



BRÅKET



Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 16

FREDAGEN DEN 24 APRIL 2009

BRÅKET

Veckobladet från
Institutionen för matematik
vid Kungl Tekniska Högskolan
och Matematiska institutionen
vid Stockholms universitet

Redaktör: Gunnar Karlsson

Telefon: 08-790 84 79

Adress för e-post:
gunnarkn@math.kth.se

Bråket på Internet: <http://www.math.kth.se/braaket.html> eller
<http://www.math.kth.se/braket/>

Postadress:

Red. för Bråket
Institutionen för matematik
KTH
100 44 Stockholm

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Sista manustid för nästa nummer:
Onsdagen den 29 april kl. 13.00.

SEMINARIER

Ti 04–28 kl. 13.15. Plurikomplexa seminariet. Maurice Rojas, College Station: *Number theory and the hardness of complex geometry*. Rum 306, hus 6, Matematiska institutionen, SU, Kräftriket. Se sidan 4.

Ti 04–28 kl. 14.00–15.00. Institut Mittag-Leffler Seminar. Per Austrin, KTH: *Randomly supported independence*. Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 4.

Ti 04–28 kl. 15.30–16.30. Institut Mittag-Leffler Seminar. Svante Linusson, KTH, och Sven Erick Alm, Uppsala universitet: *Surprising (?) correlations in randomly oriented graphs*. Institut Mittag-Leffler, Auravägen 17, Djursholm. Se sidan 5.

Ti 04–28 kl. 18.00. Populärvetenskaplig föreläsning i fysik. Göran Manneberg, Fysik, KTH: *Vad kan laserstrålar lära oss? Om lasern och vardagsoptik*. Oskar Kleins auditorium, Roslagstullsbacken 21, AlbaNova universitetscentrum. Se Bråket nr 15 sidan 6.

Fortsättning på nästa sida.

Disputation i matematik

Alexander Engström skall disputerar vid KTH på avhandlingen *Topological Combinatorics* fredagen den 8 maj kl. 13.00. Se sidan 3.

Philosophy and Foundations of Mathematics: Epistemological and Ontological Aspects

En konferens med denna titel skall äga rum i Uppsala den 5–8 maj. Se Bråket nr 14 sidorna 5–7.

Wallenbergpriset

Svenska matematikersamfundet har beslutat att Mats Boij, KTH, och Kaj Nyström, Umeå universitet, skall få 2009 års Wallenbergpris. Se sidan 7.

Nästa nummer av Bråket

utkommer torsdagen den 30 april. Material måste vara red. tillhanda senast den 29 april kl. 13.00.

Nomineringar till CIAMs Examensarbetspris 2008

Se sidan 6.

Money, jobs: Se sidorna 9–10.

Seminarier (fortsättning)

- On 04–29 kl. 10.15–12.00. Kombinatorikseminarium.** Anders Claesson, Reykjavík: *(2 + 2)-free posets, ascent sequences and pattern avoiding permutations*. Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 6.
- On 04–29 kl. 13.00–14.30. Seminarium anordnat av Institutionen för matematik-ämnet och naturvetenskapsämnenas didaktik vid SU.** Staffan Rodhe: *Matematik i ett interkulturellt och historiskt perspektiv*. Amelinsalen, A508, Campus Konradsberg.
- On 04–29 kl. 13.15–14.15. Seminarium i analys och dynamiska system.** Daniel Schnellmann, KTH: *Typical points for β -transformations and skew tent maps*. Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 9.
- On 04–29 kl. 17.00–18.00. Offentlig föreläsning på Kungl. Vetenskapsakademien.** Professor Veerabhadran Ramanathan, University of California at San Diego, USA: *Strategies for containing climate change below dangerous levels*. Beijersalen, Kungl. Vetenskapsakademien, Lilla Frescativägen 4A, Stockholm. Se Bråket nr 15 sidan 7.
- To 04–30 kl. 11.15–12.15. Kombinatorikseminarium.** (*Observera dagen, tiden och lokalen!*) Brian Hopkins, Saint Peter's College: *Bulgarian solitaire and related operations on partitions*. Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 15 sidan 6.
- To 04–30 kl. 13.15–14.15. DNA-seminariet Uppsala-KTH (Dynamical systems, Number theory, Analysis).** Björn Winckler, KTH: *Renormalization fixed points: one algorithm to find them all*. Sal 64119, Ångströmlaboratoriet, Uppsala universitet. Se sidan 4.
- Må 05–04 kl. 13.15–14.00. ACCESS Distinguished Lecture Series.** Professor Roger Brockett, Harvard University, USA: *Asymptotic properties of Markov decision processes*. Sal M3, KTH, Brinellvägen 64. Se sidan 5.
- On 05–06 kl. 10.15. Licentiatseminarium i strömningsmekanik.** Bengt E. G. Fallén, Mekanik, KTH, presenterar sin licentiatavhandling: *A new experimental setup for studies on wake flow instability and its control*. Opponent: Universitetslektor Christoffer Norberg, Lunds Tekniska Högskola. Sal E51, KTH, Osquars Backe 14, 2 tr. Se sidan 7.
- On 05–06 kl. 10.30–12.00. Extra skrivforskningskollokvium vid Institutionen för nordiska språk, SU.** Associate Professor Natasha Artemeva, Carleton University, Ottawa, Canada: *Unacknowledged genres of university teaching: Chalk talk in mathematics*. Sal D389, Institutionen för nordiska språk, SU, Södra husen, Frescati. Se sidan 8.
- On 05–06 kl. 16.00. KTH/SU Mathematics Colloquium.** Bálint Tóth, Technical University Budapest: *Title to be announced*. 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)

To 05–07 kl. 13.15–14.15. DNA-seminariet Uppsala-KTH (Dynamical systems, Number theory, Analysis). Kristian Bjerklöv, KTH: *Quasi-periodic perturbation of quadratic maps*. Sal 64119, Ångströmlaboratoriet, Uppsala universitet. Se sidan 8.

To 05–07 kl. 15.15–16.15. AlbaNova and Nordita Colloquium in Physics. Peter Fulde, MPI for Complex Systems, Dresden: *Superconductivity through intra-atomic excitations*. Oskar Kleins auditorium, Roslagstullsbacken 21, AlbaNova universitetscentrum. Se sidan 9.

DISPUTATION I MATEMATIK

Alexander Engström

skall disputeras på avhandlingen

Topological Combinatorics

fredagen den 8 maj 2009 kl. 13.00 i sal E2, KTH, Lindstedtsvägen 3, b.v. Till opponent har utsetts *professor Günter M. Ziegler*, Technische Universität Berlin.

Abstract of the thesis

This thesis on Topological Combinatorics contains seven papers. All of them but paper B are published before.

In paper A we prove that $\sum_i \dim \tilde{H}_i(\text{Ind}(G); \mathbf{Q}) \leq |\text{Ind}(G[D])|$ for any graph G and its independence complex $\text{Ind}(G)$, under the condition that $G \setminus D$ is a forest. We then use a correspondence between the ground states with $i + 1$ fermions of a supersymmetric lattice model on G and $\tilde{H}_i(\text{Ind}(G); \mathbf{Q})$ to deal with some questions from theoretical physics.

In paper B we generalize the topological Tverberg theorem. Call a graph on the same vertex set as a $(d + 1)(q - 1)$ -simplex a (d, q) -Tverberg graph if for any map from the simplex to $\mathbf{R}^d$ there are disjoint faces $F_1, F_2, \dots, F_q$ whose images intersect and no two adjacent vertices of the graph are in the same face. We prove that if $d \geq 1$, $q \geq 2$ is a prime power, and G is a graph on $(d + 1)(q - 1) + 1$ vertices such that its maximal degree D satisfies $D(D + 1) < q$, then G is a (d, q) -Tverberg graph. It was earlier known that the disjoint unions of small complete graphs, paths, and cycles are Tverberg graphs.

In paper C we study the connectivity of independence complexes. If G is a graph on n vertices with maximal degree d , then it is known that its independence complex is $(cn/d + \epsilon)$ -connected with $c = 1/2$. We prove that if G is claw-free, then $c \geq 2/3$.

In paper D we study when complexes of directed trees are shellable and how one can glue together independence complexes for finding their homotopy type.

In paper E we prove a conjecture by Björner arising in the study of simplicial polytopes. The face vector and the g -vector are related by a linear transformation. We prove that this matrix is totally nonnegative. This is joint work with Michael Björklund.

In paper F we introduce a generalization of Hom-complexes, called set partition complexes, and prove a connectivity theorem for them. This generalizes previous results of Babson, Cukic, and Kozlov, and questions from Ramsey theory can be described with it.

In paper G we use combinatorial topology to prove algebraic properties of edge ideals. The edge ideal of G is the Stanley-Reisner ideal of the independence complex of G . This is joint work with Anton Dochtermann.

PLURIKOMPLEXA SEMINARIET

Maurice Rojas:

Number theory and the hardness of complex geometry

Abstract: A beautiful and unexpected result of Pascal Koiran from the 1990s is the fact that the truth of the Generalized Riemann Hypothesis (GRH) implies a dramatically more efficient method (completely distinct from commutative algebraic methods) for computing the dimension of any complex algebraic set.

We review recent progress toward eliminating the assumption of GRH. We begin with numerous examples, illustrating how finite field techniques can say something about polynomial equations over the complex numbers. For those interested in complexity, we will review the definition of NP. For those not interested in complexity, we will see an interesting application of short interval estimates from number theory.

No background in number theory is assumed.

Tid och plats: Tisdagen den 28 april kl. 13.15 i rum 306, hus 6, Matematiska institutionen, SU, Kräftriket.

INSTITUT MITTAG-LEFFLER SEMINAR

Per Austrin:

Randomly supported independence

Abstract: We study questions of the following flavour: Given a random subset X of $[q]^n$, what is the probability that there exists a k -wise independent distribution supported on X ?

We show that there are constants $c_{q,k}$ such that, with high probability, a uniformly random set of $c_{q,k} \cdot n^k \log(n^k)$ points from $[q]^n$ can support a k -wise independent distribution, and that this is sharp up to the logarithmic factor and the exact value of $c_{q,k}$. For the case $k = 2$, we are able to remove the logarithmic factor and show that, with high probability, a uniformly random set of $c_{q,2} \cdot n^k$ points from $[q]^n$ can support a pairwise independent distribution. Finally, we show that there are other constants $c'_{q,k} > 0$ such that every subset of $[q]^n$ with size at least $q^n(1 - c'_{q,k})$ can support a k -wise independent distribution.

The talk is based on joint work with Johan Håstad.

Tid och plats: Tisdagen den 28 april kl. 14.00–15.00 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

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

Björn Winckler:

Renormalization fixed points: one algorithm to find them all

Abstract: In this talk I will give an overview of the renormalization theory for unimodal maps. The focus will be on Marco Martens' proof of the existence of renormalization fixed points and how it naturally leads to an algorithm for constructing such fixed points (of any combinatorial type and critical exponent). Finally, I will outline a computer implementation of this algorithm.

Tid och plats: Torsdagen den 30 april kl. 13.15–14.15 i sal 64119, Ångströmlaboratoriet, Uppsala universitet.

INSTITUT MITTAG-LEFFLER SEMINAR

Svante Linusson och Sven Erick Alm:

Surprising (?) correlations in randomly oriented graphs

Abstract: Consider a graph G and orient the edges independently with equal probabilities for the two directions. Let a, s, b be three distinct vertices and consider the events $\{s \rightarrow a\}$, that there is a directed path from s to a , and $\{s \rightarrow b\}$. It feels intuitively clear that these events are positively correlated, which also can be proven to be true. In fact, it is true also if we first condition that $\{s \not\rightarrow t\}$ (i.e. there is no path from s to t) for any other vertex t in G , which is less clear intuitively.

If we instead consider the paths $\{a \rightarrow s\}$ and $\{s \rightarrow b\}$, one might first guess that these should be negatively correlated, but this does not hold in general. We will give results for complete graphs, cycles, and some surprising results for the random graph $G(n, p)$.

Tid och plats: Tisdagen den 28 april kl. 15.30–16.30 vid Institut Mittag-Leffler, Auravägen 17, Djursholm.

ACCESS DISTINGUISHED LECTURE SERIES

Roger Brockett:

Asymptotic properties of Markov decision processes

Speaker: Roger Brockett joined the Department of Electrical Engineering at the Massachusetts Institute of Technology in 1963 as an assistant professor and Ford Foundation Fellow, working in automatic control. In 1969 he was appointed Gordon McKay Professor of Applied Mathematics in the Division of Applied Sciences at Harvard, where he became Wang Professor of Electrical Engineering and Computer Sciences in 1989. Experimental and theoretical aspects of robotics, including aspects of manipulation, computer control and sensor data fusion, are the focus of his present work. He has held visiting positions at a number of universities, including the Tokyo Institute of Technology. Over the past 30 years, he has been involved in the professional activities of IEEE, SIAM and AMS, having served on the advisory committees and editorial boards for several groups in these societies, including IEEE's Transactions on Automatic Control and the IEEE Transactions on Robotics and Automation. He was a co-editor for Systems and Control Letters from its founding until 1980. In 1989, he received the American Automatic Control Council's Richard E. Bellman Award, and in 1991, he received the IEEE Control Systems and Engineering Field Award. In 1996 he received SIAM's Reid Prize for his work in differential equations and control. He was elected to the National Academy of Engineering in 1991.

Abstract: A large number of applications of the optimal control of Markov processes are known, ranging from problems motivated by situations arising in service industries to problems involving network control. These problems are often classified as being finite time problems or infinite horizon problems. Recently we derived a differential equation for the expected value of the minimal cost associated for a wide class of such problems involving the optimal adjustment of the transition rates subject to an appropriate performance measure. Although the optimal policy is given explicitly in feedback form, depending only on the solution of a certain differential equation, it has remained unclear as to if the feedback control policy approaches a constant policy in steady state or if, perhaps, it approaches a periodic policy. In this talk we will review recent results in this area with emphasis on the asymptotic situation.

Tid och plats: Måndagen den 4 maj kl. 13.15–14.00 i sal M3, KTH, Brinellvägen 64.

KOMBINATORIKSEMINARIUM

Anders Claesson:

$(2 + 2)$ -free posets, ascent sequences and pattern avoiding permutations

Abstract: We present bijections between four classes of combinatorial objects. Two of them, the class of unlabelled $(2 + 2)$ -free posets and a certain class of involutions (or chord diagrams), already appeared in the literature, but were apparently not known to be equinumerous. The third class is a family of permutations defined in terms of a new type of pattern. An attractive property of these patterns is that, like classical patterns, they are closed under the action of D_8 , the symmetry group of the square. The fourth class is formed by certain integer sequences, called ascent sequences, which have a simple recursive structure and are shown to encode $(2 + 2)$ -free posets and permutations.

We determine the generating function of these objects, thus recovering a non- D -finite series obtained by Zagier for the class of chord diagrams. Finally, we characterize the ascent sequences that correspond to permutations avoiding the barred pattern $3\bar{1}524$ and use this to enumerate those permutations, thereby settling a conjecture of Pudwell.

Tid och plats: Onsdagen den 29 april kl. 10.15–12.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

Nomineringar till CIAMs Examensarbetspris 2008

En av uppgifterna för CIAM (Center for Industrial and Applied Mathematics) är att stimulera högkvalitativa examensarbeten med tema industriell och tillämpad matematik. Vi kommer därför att dela ut CIAMs Examensarbetspris 2008.

Vi välkomnar nu nomineringar till detta pris. Examensarbeten som nomineras skall ha examinerats vid KTH, och de måste ha slutförts under 2008. Nomineringar kan ske av examinerator eller handledare. Nominerade examensarbeten skall inges till Marie Lundin, Institutionen för matematik, KTH, i två exemplar senast fredagen den 15 maj 2009. Till examensarbetena skall bifogas en motivering för nomineringen där det också skall framgå

- examensarbetarens/examensarbetarnas namn och programtillhörighet,
- examensarbetets titel,
- examinatorns namn,
- eventuella övriga handledares namn,
- var examensarbetet har utförts.

Det skall speciellt framgå av motiveringen varför examensarbetet förtjänar ett pris inom industriell och tillämpad matematik.

Priset delades ut första gången 2007, då Andreas Molin Edlund mottog priset för sitt examensarbete *Resource scheduling in mobile telecommunications systems*, som utfördes vid Ericsson.

Se <http://www.ciam.kth.se> för mer information om CIAM.

Eventuella frågor besvaras av Anders Forsgren, Institutionen för matematik, KTH, e-post: andersf@kth.se, telefon: 08-790 71 27.

LICENTIATSEMINARIUM I STRÖMNINGSMEKANIK

Bengt E. G. Fallén

presenterar sin licentiatavhandling:

A new experimental setup for studies on wake flow instability and its control

Opponent: Universitetslektor Christoffer Norberg, Lunds Tekniska Högskola.

Abstract: A new experimental setup for studies on wake wake flow instability and its control, which has been designed and manufactured, is introduced and described. The main body is a dual-sided flat plate with an elliptic leading edge and a blunt trailing edge. Permeable surfaces enable boundary layer suction and/or blowing that introduce the feature of adjusting the inlet condition of the wake created behind the plate. This, in combination with a trailing edge that is easily modified, makes it an ideal experiment for studies of different control methods for the wake flow instability. Additionally, a vortex detection program has been developed in order to detect, analyse and compare small-scale vortical structures in the wake behind the plate for different inlet conditions and control methods applied to the wake flow. Instantaneous velocity fields behind a cylinder subjected to suction or blowing through the entire cylinder surface have been analysed with this program. The results of the analysis show that the major change for different levels of blowing or suction is the location of vortices, while the most common vortex size and strength are essentially unchanged.

Tid och plats: Onsdagen den 6 maj kl. 10.15 i sal E51, KTH, Osquars Backe 14, 2 tr.

WALLENBERGPRiset

Svenska matematikersamfundet utdelar årligen Wallenbergpriset till en eller två löftesrika unga svenska matematiker. Priset är ett av de mest kända prisen inom den svenska matematikforskningen.

I år delas priset av *Mats Boij*, KTH, och *Kaj Nyström*, Umeå universitet.

Mats Boij får priset för sin forskning om Hilbertfunktioner inom kommutativ algebra och speciellt för sina nyskapande idéer i studiet av Bettitabeller för graderade moduler. Hans arbeten med Jonas Söderberg har haft stort inflytande på andra forskare och gett upphov till en ny teori som bland annat ger ett bevis för en känd multiplicitetsförmodan.

Kaj Nyström får priset för banbrytande resultat inom teorin för icke-linjära partiella differentialekvationer. Bland annat har han i samarbete med John Lewis (University of Kentucky) lyckats med bedriften att utvidga stora delar av teorin för regularitet upp till randen av harmoniska funktioner i Lipschitz-områden till att omfatta även s.k. p -harmoniska funktioner ($1 < p < \infty$).

Wallenbergpriset har delats ut sedan år 1983, och det har tillkommit efter en generös donation av Marianne och Marcus Wallenbergs Stiftelse. Prissumman är i år 300 000 kr, vilken kommer att delas mellan Mats Boij och Kaj Nyström.

Priset kommer att delas ut på Svenska matematikersamfundets årsmöte den 4–5 juni i Uppsala.

Vi gratulerar Mats och Kaj till den fina utmärkelsen!

**EXTRA SKRIVFORSKNINGSKOLLOKVIUM
VID INSTITUTIONEN FÖR NORDISKA SPRÅK, SU**

**Natasha Artemeva:
Unacknowledged genres of university teaching:
Chalk talk in mathematics**

Sammanfattning: Den rysk-kanadensiska forskaren Natasha Artemeva presenterar en studie om hur matematiklärare på universitetsnivå använder tavlan (krittavla eller white-board) i undervisningen. Studien har genreteoretiska och verksamhetsanalytiska utgångspunkter och tar upp flerspråkighet och multimodalitet.

Speaker: Natasha Artemeva is Associate Professor within the School of Linguistics and Applied Language Studies at Carleton University, Ottawa, Canada. She is a co-editor (with Aviva Freedman) of *Rhetorical Genre Studies and beyond* (2006, Inkshed Publications). Her doctoral dissertation won the 2007 Conference of College Composition and Communication (CCCC) Outstanding Dissertation Award in Technical Communication (USA). Her research interests lie in the area of rhetorical genre studies, social theories of learning and practice, and disciplinary and professional discourse.

Abstract: In their multifaceted academic work, university professors participate in complex genre systems, which they are expected to manipulate expertly during various disciplinary activities. The professors' ability to participate in the *genred* discursive practices of their disciplines, and, in particular, in the genres of teaching, is important for their professional success. In this presentation we report on the first phase of a large-scale research project funded by the Social Sciences and Humanities Research Council of Canada, which addresses genres of teaching in mathematics. In considering the multimodal genre of *chalk talk* as it is used by university professors of mathematics with international teaching experiences, we draw on an integrated theoretical framework of genre learning, derived from Rhetorical Genres Studies, Activity Theory, and theories of situated learning and communities of practice. While secondary school discourse of the mathematics classroom has been extensively studied from multiple perspectives, it appears that the multimodal genre systems used by professors in the teaching of mathematics at university is under-researched. Using a multi-case study approach and multiple international sites, this study investigates the role of *chalk talk* in the genre system of an undergraduate mathematics classroom. This presentation discusses the role of *chalk talk* as the principal mediating tool in the activity of teaching mathematics, which appears to transcend national, cultural, and linguistic borders.

The talk is based on joint work with Janna Fox.

Tid och plats: Onsdagen den 6 maj kl. 10.30–12.00 i sal D389, Institutionen för nordiska språk, SU, Södra husen, Frescati.

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

**Kristian Bjerklov:
Quasi-periodic perturbation of quadratic maps**

Abstract: We consider quasi-periodic perturbations of a quadratic map exhibiting an attracting period-3 point. We will rigorously show that such a perturbation can create so-called Strange Nonchaotic Attractors, an object which lies between regularity and chaos.

Tid och plats: Torsdagen den 7 maj kl. 13.15–14.15 i sal 64119, Ångströmlaboratoriet, Uppsala universitet.

SEMINARIUM I ANALYS OCH DYNAMISKA SYSTEM

Daniel Schnellmann:

Typical points for β -transformations and skew tent maps

Abstract: For $\beta > 1$, the β -transformation $T_\beta: [0, 1] \rightarrow [0, 1]$ is defined by $x \mapsto \beta x \bmod 1$. There is a unique and hence ergodic absolutely continuous invariant probability measure μ_β for T_β . By Birkhoff's Ergodic Theorem it follows that Lebesgue almost every point $x \in [0, 1]$ is typical for μ_β , i.e.

$$\frac{1}{n} \sum_{i=0}^{n-1} \delta_{T_\beta^i(x)} \rightarrow \mu_\beta,$$

weakly as $n \rightarrow \infty$. However, it is difficult to determine if a chosen point $x \in [0, 1]$ is typical. Using a method by Benedicks and Carleson, we will discuss a generalization of a result by Schmeling and Bruin which states that x is typical for Lebesgue almost every parameter $\beta > 1$. In particular, we consider a C^2 -version of β -transformations and skew tent maps.

Tid och plats: Onsdagen den 29 april kl. 13.15–14.15 i seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

ALBANOVA AND NORDITA COLLOQUIUM IN PHYSICS

Peter Fulde:

Superconductivity through intra-atomic excitations

Abstract: Superconductivity occurs when the normal state of a metal becomes instable due to Cooper pair formation. Usually it is assumed that the glue for forming electron pairs is provided by phonons. For example, the BCS theory is based on that assumption. After the discovery of the high-temperature superconducting cuprates, it was suggested that other bosonic excitations rather than phonons should lead to Cooper pairing. However, arguments have remained vague and a quantitative theory is still lacking. On the other hand, recent experiments on the filled skutterudite $\text{PrOs}_4\text{Sb}_{12}$ have clearly demonstrated that intra-atomic crystal field excitations of the $4f^2$ shell provide more than 50 % to the binding energy of Cooper pairs. The superconducting transition temperature is low in that case. Moreover, in UPd_2Al_3 intra-atomic $5f$ excitations of the U ions provide not only an explanation for T_c but also for the observed magnetic resonance below T_c and for the heavy quasiparticles found in that system. Phonons play only a negligible role here.

Tid och plats: Torsdagen den 7 maj kl. 15.15–16.15 i Oskar Kleins auditorium, Roslags-tullsbacken 21, AlbaNova universitetscentrum.

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.

(Continued on the next page.)

Standard information channels

1. A channel to information from Vetenskapsrådet: <http://www.vr.se/naturteknik/index.asp>.
2. A channel to information from the European Mathematical Society: <http://www.emis.de>.
3. A channel to information from the American Mathematical Society: <http://www.ams.org>.
4. KTH site for information on funds: <http://www.kth.se/aktuellt/stipendier>.
5. Stockholm University site for information on funds: <http://www2.su.se/forskning/stipendier/databas.php3>.
6. Umeå site for information on funds: http://www.umu.se/umu/aktuellt/stipendier_fond_anslag.html.
7. Job announcement site: <http://www.maths.lth.se/nordic/Euro-Math-Job.html>. This is run by the European Mathematical Society.
8. Stiftelsen för internationalisering av högre utbildning och forskning (STINT) site for information on funds: <http://www.stint.se>.
9. Nordisk Forskerutdanningsakademi (NorFA) site for information on funds: <http://www.norfa.no>.
10. Svenska institutet (SI) site for information on funds: <http://www.si.se>.

New information

Jobs to apply for

11. Institutionen för matematik vid KTH söker doktorander i matematik. Sista ansökningsdag är den 22 maj. Web-info: http://www.math.kth.se/doktorand_vt09.html.

Old information

Jobs to apply for

12. Linköpings universitet söker en professor i beräkningsvetenskap. Sista ansökningsdag är den 8 maj. Web-info: <http://www.liu.se/jobbdb/show.html?2827>.
 13. Karlstads universitet söker en universitetslektor i matematikdidaktik. Sista ansökningsdag är den 11 maj. Web-info: http://www.kau.se/om-universitetet/lediga-tjanster?to_do=detail&tjanst_id=2044.
 14. Karlstads universitet söker en professor i matematikdidaktik. Sista ansökningsdag är den 11 maj. Web-info: http://www.kau.se/om-universitetet/lediga-tjanster?to_do=detail&tjanst_id=2043.
 15. SU söker två doktorander i matematik. Anställningarna har ämnesbeskrivningarna "Geometric invariants of finite groups" respektive "Geometry on configuration spaces with applications to homological algebra, number theory, and quantization". Sista ansökningsdag är den 4 maj. Web-info: <http://www.math.su.se/content/1/c6/02/88/39/applic09.pdf>.
 16. SU söker två doktorander i matematisk statistik. Sista ansökningsdag är den 4 maj. Web-info: <http://www.math.su.se/content/1/c6/02/88/39/FoutbVT09.pdf>.
 17. Lunds universitet söker en eller två doktorander i matematisk statistik. Sista ansökningsdag är den 8 maj. Web-info: <http://www3.lu.se/info/lediga/admin/document/PA2009-1208eng.pdf>.
 18. Uppsala universitet söker en professor i matematisk statistik. Sista ansökningsdag är den 15 maj. Web-info: <http://www.math.uu.se/inform/vacant.php>.
 19. 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>.
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