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# MEDDELELSER

Dansk Selskab for Teoretisk Statistik

# Todagesmøde d. 13.-14. November 2001

Sektionen for Statistik, Informatik og Matematisk Modellering

Danmarks Tekniske Universitet Byg. 306, auditorium 31

### Tilmelding:

Til Ernst Hansen, erhansen@math.ku.dk, senest onsdag den 9. november.

## Deltagergebyr:

450 kr. for voksne (incl. PhD-studerende), 225 kr. for studerende. Beløbet indbetales på DSTS girokonto, 318-8418, med tydelig angivelse af hvem det vedrører.

Program for mødes kan læses inde i bladet.

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#### Program for Todagesmøde d. 13.-14. november 2001

#### Sektionen for Statistik Informatik og Matematisk Modellering Danmarks Tekniske Universitet

Tirsdag d. 13. november (Bygning 306, Aud. 31)

14.00-14.55 Philip Brown, Institute of Mathematics and Statistics, University of Kent at Canterbury, UK.

Bayesian developments in chemometrics and variable selection.

We review the Bayesian approach to modelling and inference. The focus is a spectroscopic calibration problem which may be viewed as regression with very many variables. Stochastic search variable selection offers an approach to selecting important wavelengths (variables) and combined with Bayes model averaging, it gives robust predictions. However such model averages reintroduce all variables into prediction. We develop a decision theory approach to retaining the benefits of parsimony with the robustness of model averaging.

14.55-15.25 Pause (Kaffe, The)

15.25-16.20 Marcel F. Neuts, The University of Arizona, Tucson, Arizona, USA.

# The Markovian Arrival Process Properties, Algorithms, and Statistical Procedures

The Markovian Arrival process (MAP) is a point process model derived from finite Markov chains. It is a highly tractable generalization of the Poisson process. The MAP has many attractive properties expressed in a nice matrix formalism with correspondingly efficient algorithms. The tractability of the MAP enables us to investigate many statistical descriptors of point processes. Just how informative are these descriptors? I shall present an overview of studies of descriptors undertaken by several co-workers and myself over the past twelve years.

The MAP is also a useful benchmark process for statistical and data analytic procedures. An important practical validation process consists in applying a statistical procedure to simulated MAP data. Given the tractability of descriptors of the MAP, we can study the performance of the statistical procedure in recovering the numerical values of these descriptors.

16.20-16.35 Pause (Kaffe, The)

16.35-17.30 Kaj Madsen, IMM, Tech. Univ. of Denmark.

#### What can Interval Arithmetic do for you?

It is well known that the data used in a scientific calculation may be subject to uncertainties. Interval Arithmetic furnishes an automatic means to detect how this influences the result of the calculation. The idea is to use sets (i.e. real intervals) instead of real numbers. This also provides the possibility of using the computer for proving mathemathical theorems such as proving the existence of solutions to equations. Another prominent example is the use of Interval Arithmetic for finding the set of global minima for a non linear function.

19.00 Middag på restaurant 'Den gyldne Gren'.

#### Onsdag d. 14. november

9.30 10.20 Georg Lindgren, Matematisk Statistik, Lunds Universitet.

New concepts and computational tools for extremes and crossings.

Recent advances in computational tools have made it possible to study interesting, but rather complex, characteristics of random fields and processes, in particular of a moving random field, like a sea surface. Examples are the maximum height of a field inside a level curve, the speed of a random wave front, or the maximal height of the maxima in a wave train. These have not been accessible without proper computational methods.

I will describe some of these tools, and give several example, mainly taken from Ocean engineering.

10.20-10.50 Pause (Kaffe, The)

10.50 11.40 Ove Ditlevsen, MEK, Tech. Univ. of Denmark.

# Stochastic Model for Joint Wave and Wind Loads on Offshore Structures

The wave and wind load environment of offshore structures is of such a complicated nature that any engineering analysis requires extensive simplifications. A standard simplification is to subdivide the time development of the wind driven wave process into sea states within each of which the wave process is modeled as an affinity in height and time of a stationary Gaussian process defined by a normalized dimensionless spectrum. The affinity factors are the so-called significant wave height  $H_s$  and the characteristic zero upcrossing time  $T_z$ .

It is shown in the lecture that the so called Nataf model gives a joint distribution of  $(H_s,T_z)$  that fits well with measured data from the North Sea. Moreover, characterizing events with the time averaged wind velocity pressure Q larger than some threshold  $q_0$  as Poisson process events, available information about the wind velocity pressure distribution in high wind situations can be used to formulate a Nataf model for the joint conditional distribution of  $(H_s,T_z,Q)$  given that  $Q>q_0$ .

The joint distribution of the wave period and the wave height is essential for determining the probability distribution of the forces on the tubular members of the structure. Longuet-Higgins has derived a joint distribution of the wave height and the wave period in a stationary narrow band Gaussian process. However, simulations show that the relevant spectrum does not provide a sufficiently narrow banded process for the derived distribution to make a good fit. Surprisingly it turns out that the random time L between two consecutive zero-upcrossings and the random wave height H observed between the two zeo-upcrossings behave such that L and the ratio H/L are practically uncorrelated and both normally distributed except for clipping the negative tails.

11.40-11.55 Pause (Kaffe, The)

11.55–12.45 Thomas Scheike, Department of Mathematical Sciences, Ålborg University

The Additive Nonparametric and Semiparametric Aalen model as the Rate Function for a Counting Process.

I present a marginal model in the context of Aalen's additive risk model in the counting process set-up (Aalen 1980) that models recurrent events data with time-dependent covariates. Rather than specifying the intensity, that is the instantaneous probability of an event conditional on the entire history of the covariates and counting processes, we present a model for the best prediction of the intensity given only a set of selected covariates. The usual Aalen estimator of the time-varying effects given only the set of selected covariates is still meaningful as the best linear prediction of the risk and are provided with large sample properties that shows that the usual variance estimators are incorrect in the marginal modelling framework. We also consider the semi-parametric version of the Aalen model (McKeague and Sasieni 1994) and show that the intensity based estimators still can be given a meaningful interpretation. The standard errors that are computed based on an assumption of intensities are incorrect and altenative estimators are given.

# SEMINAR I MATEMATISK STATISTIK OG SANDSYNLIGHEDSREGNING.

Seminarerne afholdes kl. 15:15 Auditorium 10 på H.C. Ørsted Instituttet. Der serveres te i lokale E325 kl. 15:00.

Onsdag den 31. oktober: Frédérique Bec (ENSAE, Falakoff, France):

Tests for unit-root versus threshold specification with an application to the purchasing power parity. BEMÆRK, AT DETTE ER EN ÆNDRING I FORHOLD TIL DET TIDLIGERE ANNONCEREDE.

We consider modeling the real exchange rate by a stationary three-regime threshold autoregressive (TAR) model with possibly a unit root in the middle regime. This representation is shown to be consistent with the purchasing power parity in presence of trading costs. Our main contribution is to provide statistical tools for testing unit root versus a TAR. First, we show that a TAR with unit root in the middle regime is stationary and even mixing under reasonable assumptions. Second, we derive analytically the asymptotic distribution of our unit-root test under the null hypothesis. Using monthly data for the G7 countries apart from Japan, our test rejects the null of unit-root against a stationary threshold model for the pairs involving German, French and Italian currencies, bringing evidence in favor of the Purchasing Power Parity hypothesis in the hard-core of the European Union.

Onsdag den 7. november: Carsten Wiuf (University of Oxford): Inference about Population History from Genealogical Trees.

DNA sequence data reveals information about population history; for instance whether the population has been expanding or been through a bottleneck. Often inference about population history is based on a sample of sequences from a single locus. In this talk I will discuss inference about population history from single locus data, and show that consistent estimation of the demography is not possible in simple (information-rich) models.

Onsdag den 21. november: Johan Segers (University of Gothenburg): On the multiplicative excesses over a large order statistic.

Let an i.i.d. sample of a distribution which is regularly varying at infinity be given. Consider the probability measure putting equal mass at the ratios of the k largest order statistics over the k+1 largest one. We investigate its limiting behaviour and apply the results to some statistics relevant to extreme value theory.

Onsdag den 28. november: Søren Johansen (ASOR-KU): Controllin inflation in a cointegrated vector autoregressive model with an application to US data.

The Central Bank typically wants to control the inflation rate by setting the overnight interest rate. It is hoped that this intervention will spread through the economy and that an increase in the short interest rate will eventually lead to a decrease in inflation rate.

In the lecture I shall discuss the basic model we use, the cointegrated vector autoregressive model, and in this model define the long-run impact matrix and the notions of instrument, intermediate target and final target.

A target variable is said to be controllable if it can be made stationary around a desired target value by using the instrument. This can be expressed as a condition on the long-run impact matrix. Applying a linear control rule to intervene in the market changes the dynamics of the process and the properties of the new process will be derived. If time permits the theoretical results are applied to US monetary data on a daily and monthly basis. The empirical results do not provide support for the widely held belief that the Federal Reserve Bank can bring US CPI inflation down by increasing the federal funds rate. This is joint work with Katarina Juselius. A paper is available on my home page in Florence at http://www.iue.it/Personal/Johansen/Welcome.html

## Statistical Methods for Dynamical Stochastic Models.

## Positions for young researchers.

About one year ago a research training network on "Statistical Methods for Dynamical Stochastic Models" started its activities under the programme Improving Human Potential financed by the The Fifth Framework Programme of the European Commission. The principal aim of the network is to make a major contribution to the theory of statistical inference for stochastic processes by taking advantage of the tools of modern probability theory including stochastic calculus and by using highly computer-intensive methods. The principal objectives are: (1) Development of statistical methods for continuous-time stochastic processes and investigation of the properties of the developed procedures; (2) Development of asymptotic statistical theory and related general theory for stochastic processes; (3) Modelling and statistical data analysis in finance, turbulence, hydrology, and telecommunication. The nine participating teams are located in Amsterdam, Berlin, Cartagena (Spain), Copenhagen, Freiburg (Germany), Helsinki, London, Padua (Italy), and Paris. Universities in a few other cities in Denmark, France, Germany, and the Netherlands are involved in the network too. So far two workshops and two concentrated courses have been held by the network.

The network has funds to employ young researchers during 162 months that are distributed between the teams. These positions are for young researchers at the post-doc as well as the pre-doc level. The positions at the pre-doc level are mainly for Ph.D. students at other universities who wish to spend some time in one of the teams of the network. In order to be employed in the network,

the young researcher must be less than 35 years old, and he/she cannot be employed in a country where he/she is a citizen or has worked within the last two years. The young researcher must be a citizen of a member state of the European Union or of an associated state, or must have resided in the European Union for at least five years prior to his/her appointment in the network.

Further information about the research training network on ``Statistical Methods for Dynamical Stochastic Models" and about vacant positions in the network teams can be found at the web-site of the network http://www.math.ku.dk/~michael/dynstoch

#### Statistiker

Københavns Amts Center for Sygdomsforebyggelse søger en statistiker til en nyoprettet stilling.

Vi er et aktivt forskningsmiljø indenfor områderne populations epidemiologi, klinisk epidemiologi, forebyggelsesforskning, samt sundhedstjenesteforskning. Forskerne (ca. 20) kommer fra mange forskellige faggrupper og arbejder med mange forskellige problemstillinger indenfor bl.a. hjerte-kar-sygdom, allergi, børnediabetes, børns vækst, kost, motion, rygevaner, psykiatri. Dertil kommer mange eksterne forskergrupper og projekter samt kontakt til tilsvarende nationale og internationale miljøer. I dette forskningsmiljø er vi p.t. 3 statistikere og 5 IT-medarbejdere.

#### Arbejdsopgaver

Dine arbejdsopgaver bliver meget varierede, idet du vil indgå i forskningssamarbejde omkring en række projekter. Vi benytter mange forskellige statistiske metoder, bl.a. regressionsmodeller (logistisk, lineær, Cox), varianskomponentmodeller og grafiske modeller. Arbejdet består af

- analyser af data fra befolkningsundersøgelser, kliniske databaser og randomiserede studier
- vejledning af forskere og phd-studerende
- besvarelse af spørgsmål omkring statistiske og epidemiologiske metoder samt statistisk software.
- deltagelse i planlægning af kommende projekter.

#### Kvalifikationer

- matematisk-statistisk uddannelse
- gode samarbeids- og formidlingsevner
- erfaring med statistiske analyser indenfor epidemiologi vil være en fordel
- lyst til at arbeide i et forskningsmiljø med gode faglige udviklingsmuligheder

Den ugentlige arbejdstid er 37 timer. Løn- og ansættelsesvilkår forhandles med udgangspunkt i gældende overenskomst. Stillingen er ledig til besættelse snarest.

Yderligere information kan fås hos statistiker cand.scient. Anne Helms Andreasen (tlf. 4323-3270, e-mail: ahea@glostruphosp.kbhamt.dk) eller hos centerchef, overlæge, dr. med. Torben Jørgensen (tlf. 4323-3255).

Ansøgning vedlagt relevant dokumentation bedes sendt til Centerchef, overlæge, dr.med. Torben Jørgensen, Københavns Amts Center for Sygdomsforebyggelse, Amtssygehuset i Glostrup, Opgang 8, 7. sal, 2600 Glostrup

Ansøgningsfrist 19. november 2001.

Københavns Amts Center for Sygdomsforebyggelse er et sektorforskningsinstitut i Københavns Amt. Centeret beskæftiger sig med forskning indenfor områderne populations epidemiologi, forebyggelsesforskning, klinisk epidemiologi samt sundhedstjenesteforskning. Forskningen er baseret på longitudinelle data indsamlet blandt stikprøver af befolkningen siden begyndelsen af 1960'erne, centrale registre og en voksende mængde kliniske dambaser. Centret har data på mere end 25.000 personer, hvoraf nogle er undersøgt flere gange og rummer hele livsforløb.



#### **Biostatistician**

Spadille is a contract research organization specialized in biostatistics and data management for the pharmaceutical and biotech industry, with a broad experience accumulated over 30 years of existence. Our main office is placed in Fredensborg, and we have an affiliate in Malmö. Totally we have 35 employees.

Spadille's primary activity is within clinical research, although we also offer services outside this field.

Spadille's statistical department is now looking for a statistician to join the group. As a statistician at Spadille, your activities will cover statistical advice and analysis of data from clinical trials: From planning to reporting of the statistical analyses, going through their performance/programming and interpretation.

You will be a part of a well-performing and qualified group with a high interaction both inside the group and with the other disciplinary groups (e.g., data managers, programmers, and medical writers) as well as with the statistical group in an affiliate in Sweden and our clients.

We expect you to be able to work in a team and to communicate with non-statisticians about statistical issues. We also expect you to be able to handle deadlines and parallel tasks without loosing quality.

You must have a strong background in statistics, minimum a MSc in statistics or equivalent. Experience in statistical methods in clinical research is desirable, as well as good programming skills, preferably in SAS. You should also master English in speech and writing.

We offer you a challenging work place with various activities for several clients as well as the possibility to develop your skills on statistical methods and on our own procedures.

You can read more about Spadille at <a href="https://www.spadille.dk">www.spadille.dk</a> For more information, please contact

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# Head of Biometrics

Vi søger en statistiker som afdelingsleder for Biometrics, der består af 2 statistikere, 4 data managere og 1 medical writer. Biometrics er en del af International Medical Affairs (IMA), der som central funktionsenhed bl.a. står i spidsen for virksomhedens kliniske udviklingsprogrammer. Vi er vokset meget de sidste par år og er i dag omkring 35 medarbejdere i IMA. Med en lang række meget forskellige projekter og kliniske forsøg i alle faser har vi masser af opgaver og udfordringer. Det løser vi ved at arbejde snævert sammen i teams med kolleger fra alle dele af IMA. I Biometrics gør vi ligeledes meget ud af det tætte samarbejde mellem statistik, data management og clinical reporting.

#### OPGAVER:

Hovedvægten i dine opgaver vil blive

- daglig ledelse af Biometrics og sikring af det professionelle niveau i arbejdet
- strategisk udvikling af arbejdsprocesser og systemer i Biometrics
- klinisk statistik med planlægning, programmering, analyser og rapportering
- · deltagelse i ledergruppen for IMA
- · håndtering af samarbejde med CRO'er
- · deltagelse i vurdering af in-licensieringer.

#### KVALIFIKATIONER:

- lyst til og flair for at coache gruppen i Biometrics, være faglig sparringspartner
- naturvidenskabelig uddannelse med vægt på statistik
- indgående kendskab til klinisk forskning og udvikling
- erfaring med SAS
- omhyggelig, god til at formidle det statistiske budskab og god til at dokumentere produktionen
- · flydende engelsk i skrift og tale.

#### DERUDOVER FORVENTER VI, AT DU:

- har lyst til at stå som ankerperson i den videre udvikling af vores arbejdsprocesser og systemmæssige set-up
- har lyst til at arbejde i et internationalt miljø
- · kan lide at have det sjovt, mens du har travit.

#### TIL GENGÆLD KAN DU REGNE MED:

- et udfordrende og udviklende job med en stor kontaktflade, hvor du vil være tæt på ledelsen og virksomhedens udvikling
- · attraktive omgivelser og arbejdsforhold
- · konkurrencedygtig løn efter kvalifikationer
- firmabetalt pensionsordning.

Vil du høre mere om stillingen, er du velkommen til at kontakte Vice President International Medical Affairs Karin Garre på 46 77 16 03.

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### **Statisticians**



Biostatistics & Clinical Statistics Health Care Development Novo Nordisk A/S DENMARK

Due to expansion of our pharmacometric activities, we need an extra statistician for the Biostatistics department. The department's responsibility covers statistical assistance primarily within pre- and non-clinical drug development and early phase clinical development, including pharmacokinetics and pharmacodynamics. This covers planning activities of the development programme and individual trials, analyses, reporting of trial results and participating in scientific publications. The position entails statistical activities for early phase clinical projects, including pharmacokinetic modelling and analyses.

Because of our expansion within the clinical development programme we seek statisticians for the Clinical Statistics department. The department's responsibility covers statistical assistance mainly within the company's clinical drug development programmes in phases II through IV. The assistance covers planning activities of the development programme and individual trials, analyses, reporting of trial results and contributing to the preparation of scientific publications.

You must have a solid theoretical background in statistics corresponding to minimum an MSc in statistics. Also, we would appreciate experience with practical use of statistical methods in biomedical research. You will get an opportunity to extend your knowledge of the special statistical problems related to development of new drugs through your specific tasks, participation in project related statistician teams and inter-disciplinary project teams.

Drug development is an inter-disciplinary activity, so you must be able to communicate, co-operate and make decisions together with people from other fields, sometimes in a temporal intense speed. We expect you to be able to handle many parallel activities without loosing focus on quality.

Our field of activity, methods and processes are constantly developing, especially on the basis of initiatives taken by the employees. We allow for personal as well as scientific development, through participation in courses and congresses, and offering PhD studies. It is our hope that you can and will take part in the continuous development of the statistical function as a good and challenging work place for the employees.

We offer a salary that is competitive. Furthermore, if you need long-distance moving, we may be able to support you.

If you need further information about the position in Biostatistics, please feel free to call Allan Kristensen, tel.: +45 44 43 82 01 or Judith L. Jacobsen, tel.: +45 44 42 16 37.

If you need further information about the positions in Clinical Statistics, please feel free to call Niels M. Kamp, tel.: +45 44 42 17 22 or Ingrid S. Harbo, tel.: +45 44 42 24 79.

Please send your application marked "NN2649" to the Personnel Department, Novo Nordisk A/S, Novo Alle, DK-2880 Bagsvaerd, Denmark



# Analytiker

Vi tror på muligheder. Og vi har en klar målsætning om at fastholde og udvikle vores position som en af landets største finansielle virksomheder. Det kræver kvalificerede og motiverede medarbejdere, der tør tage et ansvar, og som tror på, at samarbejde og udvikling skaber de bedste betingelser for alle. Vi er 2.800 medarbejdere fordelt over hele landet, og vores aktiviteter strækker sig fra realkredit og bank til forsikring og ejendomsmæglervirksomhed.

Vi søger en Analytiker til KoncernKredit/Analyseafdelingen. Analyseafdelingen er en del af Nykredits centrale kreditafdeling og har det overordnede ansvar for udvikling og vedligeholdelse af modeller og systemer til credit scoring. Afdelingen deltager desuden i en række udviklingsopgaver, hvor statistisk kompetence er krævet.

**Dine kvalifikationer er vigtige.** Du skal have en relevant videregående uddannelse som cand. stat., cand.scient.oecon. eller lign. – gerne suppleret med en Ph.d. Du er stærk i skriftlig kommunikation og behersker engelsk i skrift og tale. Du har et par års erhvervserfaring.

Dine menneskelige egenskaber er også vigtige. Jobbet forudsætter et tæt samarbejde med og kontakt til øvrige stabsenheder i Nykredit, hvorfor det er væsentligt, at du har gode samarbejdsevner og er i stand til at bevare overblikket i pressede situationer.

**Du får indflydelse på virksomheden og vores kunder.** Du får rig mulighed for en faglig og personlig udvikling i tæt samarbejde med Analyseafdelingens øvrige 5 medarbejdere og på tværs i organisationen. Hvis du vil høre mere om jobbets indhold, er du velkommen til at kontakte Analysechef Esben Ejsing på telefon 33 42 15 27.

**Sådan gør du.** Send din ansøgning, vedlagt cv og relevante eksamenspapirer senest den 19. november 2001, til Nykredit A/S, KoncernKredit, Analyseafdelingen, att.: Esben Ejsing, Bredgade 40, 1260 København K.



www.nvkredit.dk

Nyt om Navne

## Kalender 2001

(arrangementer annonceret i MEDDELELSER)

Dato	Med. nr.	Aktivitet
31/10	8/01	KU seminar: F. Bec: Tests for unit-root versus threshold specification with an application to the purchasing power parity
7/11	8/01	KU seminar: Carsten Wiuf: Inference about Population History from Genealogical Trees.
13-14/11		Todagesmode på DTU.
21/11	8/01	KU seminar: Johan Segers: On the multiplicative excesses over a large order statistic.
28/11	8/01	KU seminar: S. Johansen: Controllin inflation in a cointegrated vector autoregressive model with an application to US data.
28/11- 1/12	7/01	Workshop and pre-workshop course on New developments in Event History Analysis at University of Osio, Norway.
11/12		DSTS Juleforedrag på HCØ med efterfølgende middag.
9-13/6	7/01	NORDSTAT 2002 - the 19th Nordic Conference on Mathematical Statistics in Stockholm.

#### De adlines i 2001

Frist for indlevering af bidrag: 23. november kl. 12

25. januar

MEDDELELSER adkomme

3. december