeley, USA.
28. Workshop on Computational Stochastics, January 17 – 22, 2000, University of Aarhus, Denmark. URL: http://www.maphysto.dk/events/CompStoc2000/.
29. Optimization, Statistics, Mathematical Economics and Algorithms IV, March 8 – 11, 2000, Habana, Cuba.
30. International Conference on Fundamental Sciences: Mathematics and Theoretical Physics, March 13 – 17, 2000, Singapore. URL: http://www.math.nus.edu.sg/icfs.
31. Seventh Rhine Workshop on Computer Algebra, March 22 – 24, 2000, Bregenz, Austria. URL: http://www.inf.ethz.ch/rwca00/.
32. Fractal 2000, "Complexity and Fractals in the Sciences", April 16 – 19, 2000, Singapore. URL: http://www.kingston.ac.uk/fractal/.
33. Summer School on Stereology and Geometric Tomography, May 20 – 25, 2000, Sandbjerg Manor, Denmark. URL: http://www.maphysto.dk/events/S-and-GT2000/.
34. SIAM Conference on Discrete Mathematics, June 12 – 15, 2000, Radisson Hotel Metrodome, Minneapolis, Minnesota, USA. URL: siam.org/meetings/dm00/.
35. First AMS-Scandinavian International Mathematics Meeting. XXIII Scandinavian Congress of Mathematicians, June 13 – 16, 2000, Odense, Denmark. URL: http://www.imada.ou.dk/~hjm/AMS.Scand.2000.html.

(Continued on the next page.)

36. Functional Analysis Valencia 2000, July 3 – 7, 2000, Technical University of Valencia, Spain. URL: http://math-www.uni-paderborn.de/VLC2000.
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