BRÅKET

Information om seminarier och högre undervisning i matematiska ämnen i Stockholmsområdet

NR 35 **FREDAGEN DEN 26 OKTOBER 2001**

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 november kl. 13.00.

Svenska Matematikersamfundets höstmöte

Detta äger rum på KTH fredagen den 26 oktober. Det första föredraget börjar kl. 10.00. Kaffe serveras från kl. 9.15. Se Bråket nr 34 sidorna 4 – 5 och hemsidan http://www.matematikersamfundet.org.se.

SEMINARIER

Fr 10 – 26 kl. 10.00 – 10.45. Svenska Matematikersamfundets höstmöte. Elliott Lieb, Princeton, Rolf Schock Prize winner 2001: *The Bose gas: A subtle many-body problem.* Sal E1, KTH, Lindstedtsvägen 3, entréplanet. Se Bråket nr 34 sidan 4.

Fr 10 – 26 kl. 11.00 – 11.45. Svenska Matematikersamfundets höstmöte. Harry Kesten, Cornell University and Mittag-Leffler Institute: *Percolation of arbitrary words in* $\{0,1\}^{\mathbb{N}}$. Sal E1, KTH, Lindstedtsvägen 3, entréplanet. Se Bråket nr 34 sidan 4.

Fr 10 – 26 kl. 13.15. Seminarium i algebraisk geometri. Ragni Piene, Universitetet i Oslo: *Towards an algorithm for node polynomials for curves on surfaces.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 3.

Fr 10 – 26 kl. 13.45 – 14.30. Svenska Matematikersamfundets höstmöte. Michael Loss, Georgia Institute of Technology, Atlanta: *Many-body aspects of approach to equilibrium.* Sal E1, KTH, Lindstedtsvägen 3, entréplanet. Se Bråket nr 34 sidan 5.

Fr 10 – 26 kl. 15.00 – 15.45. Svenska Matematikersamfundets höstmöte. Stanislav Smirnov, KTH and the Royal Swedish Academy of Sciences, Salem Prize and Clay Research Award winner, 2001: *Conformal invariance of critical percolation.* Sal E1, KTH, Lindstedtsvägen 3, entréplanet. Se Bråket nr 34 sidan 5.

Fr 10 – 26 kl. 15.15. Matematiska institutionens kollokvium (Uppsala). Professor Evgeny Shchepin, Steklov Institute, Moscow: *Arithmetic dimension theory.* Rum 2247, Matematiska institutionen, Polacksbacken, Uppsala universitet. Institutionen bjuder på kaffe, te och kakor kl. 14.45 i personalrummet. Efter föredraget ges möjlighet till diskussion och förfriskningar. Se Bråket nr 34 sidan 4.

Fortsättning på nästa sida.

Seminarier (fortsättning)

Må 10–29 kl. 13.15–14.15. Potential Analysis Seminar. Jérôme Busca, Université Paris Dauphine: *Existence and comparison results for fully nonlinear degenerate elliptic equations without zeroth-order term.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 34 sidan 5.

Må 10–29 kl. 15.15–17.00. Seminarium i finansiell matematik. Henrik Hult: *Multivariate extremes and dependence in elliptical distributions.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 34 sidan 3.

Ti 10–30 kl. 13.15–14.00. Seminar in Theoretical and Applied Mechanics. Dr Jack Lidmar, Fysikum, SU: *A buckling transition on a sphere and the shapes of viruses.* Seminarierummet, rum S40, Institutionen för mekanik, KTH, Teknikringen 8, b.v. Se sidan 4.

Ti 10–30 kl. 14.30–15.30. Mittag-Leffler Seminar. Mark Comerford, New Haven: *A survey of random iteration.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

Ti 10–30 kl. 16.00–17.00. Mittag-Leffler Seminar. Benoit Mandelbrot, New Haven: *Gap distributions for random walk.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

On 10–31 kl. 13.15–14.15. Seminarium i analys och dynamiska system. Greg Lawler, Duke and Cornell Universities: *Conformal invariance, universality, and the dimension of the Brownian frontier.* Seminarierum 3721, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se Bråket nr 34 sidan 3.

To 11–01 kl. 14.00–15.00. Mittag-Leffler Seminar. Anders Öberg: Uppsala: *Level sets of harmonic functions on the Sierpinski gasket.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

To 11–01 kl. 15.30–16.30. Mittag-Leffler Seminar. Peter Jones, New Haven: *Harmonic measure and scaling: Part III.* Institut Mittag-Leffler, Auravägen 17, Djursholm.

Må 11–05 kl. 13.15–15.00. Potentialanalysseminarium. Torbjörn Lundh, Chalmers tekniska högskola, Göteborg: *Minimal Martin boundary points of a John domain.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Må 11–05 kl. 15.15. Seminarium i matematisk statistik. Professor John Wierman, Johns Hopkins University, Baltimore: *Critical probabilities in percolation theory: Bounds, conjectures, and counterexamples.* Seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7. Se sidan 4.

Ti 11–06 kl. 13.15. Seminar in Theoretical and Applied Mechanics. Professor Jan-Olov Strömberg, Matematik, KTH: *Wavelet methods with applications in processing of signals in dimension one and two (images).* Seminarierummet, rum S40, Institutionen för mekanik, KTH, Teknikringen 8, b.v. Se sidan 5.

Ti 11–06 kl. 15.15–17.00. Seminarium om beslutsstöd och informationsfusion i ledningssystem. Maria Normark och **Henrik Artman,** Nada, KTH: *Ledningsstöd för kommunikation och samarbete.* Sal E2, KTH, Lindstedtsvägen 3, b.v.

Fortsättning på nästa sida.

Seminarier (fortsättning)

On 11–07 kl. 13.00–14.30. Seminarium i matematik och fysik vid Mälardalens högskola (Västerås). Mirislav Drozdenko: *Generalization of mixtures of exponential distributions with applications to risk processes.* Lektionssal 1632, Mälardalens högskola, Västerås.

On 11–07 kl. 15.15–16.00. Seminarium i matematik och fysik vid Mälardalens högskola (Västerås). Richard Bonner, Mälardalens högskola: *Incremental approximation in Hilbert spaces and applications.* Lektionssal N24, Mälardalens högskola, Västerås.

On 11–07 kl. 15.15. Licentiatseminarium i matematisk statistik. Maria Deijfen, SU, presenterar sin licentiatavhandling: *Asymptotic shape in a continuum growth model.* Diskussionsinledare: **Docent Kurt Johansson,** Matematik, KTH. Rum 306, Cramérrummet, hus 6, Matematiska institutionen, SU, Kräftriket. Se nedan.

SEMINARIUM I ALGEBRAISK GEOMETRI

Ragni Piene: Towards an algorithm for node polynomials for curves on surfaces

Abstract: Given a family of curves D on a family of surfaces F/Y, consider the closure $Y(r)$ of the set of y in Y such that the fibre D_y has r nodes. The "r-node polynomial" is a formula for the class $[Y(r)]$ in terms of the Chern classes of D, F, Y. By blowing up one node at a time, one gets in principle a recursive formula for the r-node polynomial. For r at most 8 one gets an algorithm which computes the polynomials — I shall explain this, and also speculate on how this algorithm could be extended to arbitrary r.

This is part of a joint work with S. Kleiman.

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

LICENTIATSEMINARIUM I MATEMATISK STATISTIK

Maria Deijfen

presenterar sin licentiatavhandling:

Asymptotic shape in a continuum growth model

Diskussionsinledare: **Docent Kurt Johansson,** Matematik, KTH.

Abstract: A continuum analogue of the Richardson model is introduced. The state at time t, S_t, is a subset of $\mathbb{R}^d$ and consists of a connected union of unit balls, which emerge from outbursts at their centre points. An outburst occurs somewhere in S_t after an exponentially distributed time with expected value $|S_t|^{-1}$ and the location of the outburst is uniformly distributed over S_t. The main result is that if S_0 is a unit ball around the origin, then the diameter of S_t grows linearly and S_t/t has a non-random shape as $t \to \infty$. Due to rotation invariance the asymptotic shape must be a Euclidean ball.

Tid och plats: Onsdagen den 7 november kl. 15.15 i rum 306, Cramérrummet, hus 6, Matematiska institutionen, SU, Kräftriket.

SEMINAR IN THEORETICAL AND APPLIED MECHANICS

Jack Lidmar: A buckling transition on a sphere and the shapes of viruses

Abstract: Many viruses are highly regular structures of icosahedral symmetry built from a large number of identical units. We model these virus shells as curved elastic sheets with a certain bending rigidity. For topological reasons twelve disclinations have to be present in the triangular lattice that constitute the shell. Our discussion of this leads to a buckling transition from a spherical shape to a more faceted one. These results are then used to discuss certain trends of the virus structures observed in nature.

Tid och plats: Tisdagen den 30 oktober kl. 13.15 – 14.00 i seminarierummet, rum S40, Institutionen för mekanik, KTH, Teknikringen 8, b.v.

POTENTIALANALYSSEMINARIUM

Torbjörn Lundh: Minimal Martin boundary points of a John domain

Abstract: We show that a John domain has finitely many minimal Martin boundary points at each Euclidean boundary point. The number of minimal Martin boundary points is estimated by the John constant. In particular, if the John constant is bigger than $\sqrt{3}/2$, then there are one or two minimal Martin boundary points at each Euclidean boundary point. This is a joint work with Hiroaki Aikawa.

(Visiting KTH, I would also like to take the opportunity at the end of the talk to briefly discuss a free boundary problem arising from a wound healing model under construction.)

Tid och plats: Måndagen den 5 november kl. 13.15 – 15.00 i seminarierum 3733, Institutionen för matematik, KTH, Lindstedtsvägen 25, plan 7.

SEMINARIUM I MATEMATISK STATISTIK

John Wierman: Critical probabilities in percolation theory: Bounds, conjectures, and counterexamples

Abstract: Percolation models are random lattice graph models for critical phenomena. The critical probability, or percolation threshold, represents the phase transition point. Exact critical probability values are known for only a few two-dimensional lattices. Finding accurate bounds for critical probability values is a challenging problem.

The talk will describe the substitution method for deriving critical probability values. Improved bounds will be given for several lattices. The bounds are relevant to a conjecture of Häggström about vertex-transitive graphs, and lead to a conjecture regarding fully-triangulated lattices. Also, counterexamples are given to two common beliefs. They show that bond and site model critical probabilities need not be in the same order, and that the critical probability is not a monotone function of the average degree of the lattice. Implications for the physicists' development of universal formulas for predicting critical probabilities will be discussed.

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

SEMINAR IN THEORETICAL AND APPLIED MECHANICS

Jan-Olov Strömberg: Wavelet methods with applications in processing of signals in dimension one and two (images)

Abstract: Wavelet methods which have developed in the last decades have had a great success in images compression and are now used in standard jpeg-2000 still images compression and in a new upcoming competing algorithm for video compression. Wavelet methods also provide a tool to analyse the time-frequency content of one-dimensional signals and one may also extract from the large data sets a few significant parameters/features in a wavelet based feature extracting method.

In the talk I will sketch some of the theoretical background for the wavelet methods that are used. I plan also to demonstrate some applications and briefly describe some project which I have been involved in, using these methods.

Tid och plats: Tisdagen den 6 november kl. 13.15 i seminarierummet, rum S40, Institutionen för mekanik, KTH, Teknikringen 8, b.v.