UNIVERSITATEA TEHNICĂ DE CONSTRUCŢII BUCUREŞTI

UNIVERSITATEA BUCUREŞTI Facultatea de Matematică-Informatică

ACADEMIA ROMÂNĂ Institutul de Statistică Matematică şi Matematică Aplicată „Gheorghe Mihoc – Caius Iacob”

A 13-a CONFERINȚĂ A SOCIETĂȚII DE PROBABILITĂȚI ŞI STATISTICĂ

Universitatea Tehnica de Constructii Bucuresti
B-dul Lacul Tei nr. 122-124 sector 2, Bucuresti
Vineri 16 aprilie 2010

Comitetul Ştiinţific

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PROGRAMUL CONFERINȚEI SPSR 2010

Sala II-7

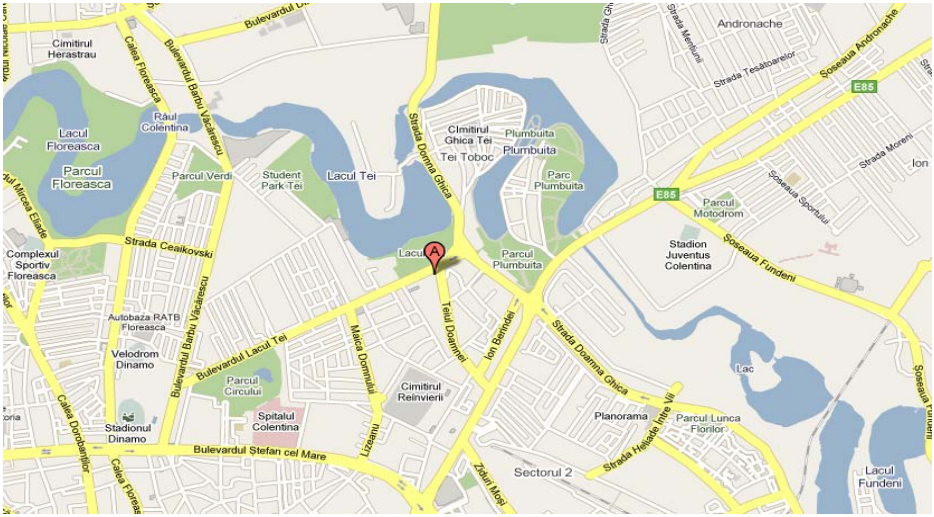
9:30 – 10:30	***Deschidere festivă, Adunare generală a SPSR.*** Ordinea de zi: raport financiar, diverse.
10:30 – 11:00	pauză
11:00 – 12:30	**Comunicări pe secțiuni**
12:30 – 14:00	Pauză de masă
14:00 – 18:00	**Comunicări pe secțiuni**
18:30	**Cină festivă**

Secțiuni

Probabilități şi procese stochastice

Statistică

Optimizare şi matematici aplicate



COMUNICĂRI PE SECȚIUNI

Vineri 28 aprilie orele 11:00 – 18:30

Secția: **Probabilități şi Procese Stochastice. Sala de Consiliu (Et. I)**

Ora 11:00 Conduce: Ioan Cuculescu

11:00 – 11:15 Aurel Spătaru (ISMMA): ***Renewal processes with finite set of interarrival distributions***

11:15 – 11:45 Vasile Stănciulescu (Universitatea Bucuresti): ***Numerical solution of the Dirichlet problem for linear parabolic SPDEs based on averaging over characteristics***

11:45 – 12:00 Romeo Negrea (Universitatea "Politehnica" Timisoara):

Numerical solution for a class of nonlinear system under regime switching

12:00 – 12:15 Eugen Paltanea (Universitatea Transilvania din Brasov): ***On stochastic comparison of order statistics***

12:15 – 12: 30 Dan Lascu, Ion Colțescu (Academia Navala "Mircea cel Batran", Constanta): ***Metric properties of some continued fraction expansions***

12:30 – 14 :00 Pauză de masă

Secția: **Probabilități şi Procese Stochastice. Sala de Consiliu (Et I)**

Ora 14:00 Conduce: Constantin Tudor

14:00 – 14:15 Mioara Buiculescu (Institutul de Statistica Matematica si Matematica Aplicata al Academiei Romane): ***On Tweedie's construction of an invariant measure***

14:15 – 14:30 Corina Grosu (Universitatea Politehnica Bucuresti): ***Certain applications of Chernoff bounds***

14: 30 – 14:45 Ana Maria Raducan (Institutul de Statistica Matematica si Matematica Aplicata Caius Iacob Gheorghe Mihoc): ***Compound sums - remarks and examples***

14:45 - 15:00 Mariana Sibiceanu (Institutul de Statistica Matematica si Matematica Aplicata, Academia Romana): ***Large deviations for occupation measures associated with mixed Markov chains***

15:00 – 15:15 Udrea Paun (Institutul de statistica matematica si matematica aplicata "Gheorghe Mihoc-Caius Iacob"): ***A structure theorem***

15:15 – 15:30 Mioara Varga (Univ. de Stiinte Agronomice si Medicina Veterinara Bucuresti): ***Some results about convergence in distribution of random variables***

15: 30 – 16:00 Pauză

Secția: **Probabilități şi Procese Stochastice. Sala de Consiliu (Et I)**

Ora 16:00 Conduce: Eugen Păltănea

16:00 – 16:15 Bogdan Gheorghe Munteanu (Academia Fortelor Aeriene "Henri Coanda"), ***About Rates of Convergence in the Limit Theorem***

16:15 – 16:30 Marius Rădulescu, Sorin Rădulescu (Institutul de Statistica Matematica si Matematica Aplicata), ***Limit of powers of matrices with applications to Markov chain*s**

16:30 – 16:45 Mioara Buiculescu, V. Petrehus, Gh. Zbaganu (ISMMA, Universitatea Tehnica de Constructii, Universitatea Bucuresti), ***On a conjecture concerning the integrated tail***

16:45 – 17:00 Barbu Vlad □tefan (Univ Rouen), Nikolaos Limnios . ***Some algebraic methods in semi-Markov processes.***

Secţia **Statistică, Sala II-6**

Ora 11:00 Conduce: Ştefan Ştefănescu

11:00 – 11:15 Luis Antonio Perez Gonzalez and Ion Vaduva (Polytehnic University of Toluca Valey (Mexic); University of Bucharest): ***Simulation of Some Mixed Lifetime Distributions***

11:15 – 11:30 Alexei Leahu, Carmen Lupu (Universitatea Ovidius, Constanta): ***On the new life time distribution***

11:30 – 11:45 Daniel Ciuiu (UTCB, IPE): ***Simulation of Queueing Systems with Many Stations and of Queueing Networks Using Copulas***

11:45 – 12:00 Sorin Baz (A.S.E. Bucuresti): ***On a MCMC procedure for simulating missing entries in a contingency table***

12:00 – 12:15 Aida Toma (Academia de Studii Economice din Bucuresti): ***Optimal robust M-estimators using Renyi pseudodistances***

12:15 – 12:30 Bianca Roman (Universitatea din Bucuresti): ***The ability of outliers detection in bioequivalence studies***

12:30 – 14:00 Pauză de masă

Secția **Statistică, Sala II-6**

Ora 14:00 Conduce: Raluca Vernic

14:00 – 14:15 Costin Apostol (Université Lille Nord de France) , ***Clustering repeated data***

14:15 – 14:30 Cornelia Enachescu (ISMMA): ***Multivariate data techniques for testing "similarity" of drug dissolution profiles***

14:30 – 14:45 Stefan Stefanescu (Universitatea Bucuresti): ***About a class of individual deprivation indices***

14:45 – 15:00 Daniel Ciuiu, Romica Trandafir si Radu Drobot (Universitatea Tehnica de Constructii, Bucuresti; Institutul de Prognoza Economica): ***The Utilization of Copula in Hydrology***

15:00 – 15:15 Mariana Popa (Universitatea din Bucuresti): ***Optimization in statistics. Bayes and non-Bayes estimates based on record values from a Weibull type model***

15:15 – 15:30 Mariana Popa, Supian Sudradjat (Universitatea din Bucuresti Romania, University of Bandung Indonesia), ***On maximum likelihood estimate and Fisher information matrix for an exponential-Poison type distribution***

15:30 – 16:00 Pauză

Secția **Statistică, Sala II-6**

Ora 16:00 Conduce: Ion Văduva

16:00 – 16:15 Ionut Bebu, Thomas Mathew (Georgetown University): ***Higher Order Inference for Tolerance Limits for a Gamma Distribution***

16:15 – 16:30 Vasile Preda, Eugenia Panaitescu, Alina Constantinescu (University of Bucharest, "Carol Davila" University of Medicine and Pharmacy, University "Valahia"): ***Bayes estimators of Modified Weibull distribution parameters using Lindley's approximation***

16:30 – 16:45 Raluca Vernic (Universitatea Ovidius Constanta): ***On estimating the parameters of a bivariate Pareto distribution by the EM algorithm***

16:45 – 17:00 Georgiana Popovici, Monica Dumitrescu (Universitatea Bucuresti): ***On some statistic properties of AR(2) processes involving Uniform distributions***

17:00 – 17:15 Elena Carmen Lupu (Universitatea Ovidius Constanta): ***On Exponential-Geometric-Max distribution***

17:15 – 17:30 Voicu Boscaiu (Institute of Mathematical Statistics and Applied Mathematics "Gheorghe Mihoc-Caius Iacob"): ***Modificările climatice şi dinamica comunităților de plante alpine***

17:30 – 17:45 Ion Mierlus-Mazilu, Luciana Majercsik (Technical University of Civil Engineering Bucharest), ***Interpretation of Structural Seismic Image with Genetic Algorithms***

Secția **Optimizare şi Matematici Aplicate, Sala II-7**

Ora 11:00 Conduce: Ion Stancu Minasian

11:00 – 11:15 Costel Balcau, Vasile Preda (Universitatea din Pitesti, Universitatea Bucuresti): ***Convex quadratic semi-infinite programming with entropic perturbation***

11:15 – 11:30 A. Bătătorescu, I. Antonescu (Universitatea din Bucureşti, Academia Navală "Mircea cel Bătrân" - Constanța): ***On local cone approximation in multiobjective optimization***

11:30 – 11:45 Iuliana Iatan (UTCB): ***New Representation for the Fuzzy Systems In Terms Of Some Additive and Multiplicative Subsystem Inferences***

11:45 – 12:00 Mihalcea Toni (Universitatea Bucuresti): ***Second-Order Optimality Conditions with Mangasarian-Fromovitz constraint qualification***

12:00 – 12:15 Ilie Marinescu (Universitatea Bucuresti): ***On a chance programming model under fuzzy distribution***

12:15 – 12:30 Monica Patriche (Universitatea din Bucuresti): ***Abstract fuzzy economies and fuzzy equilibrium pairs***

12:30 – 14:00 Pauză de masă

Secția **Optimizare şi Matematici Aplicate, Sala II-7**

Ora 14:00 **Conduce**: **Anton Bătătorescu**

14:00 – 14:15 Vasile Preda, Cristian Niculescu (Universitatea Bucuresti): ***On a generalized multifacility location problem***

14:15 – 14:30 Rusu Alin Marian (Universitatea Bucuresti): ***Maxentropic Reconstruction for Markov Chains***

14:30 – 14:45 I.M. Stancu-Minasian, Narcisa Teodorescu, Andreea Madalina Stancu (ISMMA, UTCB, ISMMA): ***On Dinkelbach-Type Algorithm for Solving Generalized Fractional Programming***

14:45 – 15:00 Sorin Demetriu, Alexandru Aldea (Universitatea Tehnica de Constructii Bucuresti si CNRRS): ***Modal parameter identification of buildings from ambient vibration records***

15:00 – 15:15 Silviu Sburlan (Acad. Navală "Mircea cel Bătrân", Constanța): ***Asupra unei probleme de optim în spații Banach***

15:15 – 15:30 Oana Rachieru (Universitatea Transilvania din Brasov): ***Numerical approximation of second Neumann eigenfunctions in triangular domains***

15:30 – 16:00 pauză

Secția **Optimizare şi Matematici Aplicate, Sala II-7**

Ora 16:00 **Conduce**: **Vasile Preda**

16:00 – 16:15 Sorin Demetriu, Gabriela Gabor, Alexandru Olăreanu (Universitatea Tehnica de Constructii Bucuresti): ***Reprezentări ale mişcărilor seismice puternice***

16:15 – 16:30 Sandra Teodorescu (Universitatea Ecologica din Bucuresti): ***Different approaches to model the loss distribution of a real data set from motor third part liability insurance***

16:30 – 16:45 Mircea Iulian (ASE Bucuresti): ***The Stochastic Mortality Models - An Application to The Annuity Market and Pension Schemes***

16:45 – 17:00 Horia Oprica (Univ.Politehnica Bucuresti): ***Analiza tenica si fundamentala in estimarea cotatiilor la bursa***

17:00 – 17:15 Clim Adriana (Universitatea Bucuresti): ***Inequalities and some results of entropy type with applications in cryptography***

17:15 – 17:30 Serban Florentin , Dedu Silvia (Ase Bucuresti): ***Volatilitatea unei actiuni-calea prin care se pot pierde sau cistiga bani la bursa***

17:30 – 17:45 Ovidiu Veghes (Academia de Studii Economice, Bucuresti): ***Alocatii valoare pentru jocuri cooperative cu un numar infinit de jucători***

REZUMATE

1. Costin APOSTOL (Université Lille Nord de France)

Clustering repeated data

Having repeated data experimental designs in bio-sciences is a very common practice. In such designs, each subject is characterized by several replications. In order to cluster the subjects we propose various algorithms and we employ various statistical methods. Mixed models are used to eliminate the noises, then we apply k-means and hierarchical classification on empirical cumulative distribution functions using the Kolmogorov-Smirnov criteria as dissimilarity between subjects. As repeated data designs are particularly expensive we are also proposing a study for determining the minimal number of replications per subject needed. All the methods were applied to a data set issued from an experiment against cancer, provided by the "Institut de Biologie de Lille", France.

2. Costel Balcau, Vasile Preda (Universitatea din Pitesti, Universitatea Bucuresti)

Convex quadratic semi-infinite programming with entropic perturbation

Entropy programming methods and the cutting plane method are applied to solve convex quadratic semi-infinite programs.

3. Sorin BAZ (A.S.E. Bucuresti)

On a MCMC procedure for simulating missing entries in a contingency table

In this paper one presents a MCMC procedure for simulating missing data in a contingency table, based on a modified Gibbs algorithm. For the proposal probability distribution one considers a random walk model and, alternately, some special-purpose distribution in an independent case, both aiming at the correlation coefficient.

4. A. Bătătorescu, I. Antonescu (Universitatea din Bucureşti, Academia Navală "Mircea cel Bătrân" - Constanţa)

On local cone approximation in multiobjective optimization

We present some results on semilocally convex, semilocally preinvex and semilocally invex functions and give a sufficient optimality condition for a multiobjective optimization problem. By recalling the definition of a class of generalized invex function by means of K-dimensional derivatives, where K is a local cone approximation, we obtain some optimality results.

5. Ionut Bebu, Thomas Mathew (Georgetown University)

Higher Order Inference for Tolerance Limits for a Gamma Distribution

The gamma distribution is widely used for the analysis of right-skewed positive data, and has found numerous applications in the environmental and engineering science. In this talk, we consider the derivation of upper and lower tolerance limits for the gamma distribution. The methodology we shall pursue is small sample asymptotics. The proposed procedures are evaluated using simulations, and an example is provided.

6. Voicu Boscaiu (Institute of Mathematical Statistics and Applied Mathematics "Gheorghe Mihoc-Caius Iacob")

Modificările climatice şi dinamica comunităţilor de plante alpine

Ne propunem să verificăm conjectura potrivit căreia încălzirea globală este deja observabilă în România la nivelul unor comunităţi de plante alpine. Beneficiem de posibilitatea utilizării a două seturi de date privind biodiversitatea, colectate în Munţii Rodnei în anii 2000 şi 2008. Concluziile analizei sunt surprinzătoare, cel puţin la prima vedere.

7. Mioara Buiculescu (Institutul de Statistica Matematica si Matematica Aplicata al Academiei Romane)

On Tweedie's construction of an invariant measure

We discuss in terms of the theory of excessive measures for continuous time Markov proceses the construction of an invariant measure given by Tweedie in the Markov chains context. This construction is based on the existence of an excessive measure of the process and of a special Harris recurrent set.

8. Mioara Buiculescu, V. Petrehus, Gh. Zbaganu (ISMMA, Fac de constructii, Universitatea Bucuresti)

On a conjecture concerning the integrated tail

Let F be a distribution function on the positive reals. Suppose it has finite moments Its integrated tail is the distribution function $F_I(x)$ defined as the area under its tail $1 - F$ on the interval $[0,x]$ divided by the total area. Such an operator occurs at least in ruin theory (it is the distribution of the severity of ruin) and in renewal processes (any renewal process becomes stationary provided the distribution function of the first renewal time is F_I). Tzvetan Ignatov conjectured that repeating this procedure the secuence $F,F_I,F_{II},F_{III},...$ must converge to an exponential distribution. We show that this is not true in general, it is true when the hazard ration of F has a limit to infinity or it is periodic and conjecture that Ignatov conjecture is true if the hazard rate has a Cesaro limit to infinity.

9. Daniel CIUIU (UTCB, IPE)

Simulation of Queueing Systems with Many Stations and of Queueing Networks Using Copulas

In this paper we will generate queueing systems with c stations where the inter-arrival time and the c services times depend through a c + 1 copula C. Using an analogue method we will generate closed and open queueing networks for which the service times (and the eventually interarrival times in the case of open networks) are also connected by a copula. The marginals can be exponential, Erlang or hyper-exponential.
AMS Subject Classification: 60K25, 90B22
Keywords: Queueing systems, copula, simulation.

10. Adriana Clim (Universitatea Bucuresti)

Inequalities and some results of entropy type with applications in cryptography.

The entropy of a random variable is defined in terms of its probability distribution and can be shown to be a good measure of randomness or uncertainty. Using some kinds of entropies and inequalities that result from their properties, the cryptographic system with its resistance can be characterized. From monotony of Tsallis relative entropy derives some estimations and characterization of uncertainty which is transmitted from input to output in information theory of secret system.

11. Sorin Demetriu, Alexandru Aldea (Universitatea Tehnica de Constructii Bucuresti si CNRRS)

Modal parameter identification of buildings from ambient vibration records

The identification of modal characteristics using recorded response data of existing buildings represents a useful tool for understanding of building's dynamic behavior. In this paper, the modal parameters of several buildings are estimated from ambient vibration records using different modal extraction methods: spectral analysis, eigen-system realization algorithm and random decrement.

12. Sorin Demetriu, Gabriela Gabor, Alexandru Olăreanu (Universitatea Tehnica de Constructii Bucuresti)

Reprezentări ale mişcărilor seismice puternice

Conținutul de amplitudini, durata efectivă şi compoziția spectrală caracterizează distructivitatea mişcării seismice a terenului. Se consideră diferite reprezentări scalare şi vectoriale utilizate pentru aceste caracteristici. Datele analizate sunt componentele de translație pe trei direcții ortogonale ale unor mişcări seismice înregistrate, în timpul cutremurelor puternice, in diferite condiții de teren.

13. Daniel Ciuiu, Romica Trandafir si Radu Drobot (UTCB; Institutul de Prognoza Economica)

The Utilization of Copula in Hydrology

In this paper we will estimate the parameters of the generalized Pareto marginals and the parameter θ of the connecting copula for the water debits and water volumes. We will also draw the isolines for $C(F(x),G(y)) = 1 - \varepsilon$ and for $C(F(x),G(y)) = F(x)+G(y)+ \varepsilon - 1$.

14. Cornelia Enachescu (ISMMA)

Multivariate data techniques for testing "similarity" of drug dissolution profiles

A new approach for testing “similarity” through comparision of drug dissolution profiles, based on multivariate data analysis is presented.The dissolution curve corresponding to three brands each of Sulfonamide and Oxicame tablets were prepared by dissolution measurements at multiple pre-specified time points.Reference and test data were simultaneosly subjected to principal component and cluster analysis and pairwise comparisions between the dissolution characteristics of lots of the same and different brands were carried out. All the results were compared with information provided by the difference (f1) and similarity (f2) factor tests. Unlike the f2 criterion, the proposed methods reflect variability within the individual dissolution curves, being also highly sensitive to profile variations.

15. Corina GROSU (Universitatea Politehnica Bucuresti)

Certain applications of Chernoff bounds

16. Iuliana Iatan (UTCB)

A New Representation for the Fuzzy Systems In Terms Of Some Additive and Multiplicative Subsystem Inferences

A new representation for fuzzy systems in terms of additive and multiplicative subsystem inferences of single variable is proposed. This representation enables an approximate functional characterization of the inferred output. The form of the approximating function is dictated by the choice of polynomial, sinusoidal, or other designs of subsystem inferences.

17. Mircea Iulian (ASE Bucuresti)

The Stochastic Mortality Models - An Application to The Annuity Market and Pension Schemes

În lucrare prezint câteva modele de mortalitate (Lee-Carter, APC, CBD) folosite la stabilirea prețului obligațiunilor pe longevitate (longevity bond). Aceste obligațiuni sunt utilizate pentru diminuarea riscului asiguratorilor printr-o compensare intre valoarea cupoanelor obligatiunilor si valoarea rentelor viagere, echilibru stabilit cu transformata lui Wang.

18. Dan LASCU, Ion COLTESCU (Academia Navala "Mircea cel Batran", Constanta)

Metric properties of some continued fraction expansions

In this paper we study metric properties of some continued fraction expansion, and we give the invariant measure and the natural extension of the map which generates this expansions. For these continued fraction expansions, we show formulae of probability about incomplete quotients.

19. Alexei Leahu, Carmen Lupu (Universitatea Ovidius, Constanta)

On the new life time distribution

As a new life time distribution we consider exponential zero truncated binomially mixed (EB) distribution. It is shown that in the conditions of the Poisson's Limit Theorem this distribution may by approximated by exponential distribution mixed with zero truncated Poisson (EP) distribution. We compare two techniques for statistical simulation of EB distribution too.

20. Elena Carmen Lupu (Universitatea Ovidius Constanta)

On Exponential-Geometric-Max distribution

This paper introduces a new distribution named Exponential-Geometric-max distribution obtained by compounding a particular exponential distribution with zero truncated geometrical distribution. Various properties of the distribution are discussed. The maximum likelihood estimates and the asymptotic variance and covariance of these estimates are obtained. Also, two statistic simulation algorithms are proposed.

21. Marinescu Ilie (Universitatea Bucuresti)

On a chance programming model under fuzzy distribution

We consider probability density functions where some of the parameters are uncertain. This paper develops a solution method chance constrained programming problem where the random variable in the chance costrained follows different fuzzy distributions. The methodology is justified through numerical examples.

22. Ion Mierlus-Mazilu, Luciana Majercsik (Technical University of Civil Engineering Bucharest)

Interpretation of Structural Seismic Image with Genetic Algorithms

We present the applicability and repeatability of a genetic algorithm to automatically correlate horizons across faults in seismic data images. This problem arises from geological sciences where it is a subtask of the structural interpretation of seismic images. The key problem is an optimisation task which cannot be solved exhaustively since it would cause exponential computational cost. Among stochastic methods, a genetic algorithm has been chosen to solve the application problem.

23. Mihalcea Toni (Universitatea Bucuresti)

Second-Order Optimality Conditions with Mangasarian-Fromovitz constraint qualification

Optimality conditions for multiobjective optimization problems have been studied extensively in the literature. Many efforts have been made to derive first-order necessary and/or sufficient conditions for a feasible solution to be an efficient solution. While the first-order necessary conditions give us extremal points, these points are not necessarily efficient solutions to the problem. In order that an extremal point be an efficient solution to the problem, some additional conditions are needed.

24. MUNTEANU BOGDAN GHEORGHE (Academia Fortelor Aeriene "Henri Coanda")

About Rates of Convergence in the Limit Theorem

The paper proposes to estimate the convergence rate of the density of sums of random variables towards the probability density of distribution χ^2. Similar studies have been made by W. Machet and W. Wolf in the paper "On the local central limit theorem" (1987), where the approximation of the probability density of the sequence of random variables is made with reference to the probability density of the standard normal distribution: $\sup_x |p_{Z_n}(x) - \phi(x)| = O\left(\frac{\sqrt{\ln \Delta_n}}{\Delta_n}\right)^{\gamma}$. The main result of this article consists in the Theorem 0.1 that establishes the convergence rate of the of the probability density of the sequence of random variables Y_n towards the probability density of χ^2 distribution of the variance one and three degrees of freedom.

Keywords: rate of convergence, characteristic function, sums of independent random variables.

2010 *Mathematics Subject Classification*: 60F05, 60E10, 60G50.

25. Romeo NEGREA (Universitatea "Politehnica" Timisoara)

Numerical solution for a class of nonlinear system under regime switching

We study a nonlinear system under regime switching and subject to an environmental noise. The stochastic differential equations with Markovian switching (SDEwMSs), one of the important classes of hybrid systems, have been used to model many physical systems that are subject to frequent unpredictable structural changes. The research in this area has been both theoretical and applied. Most of SDEwMSs do not have explicit solutions so it is important to have numerical solutions. The most important results in this paper is to develop a numerical scheme for SDEwMSs and estimate the error between the numerical and exact solutions. Also, we study the application of these system to control the electronic circuits.

26. Horia Oprica (Univ.Politehnica Bucuresti)

Analiza tenica si fundamentala in estimarea cotatiilor la bursa

Se examineaza o abordare alternativa a estimarii cursului bursier.

27. Monica Patriche (Universitatea din Bucurestiu)

Abstract fuzzy economies and fuzzy equilibrium pairs

In this paper we de.ne a model of abstract economy in which the preference correspondence is also split in two parts P_i and F_i and describe the equilibrium pair. We prove the existence of equilibrium pair of abstract economies in four cases. For example, the correspondences P_i have open lower sections and the correspondences B_i are upper ssemicontinuous or, other case treat the abstract economies with Q-majorized correspondences P_i and upper ssemicontinuous correspondences B_i. The paper is organized in the following way: Section 2 contains preliminaries and notation. The equilibrium theorems are stated in section 3.

28. Eugen Paltanea (Universitatea Transilvania din Brasov)

On stochastic comparison of order statistics

We discuss a class of results on stochastic comparison of order statistics. These results are directly related to the comparison of Markov models in reliability.

29. Udrea Paun (Institutul de statistica matematica si matematica aplicata "Gheorghe Mihoc-Caius Iacob")

A structure theorem

We state a structure theorem for products of stochastic matrices.

30. Luis Antonio Perez Gonzalez and Ion Vaduva (Polytehnic University of Toluca Valey (Mexic); University of Bucharest)

Simulation of Some Mixed Lifetime Distributions

The paper introduces some new lifetime distributions, as mixtures of some known distributions composed with a truncated (positive valued) Poisson distribution. Various methods for simulating introduced distributions are presented. Particularly, some rejection algorithms are developed, based on the enveloping rejection method.

31. Mariana Popa (Universitatea din Bucuresti)

Optimization in statistics. Bayes and non-Bayes estimates based on record values from a Weibull type model

In the paper we consider the modified exponential distribution and the Weibull distribution as the important models of life time models and compare Bayesian and non-Bayesian estimators based on record values of the scale and shape parameters, reliability and hazard functions. The Bayes estimates are obtained based on a conjugate prior for the scale parameter and a discrete prior for the shape parameter of the distribution. A practical example consisting of real record values using the data for strengths of 1.5 cm glass fibres reported by Smith and Naylor was used for illustration and comparison. The results may be of interest in a situation where only record values are stored.

32. Mariana Popa, Supian Sudradjat (Universitatea din Bucuresti Romania, University of Bandung Indonesia)

On maximum likelihood estimate and Fisher information matrix for an exponential-Poison type distribution

In this paper we consider the two-parameter distribution, known as exponential-Poisson (EP) distribution, which was introduced by Kus (2007). We derive expressions for its moment generating function and the r-th generalized moment. We also discuss maximum likelihood estimation and provide formulae for the elements of the Fisher information matrix. We also demonstrate its usefulness on a real data set.

33. Georgiana Popovici, Monica Dumitrescu (Universitatea Bucuresti)

On some statistic properties of AR(2) processes involving Uniform distributions

The paper addresses three classes of stationary AR(2) processes: UIAR(2), with (continuous) uniform innovations, UCLAR(2), with (continuous) uniform transition distributions, UAR(2), with (continuous) uniform marginal distribution. The following three aspects are discussed: (a) Constructive properties: UIAR(2) and UCLAR(2) are equivalent time series, constructed by full linear filtering of innovations. UAR(2) processes are obtained by random (soft) linear filtering of a sequence of discrete, uniformly distributed innovations. (b) Correlation structure: The covariance structure of UIAR(2) is the typical one, met in the inference for stationary time series. We establish the covariance structure of UAR(2) processes and investigate it by means of a simulation study. (c) Entropy rate: All three processes verify "the entropy invariance" property. That is, the entropy rate of the AR(2) time series equals the entropy of the corresponding sequence of innovations.

34. Vasile Preda, Cristian Niculescu (Universitatea Bucuresti)

On a generalized multifacility location problem

35. Vasile Preda, Eugenia Panaitescu, Alina Constantinescu (University of Bucharest, "Carol Davila" University of Medicine and Pharmacy, University "Valahia")

Bayes estimators of Modified Weibull distribution parameters using Lindley's approximation

In this paper, we have obtained the Bayes Estimators of Modified-Weibull distribution scale and shape parameters using Lindley's approximation (L-approximation) under various loss functions. The proposed estimators have been compared with the corresponding MLE for their risks based on corresponding simulated samples.

36. Oana Rachieru (Universitatea Transilvania din Brasov)

Numerical approximation of second Neumann eigenfunctions in triangular domains

We give the numerical implementation in Mathematica of a numerical algorithm for the approximation of the second Neumann eigenfunction of the Laplaceian in a triangular domain, and we apply it to obtain some numerical results.

37. Ana Maria Raducan (Institutul de Statistica Matematica si Matematica Aplicata Caius Iacob Gheorghe Mihoc)

Compound sums - remarks and examples

One of the most interesting actuarial problems is finding the distribution function of a compound sum. For the discret case, the Panjer algorithm is the most applied and known method in this sense. In this paper we will refer to another particular hypothesis that permits us to determin a formula for this distribution function.

38. Radulescu Marius (Institutul de Statistica Matematica si Matematica Aplicata)

Limit of powers of matrices with applications to Markov chains

Several conditions that imply the convergence of powers of arbitrary square matrices or of sequences of matrices that are built from powers of matrices to a square matrix are given. The description of the limiting matrix is also presented. Applications to finite Markov chains are discussed also.

39. Bianca Roman (Universitatea din Bucuresti)

The ability of outliers detection in bioequivalence studies

Before a new formulation of an existing drug can be introduced into the market, the American Food and drug Administration (FDA) requires that a study should be conducted in order to prove the fact that the new formulation is bioequivalent to the existing one. One of the problems commonly encountered in bioequivalence studies is that the data may contain some extremely large or small (i.e. outlying) observations that may influence the conclusion of bioequivalence. Thus, this talk intends to introduce an Exploratory Data Analysis technique, providing the facility of visualizing the data, to detect outlier subjects and to compare it with the estimate distance test using an extensive computer simulation procedure.

40. Rusu Alin Marian (Universitatea Bucuresti)

Maxentropic Reconstruction for Markov Chains

In this paper we will use the maximum entropy principle in choosing the Markov chain for which the entropy is maximum in the class of the chains that are compatible with the estimated data. Using the geometric programming method there will be constructed dual programming problems for the problems of minimizing the relative entropy with convex constraints in the case of the finite repartition. Using the dual problem there will be described an algorithm for obtaining a solution for the primal problem. In the end I will describe the problem of maximizing the entropy of the finite, homogeneous and stationary Markov chains with convex constraints.

41. Mariana Sibiceanu (Institutul de Statistica Matematica si Matematica Aplicata, Academia Romana)

Large deviations for occupation measures associated with mixed Markov chains

We present some certain results regarding the large deviation behavior of a sequence of occupation measures associated with a Markov chain, under suitable topological peoperties of the state space, when sufficient ergodicity conditions are assumed.

42. I.M. STANCU-MINASIAN, Narcisa TEODORESCU, Andreea Madalina STANCU (ISMMA, UTCB, ISMMA)

On Dinkelbach-Type Algorithm for Solving Generalized Fractional Programming

In this paper, we consider a variant of Dinkelbach algorithm for solving generalized fractional programming problems. In this algorithm, the new iterate is generated using the information given by previous iterates and not only by the last one. Finally, the algorithm is applied to the case of generalized linear fractional programming.

43. Aurel Spătaru (Academia Romana)

Renewal processes with finite set of interarrival distributions

We consider a renewal process based on a sequence of independent non-negative interarrival times whose distributions are taken from a finite set. We extend the classical central limit theorem obtained by Takács.

44. Serban Florentin , Dedu Silvia (Ase Bucuresti)

Volatilitatea unei actiuni-calea prin care se pot pierde sau cistiga bani la bursa

În acesta prezentare este descrisa « volatilitatea » unei actiuni impreuna cu riscul asumat printr-o investitie la bursa. Sunt prezentate 2 metode prin care se poate masura volatilitatea unei actiuni : coeficientul beta si indicatorul tehnic ATR. Este prezentat, in continuare, modul de calcul al coeficientului beta, sunt date cateva exemple apoi sunt comentate 2 grafice : unul al unui indice bursier si altul al unei actiuni. In ultima parte a materialului este prezentat unul dintre indicatorii cel mai des folositi pentru a masura volatilitatea unei actiuni : Average True Range(ATR). Sunt prezentate metode de calcul ale acestui indicator, sunt interpretate valori ale acestuia, iar utilitatea acestui indicator este exemplificata pe cazul unei actiuni listate la bvb.

45. VASILE STANCIULESCU (Universitatea Bucuresti)

Numerical solution of the Dirichlet problem for linear parabolic SPDEs based on averaging over characteristics

Numerical methods for the Dirichlet problem for linear parabolic stochastic partial differential equations are constructed. The methods are based on the averaging-over-characteristics formula and the weak-sense numerical integration of ordinary stochastic differential equations in bounded domains. Their orders of convergence in the mean-square sense and in the sense of almost sure convergence are obtained. The Monte Carlo technique is used for practical realization of the methods. Results of some numerical experiments are presented.

46. Stefan Stefanescu (Universitatea Bucuresti)

About a class of individual deprivation indices

We'll consider that the individual deprivation index $\Delta_k(\underline{v},P)$ of any person k from a given population P depends only on he income distribution $\underline{v}$ in P. Imposing appropriate axioms we deduce the expression of the function $\Delta_k(\underline{v},P)$. The unknown parameters of an individual deprivation index are estimated taking into consideration the subjective perceptions of the individuals from the population P. In this context the known Yitzhaki's coefficient results as a particular case.

47. Sandra TEODORESCU (Universitatea Ecologica din Bucuresti)

Different approaches to model the loss distribution of a real data set from motor third part liability insurance

The paper examined several different approaches to model the loss distribution for a real data set on compensations, paid in 2008 by a Romanian insurance company for motor third part liability insurance.

48. Aida Toma (Academia de Studii Economice din Bucuresti)

Optimal robust M-estimators using Renyi pseudodistances

Using Renyi pseudodistances, we define new standardized sensitivities which measure the degree of robustness of an estimator under infinitesimal outlier contamination. Following the Hampel approach, we construct optimal robust M-estimators by maximizing the asymptotic efficiency subject to an upper bound on the standardized sensitivity. The classical optimal Bi-robust M-estimator based on information standardized sensitivity is particularly obtained. The standardized sensitivities based on Renyi pseudodistrances have the advantage to be invariant with respect to model reparametrizations and consequently the corresponding optimal estimators are equivariant.

49. Mioara Varga (Univ. de Stiinte Agronomice si Medicina Veterinara Bucuresti)

Some results about convergence in distribution of random variables

Abstract: This paper presents some results about convergence in distribution of random variables. We define concepts as the weak convergence of probabilities, the function of Kolmogorov, the tightness's family of probability, the real Brownian motion, and finally, we refer to the Invariance Principle as one of the notable results in the intervening notions outlined above. Keywords: convergence in distribution of random variables, tightness of family of probability, real Brownian motion

50. Ovidiu Veghes (Academia de Studii Economice, Bucuresti)

Alocatii valoare pentru jocuri cooperative cu un numar infinit de jucători

51. Raluca Vernic (Universitatea Ovidius Constanta)

On estimating the parameters of a bivariate Pareto distribution by the EM algorithm

Asimit et al. 2010 [On a multivariate Pareto distribution. Insurance: Mathematics and Economics 46, 308-316] introduced a multivariate Pareto distribution of the second kind and presented its application to insurance pricing (capital allocation). Therefore, the parameters estimation becomes of interest. Unfortunately, the problem is not trivial, e.g. the maximum likelihood method is not directly applicable. As an alternative, we suggest using the EM algorithm that we present in detail and numerically illustrate for the bivariate case.

52. Vlad Stefan Barbu (Université de Rouen), Nikolaos Limnios (Université de Technologie de Compiègne,)

Some algebraic methods in semi-Markov processes

This article is concerned with algebraic methods developed for discrete-time semi-Markov processes with countable state space. The results presented here are a generalization of those from Barbu, Boussemart, and Limnios (2004), summarized also in Barbu and Limnios (2008), where the basic object analyzed was a finite state space semi-Markov chain. After a short presentation of infinite matrices and associated operations, we describe the discrete-time semi-Markov setting. Afterwards, we present some elements of Markov renewal theory, and we apply these results for obtaining mean hitting times of such a process. Possible fields of application of such models are reliability, survival analysis, queueing systems, finance or insurance.

53. Emiliana Ursianu, Radu Ursianu, Victor Ursianu.

Model Rayleigh Generalizat cu aplicații

Modelul Rayleigh genaralizat include cazuri particulare cunoscute cum ar fi legea Maxwell şi modelul putere. Se construiesc estimatori pentru parametrii modelelor. Se arată că sunt nedeplasați, li se calculează varianța şi se dau algoritmi de calcul. Exemplele sunt luate din domeniul energetic.