

3rd World Congress of  
The Bernoulli Society  
and  
57th Annual Meeting of  
The Institute of Mathematical Statistics

June 20-25, 1994

Announcement and Complete Program

The University of North Carolina at Chapel Hill  
The William and Ida Friday Continuing Education Center

Organization

Program Committee:

M. Eaton, (Chairman)	R. Adler	A. P. Dawid
P. Diaconis	P. Donnelly	H. Foellmer
J. K. Ghosh	P. Hall	N. Keiding
R. Z. Khasminskii	G. Kitagawa	H. Kuensch
T. Lai	T. Liggett	V. Nair
J. Neveu	D. Nolan	R. Rebolledo
N. Reid		

ex officio:

R. Gill	M. Hahn	I. Johnstone
M. R. Leadbetter	J. Sacks	G. Simons

Organizing Committee:

CONGRESS@STAT.UNC.EDU	R. Berger	S. Cambanis
E. Carlstein	I. Chakravarti	M. Davidian
C. Ji	J. Maxwell	R. Rodriguez
F. Seillier-Moiseiwitsch	G. Simons	L. Stefanski
G. Styan	Y. Truong	W. van Zwet
R. Wolpert		

Executive Committee:

S. Cambanis	E. Carlstein
R. Leadbetter	W. van Zwet

Scientific Program

The format of the Congress will be similar to that of the Second World Congress held in Uppsala in 1990, blending Bernoulli Society and IMS traditions. A complete program for the Congress is at the end of this file.

General Information

The Congress will be held at The William and Ida Friday Continuing Education Center, the University of North Carolina at Chapel Hill. The Friday Center is a state-of-the-art continuing education facility located a short distance from the center of campus and convenient to bus lines. The University of North Carolina is the oldest state university in the United States; the Congress will take place during the University's Bicentennial Observance year and has been designated an official Bicentennial event.

Location

The Chapel Hill area offers many cultural, sporting, dining, and leisure activities. The area is a cosmopolitan mix of cities, rural landscapes, and small villages. Museums, performing arts centers, historical and architectural landmarks, restaurants, shops of all descriptions, and sporting events are easily accessible throughout the Triangle, which is home to major universities, the state capital, and the Research Triangle Park. Chapel Hill's weather in late June is typically sunny, with daytime temperatures in the mid-80s F (approximately 30 C) and nighttime temperatures of 60-70 F (15-20 C).

## Travel

Chapel Hill and The Friday Center are in central North Carolina, approximately 15 miles from the Raleigh Durham International Airport (RDU) and near interstate highways 40 and 85.

## Registration

Participants are requested to register using the enclosed registration form. Fees must be paid in U.S. dollars drawn on a U.S. bank and must accompany the registration form. Fees may be paid using VISA or MasterCard. The registration fees are:

	Before February 1, 1994	After February 1, 1994
Participants	\$200	\$220
Accompanying persons	\$15	\$20

The fee covers all sessions, coffee and tea breaks, and a welcoming reception. Refunds, less a \$25 administrative fee, will be made to participants who cancel their registration in writing prior to June 3, 1994. After June 3, 1994, no refunds can be made.

Conference registration will begin on Sunday evening, June 19, 1994, at the Carolina Inn on the UNC campus and will continue on Monday morning, June 20, at The Friday Center.

## Social Events

A variety of reasonably-priced side trips and Wednesday excursions are being planned, including tours of neighboring academic and research institutions as well as such North Carolina favorites as potteries, a colonial village, an outdoor drama, Civil War sites, primate and carnivore centers, AND a habitat zoo. A southern-style banquet is planned at an approximate cost of \$30 per person. Information regarding tours and their costs will be included in IMS Bulletin announcements.

## Accommodations

A number of housing options are available, including hotels and dormitories. Prices are \$30 per night for dormitories and from \$44 to \$99 per night for hotels. Participants from the United States are responsible for making their own housing arrangements. The conference staff can assist foreign participants in making arrangements; please provide the requested information on your registration form if you need assistance.

To ensure your accommodation reservation, you are advised to reserve your room no later than May 1, 1994. Rooms will be available on a first-come, first-served basis.

Rooms have been set aside at the following establishments:

High: \$45-89 singles, \$55-99 doubles:

### Carolina Inn

PO Box 1110, Chapel Hill, NC 27514

phone: 1-800-962-8519

FAX: 919-962-3400

Reservation deadline: May 30, 1994

The only hotel located in the center of Chapel Hill and on the UNC campus, the charming Carolina Inn features the Garden Room cafeteria and the Hill Room restaurant.

### The Siena Hotel

1505 East Franklin Street, Chapel Hill, NC 27514

phone: 1-800-223-7379

FAX: 919-968-8527

Reservation deadline: June 1, 1994

The Siena is located one mile northeast of campus. It is a four-diamond establishment with a restaurant, concierge, and free

local transportation.

Omni Europa Hotel

1 Europa Drive, Chapel Hill, NC 27514

phone: 1-800-843-6664

FAX: 919-968-3520

Reservation deadline: May 30, 1994

The Omni Europa is a continental-style hotel located two miles from the UNC-Chapel Hill campus. It is noted for its fine restaurants and has an outdoor pool and tennis courts.

Moderate: \$44 singles, \$58 doubles

Best Western University Inn

Highway 54 East, Chapel Hill, NC 27514

phone: 1-800-528-1234

FAX: 919-967-0959

Reservation deadline: May 30, 1994

The University Inn is a colonial-style facility located approximately one-half mile from The Friday Center and one mile from the UNC campus. It has an outdoor swimming pool.

Several other hotels in the moderate price range are located nearby but do not reserve blocks of rooms. These include:

Comfort Inn University

3508 Mount Moriah Rd., Durham, NC 27707

phone: 1-800-221-2222

Hampton Inn

1740 N. Fordham Blvd., Chapel Hill, NC 27514

phone: 1-800-426-7866

Holiday Inn

1301 N. Fordham Blvd., Chapel Hill, NC 27514

phone: 1-800-HOLIDAY

The Red Roof Inn

5623 Chapel Hill Blvd., Durham, NC 27707

phone: 1-800-843-7663

Budget: \$30 singles or doubles

UNC Residence Halls

CB# 5510 Community Service Building, UNC-Chapel Hill, Chapel Hill, NC 27599-5510

phone: 1-800-UNC-STAY

FAX: 919-962-1006

Reservation deadline: June 9, 1994

Dormitory accommodations are available on the UNC campus.

Further Information

Address inquiries to:

IMS/Bernoulli Society Meeting  
Conferences and Institutes  
UNC-CH Division of Continuing Education  
PO Box 3392  
Chapel Hill, NC 27515-3392  
phone: 1-800-845-8640  
FAX: 919-962-2061  
E-mail: TPC.CE@MHS.UNC.EDU

The following meetings are scheduled (some tentative) close to the conference period and may be of interest to participants:

Summer Research Conference on Stochastic Geometry. June 11-17, Mt. Holyoke College, S. Hadley, MA. (Contact Rick Vitale, University of Connecticut, RVITALE@UCONNVM.UCONN.EDU)

IMS/ASA Spring Research Conference on Industrial Statistics. June 13-14, National Institute of Statistical Sciences, Research Triangle Park, NC. (Contact Jeff Wu, University of Waterloo, jwu@poppy.waterloo.edu. or Vijay Nair, AT&T Bell Labs, unn@research.att.com.)

Interface '94. June 15-18, Research Triangle Park, NC. (Contact John Sall, SAS Institute, sal@sas.com.)

IMS Directions in Probability Workshops. June 19-20, Chapel Hill, NC. (Contact Marjorie Hahn, Tufts University, mhahn@jade.tufts.edu.)

IMS Directions in Sequential Analysis Workshop. June 18-19, Chapel Hill, NC. (Contact B.K. Ghosh, Lehigh University, bkg0@lehigh.edu)

Stochastic Partial Differential Equations Workshop. June 19-21, Chapel Hill, NC. (Contact G. Kallianpur, University of North Carolina, gk@stat.unc.edu.)

Western Regional IMS/WNAR meeting. June 27-29, Los Angeles, CA. (Contact Don Ylvisaker, UCLA, ndy@math.ucla.edu.)

Registration Form  
3rd World Congress of the Bernoulli Society  
57th Annual Meeting of the Institute of Mathematical Statistics

Name

\_\_\_\_\_

Affiliation

\_\_\_\_\_

Address

\_\_\_\_\_

Daytime phone number

\_\_\_\_\_

U.S. Participants only:  
Social Security number

\_\_\_\_\_

Provision of the social security number is voluntary;  
it will be used for internal record-keeping.

Contributed papers:

If you plan to submit an abstract, please indicate the title of your paper and the general subject area.

Title:

\_\_\_\_\_

Subject area:

\_\_\_\_\_

Fees

Payment must be made in U.S. dollars drawn on a U.S. bank and must accompany this form.

	Before February 1, 1994	After February 1, 1994
_____ Participants	\$200	\$220
_____ Accompanying persons	\$15	\$20

Total enclosed: \_\_\_\_\_  
(Excursions and banquet costs to be announced later.)

Payment by:

Check (made payable to Division of Continuing Education;  
must be in U.S. dollars drawn on a U.S. bank)  
 MasterCard  VISA  
Card number \_\_\_\_\_  
Exp. date \_\_\_\_\_  
Cardholder's  
signature \_\_\_\_\_

Foreign participants only:

The Division of Continuing Education can assist you in making housing arrangements. Please indicate your first, second, and third choice of accommodation:

High price range (luxury hotel)  
 Moderate price range (chain hotel)  
 Budget price range (dormitory room)

Send this registration form with your payment to:

IMS/Bernoulli Society Meeting  
Conferences and Institutes  
UNC-CH Division of Continuing Education  
PO Box 3392  
Chapel Hill, NC 27515-3392  
phone 1-800-845-8640; 919-962-2643  
FAX 919-962-2061  
E-mail TPC.CE@MHS.UNC.EDU

IMS/Bernoulli Society Meeting  
Conferences and Institutes  
UNC-CH Division of Continuing Education  
PO Box 3392  
Chapel Hill, NC 27515-3392

Organizing Committee chairman:  
Ross Leadbetter UNCMRL@UNCMVS.OIT.UNC.EDU

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PROGRAM

Monday, June 20, 9:00 a.m.  
OPENING CEREMONY

Monday, June 20, 9:30 a.m.

1. KOLMOGOROV LECTURE

BRANCHING PROCESSES AS POPULATION DYNAMICS, Peter Jagers, Chalmers University of Technology

Monday, June 20, 11:00 a.m.

2. WALD MEMORIAL LECTURE (I)

POLYNOMIAL SPLINES AND THEIR TENSOR PRODUCTS IN FUNCTIONAL MODELING, Charles J. Stone, University of California, Berkeley

Monday, June 20, 1:30 p.m.

3. DEVELOPMENTS IN PROBABILITY AND THEIR APPLICATIONS IN STATISTICS (III)  
Invited Paper Session and Directions in Probability Workshop

Organizers: J. Wellner, University of Washington and R. Dudley,  
Massachusetts Institute of Technology  
Chair: E. Gine, University of Connecticut at Storrs

NONPARAMETRIC MAXIMUM LIKELIHOOD ESTIMATORS, S. van de Geer, University  
of Leiden

M-ESTIMATORS VIA EMPIRICAL PROCESS METHODS, A. van der Vaart,  
University of Amsterdam

THE DELTA METHOD AND EMPIRICAL PROCESSES, V. Koltcinskii, University of  
Geissen

4. COMPUTATIONALLY INTENSIVE METHODS IN STATISTICS

Invited Paper Session

Organizer: C. Geyer, University of Minnesota

Chair: G. Churchill, Cornell University

AN OVERVIEW OF MARKOV CHAIN MONTE CARLO, C. Geyer, University of  
Minnesota

ANALYSIS OF SPATIAL DATA BY MCMC METHODS, A. Penttinen, University of  
Jyvaskyla, Finland

PENALIZED DISCRIMINANT ANALYSIS, R. Tibshirani, University of Toronto

5. SEQUENTIAL METHODS IN MEDICINE

Invited Paper Session

Organizer: D. Siegmund, Stanford University

Chair: D. Siegmund, Stanford University

MONITORING MEDICAL STUDIES WITH SURVIVAL ENDPOINTS: SOME RECENT  
DEVELOPMENTS AND UNRESOLVED ISSUES, D. Y. Lin, University of Washington

A TEST FOR A STRATA EFFECT IN A SEQUENTIALLY DESIGNED CLINICAL TRIAL,  
B. Yakir, University of Rochester

SEQUENTIAL TESTS OF BIOEQUIVALENCE, D. Rabinowitz, Columbia University

6. STOCHASTIC PARTIAL DIFFERENTIAL EQUATIONS (II)

Contributed Paper Session and SPDE Workshop

THE WAVE EQUATION IN 3-DIMENSIONS EXISTENCE OF SOLUTIONS, Nikos  
Frangos, Hofstra University and R. Dalang, Tufts University

EFFECTIVE DIFFUSION OF SINGULARLY PERTURBED EQUATIONS Andrey L.  
Piatnitski, Lebedev Physical Institute

EXISTENCE, UNIQUENESS AND INVARIANT MEASURES FOR STOCHASTIC SEMILINEAR  
EQUATIONS, Benjamin Goldys, The University of New South Wales

FOURIER TRANSFORM IN WHITE NOISE CALCULUS AND ITS APPLICATION TO HEAT  
EQUATION, Isamu Doku, Hui-Hsiung Kuo and Yuh-Jia Lee, Louisiana State  
University

ON BEHAVIOUR OF SOLUTIONS OF EVOLUTION EQUATIONS PERTURBED BY DIFFUSION  
PROCESSES, Yuriy V. Kolomiets, Institute of Applied Mathematics and  
Mechanics

STOCHASTIC DIFFERENTIAL EQUATION WITH PARTIAL DERIVATIVES, Ilya  
Gikhman, Institute of Applied Mathematics and Mechanics

PARAMETER ESTIMATION FOR INDIRECT OBSERVATION OF SIGNAL IN GAUSSIAN  
NOISE, Betty V. Lazareva, Wayne State University

## 7. MULTIVARIATE STATISTICS

Contributed Paper Session

PRINCIPAL COMPONENTS SELECTION BY MEAN DIFFERENCE OF COMPLEXITY, Guoqi Qian, George Gabor and R.P. Gupta, Dalhousie University

ON THE APPROPRIATENESS AND IMPROVEMENT OF ORDERING BY CORRESPONDENCE ANALYSIS, Rouh-jane Chou, National Tsing Hua University

ON ESTIMATING THE MEAN OF A MULTIVARIATE NORMAL POPULATION WITH CONSTRAINTS, Eric P. Marchand, University of New Brunswick

DOUBLE SHRINKAGE ESTIMATORS IN THE GMANOVA MODEL, Takeaki Kariya, Hitotsubashi University; Yoshihiko Konno, Ishinomaki Senshu University; and William E. Strawderman, Rutgers University

RELATIVE POTENCY OF TWO PREPARATIONS APPLIED IN REINFORCED BLOCK DESIGN WITH MULTIVARIATE RESPONSES, Zofia Hanusz, Agriculture University of Lublin

REML ESTIMATION: ASYMPTOTIC BEHAVIOR AND RELATED TOPICS, Jiming Jiang, University of California, Berkeley

COMPARING NORMAL LINEAR EXPERIMENTS FOR QUADRATIC ESTIMATION, Czeslaw Stepniak, Agricultural University of Lublin

## 8. WAVELETS

Special Topics Contributed Paper Session

Organizer: Guy P. Nason, University of Bristol

Chair: Bernard W. Silverman, University of Bristol

WAVELET ESTIMATORS: ADAPTING TO UNKNOWN SMOOTHNESS, Anatoli Juditsky, IRISA/INRIA

GRAPHICAL DISPLAYS OF WAVELETS, Duncan J. Murdoch, Rekha Agrawal, and Malcolm A. Binns, Queen's University

WAVELET REGRESSION USING CROSS-VALIDATION, Guy P. Nason, University of Bristol

WAVELET-BASED CURVE ESTIMATION FOR DEPENDENT DATA, Peter Hall, Australian National University; Prakash Patil, Australian National University; and Young K. Truong, University of North Carolina

RANDOM DENSITIES VIA WAVELETS, Brani Vidakovic, Duke University

NONLINEAR WAVELET METHODS FOR LOCAL-STATIONARY TIME SERIES, Rainer von Sachs, University of Kaiserslautern

Monday, June 20, 3:45 p.m.

## 9. ESTIMATION AND EFFICIENCY

Contributed Paper Session

FULLY EFFICIENT ESTIMATION IN NEYMAN-SCOTT PROBLEMS, Richard P. Waterman, University of Pennsylvania and Bruce G. Lindsay, Pennsylvania State University

GEOMETRIC CONSIDERATION OF ESTIMATING FUNCTIONS FOR SEMIPARAMETRIC STATISTICAL MODELS, Motoaki Kawanabe and Shun-ichi Amari, University of Tokyo

EXISTENCE AND STRONG CONSISTENCY OF MAXIMUM LIKELIHOOD ESTIMATES FOR EXPONENTIAL FAMILIES, Weiwen Miao and Marjorie G. Hahn, Tufts University

A RAO-BLACKWELL THEOREM FOR CONVEX MATRIX LOSS FUNCTIONS, Kenneth O. Nordstrom, University of Helsinki

EFFICIENCY OF WEIGHTED AVERAGES, W. J. Hall, University of Rochester

NONPARAMETRIC CDF ESTIMATION FROM STRATIFIED SAMPLES, Yuly Koshevnik, Southern Methodist University

10. CONVERGENCE OF MARKOV CHAIN ALGORITHMS  
Contributed Paper Session

GEOMETRIC CONVERGENCE OF HASTINGS AND METROPOLIS ALGORITHMS, Richard L. Tweedie, Colorado State University; Kerrie L. Mengersen, Queensland University of Technology; and Gareth O. Roberts, University of Cambridge

GEOMETRIC CONVERGENCE RATES FOR STOCHASTICALLY ORDERED MARKOV CHAINS, Robert B. Lund, The University of Georgia

CONVERGENCE RATE OF MARKOV CHAIN MONTE CARLO ALGORITHM RELATED TO SOME SPATIAL POINT PROCESSES, Elisabeti Kira, University of North Carolina

SECOND LARGEST EIGENVALUE ESTIMATION FOR DETERMINING HOW MANY ITERATIONS FOR MARKOV CHAINS, Steven T. Garren, University of North Carolina

COMPUTATIONAL COMPLEXITY OF MARKOV CHAIN MONTE CARLO METHODS, Arnoldo Frigessi, University of Venice; Fabio Martinelli, Universita di Roma III; Julian Stander, University of Plymouth

MONTE CARLO MARKOV CHAIN LIKELIHOOD RATIO TEST AND PARAMETER VARIANCE ESTIMATION METHODS FOR DEPENDENT DATA, Jonathan M. Graham, North Carolina State University

11. SEQUENTIAL ANALYSIS  
Contributed Paper Session

CONSISTENCY OF THE MLE VERSION OF CONTINUAL REASSESSMENT METHOD, Larry Z. Shen, Procter and Gamble Company and John O'Quigley, University of California, San Diego

SEQUENTIAL ALLOCATION RULES FOR MULTI-ARMED CLINICAL TRIALS, Steve Coad, University of Michigan

MAXIMUM LIKELIHOOD FOR AN ADAPTIVE ALLOCATION SCHEME, William F. Rosenberger, George Washington University; Nancy Flournoy, American University; and Stephen D. Durham, University of South Carolina

ACCELERATED SEQUENTIAL ESTIMATION OF THE LARGEST LOCATION PARAMETER IN THE NORMAL AND NEGATIVE EXPONENTIAL CASES, Nitis Mukhopadhyay, University of Connecticut and Tumulesh K.S. Solanky, University of New Orleans

FINE-TUNED BOUNDED RISK SEQUENTIAL POINT ESTIMATION OF THE MEAN OF AN EXPONENTIAL DISTRIBUTION, Nitis Mukhopadhyay, University of Connecticut and Sujay Datta, University of New Orleans

ASYMPTOTIC OPTIMALITY OF SEQUENTIAL TESTS FOR NONHOMOGENEOUS PROCESSES, Alexander G. Tartakovsky, UCLA

FINITE SAMPLE BEHAVIOR IN SEQUENTIAL BAYES REGRESSION, Robert M. Hoekstra and Thomas C. Chenier, East Carolina University

A MINIMAX OPTIMAL STOP RULE FOR RELIABILITY CHECKING, Jose M. Gouweleew, Vrije Universiteit



12. BROWNIAN MOTION AND ANALYSIS (III)

Invited Paper Session and Directions in Probability Workshop  
Organizers: R. Williams, University of California at San Diego  
and M. Yor, Universite Pierre et Marie Curie, Paris  
Chair: Susan Lee, Cornell University

THE LIE ALGEBRA OF THE ITERATED GRADIENTS OF A MARKOV GENERATOR, M.  
Ledoux, Universite Paul Sabatier, Toulouse

BROWNIAN MOTION AND NEVANLINNA THEORY, K. Carne, Cambridge University

AN APPLICATION OF SUPERPROCESSES TO BLOWUP OF SOLUTIONS OF A SEMILINEAR  
HEAT EQUATION, A. Etheridge, University of Edinburgh

13. NEW ASPECTS OF MULTIVARIATE ANALYSIS

Invited Paper Session  
Organizer: S. Konishi, Institute of Statistical Mathematics, Tokyo  
Chair: A. K. Gupta, Bowling Green State University

SADDLE POINT APPROXIMATIONS IN MULTIVARIATE ANALYSIS, R. W. Butler,  
Colorado State University

DISCRIMINANT ANALYSIS, TREE-STRUCTURED CLASSIFICATION AND SLICED  
INVERSE REGRESSION, Ker-Chau Li, University of California, Los Angeles  
and C. H. Chen, Academia Sinica, Taipei

INFORMATION CRITERIA IN MULTIVARIATE ANALYSIS, S. Konishi and G.  
Kitagawa, Institute of Statistical Mathematics, Tokyo

14. ENGINEERING APPLICATIONS OF WAVELETS

Royal Statistical Society Session

Tuesday, June 21, 8:30 a.m.

15. FOUNDATIONS (I)

Contributed Paper Session

DISTRIBUTIONAL INFERENCE: A LOSS FUNCTION APPROACH, A. H. Kroese,  
University of Groningen

BAYESIAN ROBUSTNESS UNDER SOME CLASSES OF LOSS FUNCTIONS, Fabrizio  
Ruggeri, Duke University

GLOBAL AND CONDITIONAL TESTS, Benito V. Frosini, Universita Cattolica

ON THE VALUE OF INFORMATION IN MULTI-AGENT DECISION THEORY, Bruno  
Bassan, Politecnico di Milano

QUALITATIVE AND COMPARATIVE PROBABILITY ASSESSMENTS, Giuliana Regoli,  
Universita di Perugia

SOME CHARACTERISATIONS OF CONDITIONAL COHERENT PROBABILITIES, Lucio  
Crisma, Universita di Trieste

THE TRANSFORMATION OF THE NON-PARAMETRIC STATISTICAL MANIFOLD UNDER  
CONDITIONING AND SAMPLING, Giovanni Pistone, Politecnico di Torino and  
Maria Piera Rogantin, Universita di Genova

16. POSTER SESSION: TOPICS IN NONPARAMETRIC STATISTICS

Contributed Paper Session

EFFECT OF INTEGRAL-TRANSFORM SMOOTHING IN FINITE SAMPLES, Cheng Cheng,

Upjohn Laboratories

SADDLEPOINT AND EDGEWORTH EXPANSIONS WITH EXACT COEFFICIENTS, Sorana Froda, Universite du Quebec a Montreal and Constance van Eeden, University of British Columbia

17. DEVELOPMENTS IN PROBABILITY AND THEIR APPLICATIONS IN STATISTICS (IV)

Invited Paper Session and Directions in Probability Workshop  
Organizers: J. Wellner, University of Washington and R. Dudley,  
Massachusetts Institute of Technology  
Chair: J. Wellner, University of Washington

U-PROCESSES AND APPLICATIONS, E. Gine, University of Connecticut at Storrs

EMPIRICAL PROCESSES GENERATED BY ABSOLUTELY REGULAR SEQUENCES, E. Rio, University of Paris at Orsay

EXPONENTIAL BOUNDS FOR SUPREMA, M. Talagrand, Ohio State University

18. STATISTICAL ESTIMATION PROBLEMS FOR STOCHASTIC PDE'S

Invited Paper Session and SPDE Workshop  
Organizer: R. Khasminskii, Wayne State University  
Chair: R. Khasminskii, Wayne State University

IDENTIFICATION OF SPATIALLY DEPENDENT PARAMETERS IN INFINITE DIMENSIONAL SYSTEMS, A. Bagchi, University of Twente, Netherlands

ON ASYMPTOTIC PROPERTIES OF MLE FOR PARABOLIC STOCHASTIC PDE, B. Rozovskii, University of Southern California

ON SOME ESTIMATION PROBLEMS IN FUNCTION SPACES, I. Ibragimov, Mathematical Institute of the Russian Academy of Science and R. Khasminskii, Wayne State University

19. THE HUMAN GENOME PROJECT AND MOLECULAR EVOLUTION

Invited Paper Session  
Organizer: D. J. Balding, Queen Mary and Westfield College, London  
Chair: E. Thompson, University of Washington

A DECISION PROBLEM IN THE PHYSICAL MAPPING OF CHROMOSOMES, T. Speed, University of California, Berkeley

ESTIMATING THE AMOUNT OF SELECTION FROM ALIGNED DNA SEQUENCES, S. Sawyer, Washington University, St. Louis

MOLECULAR EVOLUTION, POPULATION GENETICS AND DNA PROFILES, D. Balding, Queen Mary and Westfield College, London

20. RELIABILITY

Contributed Paper Session

NONPARAMETRIC ANALYSIS OF DATA RELATING TO RANDOM FATIGUE, Kamal C. Chanda, Texas Tech University

OPTIMAL ALLOCATION UNDER PARTIAL ORDERING OF LIFETIMES OF COMPONENTS, Emad El-Newehi, The American University in Cairo and Jayaram Sethuraman, Florida State University

MULTIPLE COMPARISON PROCEDURE WITH THE AVERAGE - THE LOCATION PARAMETER CASE, Shu-Fei Wu and Hubert J. Chen, University of Georgia

A BIVARIATE EXPONENTIAL MODEL WITH COVARIATES, Cicilia Yuko Wada,  
Campinas University

ON TESTING FOR AND AGAINST ORDER RESTRICTION INCLUDING HAZARD AND  
CONTINUATION RATIO PROBABILITY ORDERING, Broderick O. Oluyede, Georgia  
State University

SEQUENTIAL SEARCH FOR SIGNIFICANT VARIABLES OF A FUNCTION IN NOISE,  
Mikhail B. Maljutov, Moscow State University and Ivan I. Tsytoich,  
Institute of Problems of Information Transmission of RAN

Tuesday, June 21, 10:45 a.m.

21. IMS SPECIAL INVITED PAPER

BROWNIAN MODELS OF MULTICLASS QUEUEING NETWORKS, Ruth J. Williams,  
University of California, San Diego

22. IMS SPECIAL INVITED PAPER

IMAGE COMPRESSION AND CLASSIFICATION USING TREE-STRUCTURED VECTOR  
QUANTIZATION, Robert M. Gray, Stanford University

23. DISTRIBUTIONAL LIMIT THEORY  
Contributed Paper Session

A DISTRIBUTIONAL LIMIT THEOREM FOR PROCESSES INDEXED BY SMOOTH  
FUNCTIONS, M. A. Arcones, University of Utah

STOCHASTIC DIFFERENTIABILITY IN MAXIMUM LIKELIHOOD THEORY, Vladimir T.  
Dobric, Lehigh University

APPROXIMATION OF LIKELIHOOD PROCESSES, Ernst W. Eberlein and Manfred  
Roemersperger, Universitat, Freiburg

A CENTRAL LIMIT THEOREM FOR MARTINGALES WITH APPLICATIONS TO THE  
ANALYSIS OF LONGITUDINAL DATA, Susan Murphy, The Pennsylvania State  
University

24. STOCHASTIC DIFFERENTIAL EQUATIONS  
Contributed Paper Session

WEAK CONVERGENCE OF STOCHASTIC RICKER MODELS,, T. Koski, Lulea  
University of Technology and P. Sundar, Louisiana State University

MARTINGALES ON MANIFOLDS WITH PRESCRIBED LIMIT, AND BACKWARDS SDE,  
R. W. R. Darling, AOML/NOAA, Miami

WEAK BERNOULLI, MIXING RATE AND LARGE DEVIATIONS: APPLICATIONS TO  
STOCHASTIC-APPROXIMATION TYPE PROCESSES WITH AVERAGING, Alexander Yu.  
Veretennikov, Institute for Information Transmission Sciences

APPROXIMATIONS FOR STOCHASTIC DIFFERENTIAL EQUATIONS WITH REFLECTING  
CONVEX BOUNDARIES, Roger Pettersson, University of Lund

ON LARGE DEVIATIONS FOR SOLUTIONS OF STOCHASTIC EQUATIONS WITH  
IRREGULAR COEFFICIENTS, Sergey Ya. Makhno, Institute of Applied  
Mathematics and Mechanics

OPTIMAL DRIFT ON  $[0,1]$ , Susan Lee, Cornell University

25. STATISTICS IN MOLECULAR BIOLOGY  
Contributed Paper Session

ANALYSIS OF NUCLEOTIDE SUBSTITUTION DATA, Susan R. Wilson, Australian National University

ESTIMATING THE FRACTION OF NEUTRAL MUTATIONS, Paul Joyce, University of Idaho

A STEREOLOGICAL PROBLEM IN CARCINOGENESIS MODELLING, Mathisca de Gunst, Free University

CONDITIONAL GENOTYPIC FREQUENCIES, Bruce S. Weir, North Carolina State University

26. NONPARAMETRIC CURVE ESTIMATION (III)  
Contributed Paper Session

ON THE EFFICIENCY OF WAVELET ESTIMATORS UNDER ARBITRARY ERROR DISTRIBUTIONS, Michael H. Neumann and Vladimir G. Spokoiny, Institute for Applied Analysis and Stochastics

JUMP AND SHARP DETECTION BY WAVELETS, Yazhen Wang, University of Missouri-Columbia

GAUSSIAN FIELDS WITH LARGE TRENDS AND THE OPTIMAL CHOICE OF THE BANDWIDTH PARAMETER, Valentin Konakov, Central Economics-Mathematical Institute and Vladimir Piterbarg, Moscow State University

LIMITING BEHAVIOUR OF EXTREMA OF CERTAIN CONDITIONAL SAMPLE FUNCTIONS Zhen-Wei Zhou and Pranab Kumar Sen, University of North Carolina

Tuesday, June 21, 1:30 p.m.

27. BROWNIAN MOTION AND ANALYSIS (IV)  
Invited Paper Session and Directions in Probability Workshop  
Organizers: R. Williams, University of California at San Diego  
and M. Yor, Universite Pierre et Marie Curie, Paris  
Chair: Z. Q. Chen, University of California at San Diego

BROWNIAN SPIRALS, T. Salisbury, York University, Toronto

ON A REFINED DECOMPOSITION OF ADDITIVE FUNCTIONALS OF FINITE ENERGY, M. Fukushima, Osaka University

PRINCIPLE VALUES, RADON TRANSFORMS AND BROWNIAN LOCAL TIMES, T. Yamada, Ritsumeikan University, Kyoto

28. STATISTICS OF EXTREMES  
Invited Paper Session  
Organizer: H. Rootzen, Chalmers University of Technology  
Chair: R. Leadbetter, University of North Carolina

STATISTICS OF EXTREME EVENTS, J. A. Tawn, Lancaster University

MAXIMA OF GAUSSIAN RANDOM FIELDS AND STATISTICAL APPLICATIONS, Jiayang Sun, University of Michigan

SEMIPARAMETRIC AND EMPIRICAL PROCESS METHODS FOR DEPENDENT EXTREMES, H. Rootzen, Chalmers University of Technology

29. STATISTICAL METHODS FOR DATA COMPRESSION  
Invited Paper Session  
Organizer: R. Olshen, Stanford University  
Chair: R. Gray, Stanford University

UNIVERSAL DATA COMPRESSION, P. Chou, Xerox PARC

CODE DESIGN VIA SELECTION OF A STATISTICAL MODEL, J. Kieffer,  
University of Minnesota

TREE-STRUCTURED CLUSTERING AND DIGITAL RADIOGRAPHY, R. Olshen, Stanford  
University

30. STOCHASTIC PARTIAL DIFFERENTIAL EQUATIONS (I)  
Contributed Paper Session and SPDE Workshop

LARGE DEVIATIONS FOR DIFFUSION PROCESSES IN DUALS OF NUCLEAR SPACES,  
Jie Xiong, University of Tennessee

MAXIMUM LIKELIHOOD ESTIMATION FOR MULTIDIMENSIONAL PARAMETERS OCCURRING  
IN STOCHASTIC EVOLUTION SYSTEMS, Marianne Huebner, Tufts University

ESTIMATING PARAMETERS OF SPDE UNDER DISCRETE OBSERVATIONS, Leonid  
Piterbarg, University of Southern California

WONG-ZAKAI APPROXIMATIONS FOR STOCHASTIC DIFFERENTIAL EQUATIONS AND  
SUPPORT THEOREMS, Krystyna Twardowska, Warsaw University of Technology

STOCHASTIC MCKEAN-VLASOV EQUATIONS, Jean Vaillancourt, Universite de  
Sherbrooke

LARGE DEVIATIONS FOR A CLASS OF STOCHASTIC REACTION-DIFFUSION  
EQUATIONS, Gopinath Kallianpur, University of North Carolina and Jie  
Xiong, University of Tennessee

THE RATE FUNCTION FOR SOME MEASURE-JUMP PROCESSES, Ingemar Kaj,  
University of Uppsala

31. NONPARAMETRIC CURVE ESTIMATION (I)  
Contributed Paper Session

ADAPTIVE DENSITY ESTIMATION FOR SMALL SAMPLES, Sam Efromovich, The  
University of New Mexico

NONPARAMETRIC DENSITY ESTIMATION WITH A PARAMETRIC START, Nils Lid  
Hjort, University of Oslo and Ingrid K. Glad, Norwegian Institute of  
Technology

BANDWIDTH SELECTION IN LOCAL POLYNOMIAL FITTING, Jianqing Fan,  
University of North Carolina and Irene Gijbels, Catholic University of  
Louvain

LOCAL POLYNOMIALS - A "GOLDEN STANDARD" IN NONPARAMETRIC  
REGRESSION?, Burkhardt Seifert, University of Zurich

LOCALLY PARAMETRIC ESTIMATORS OF NONPARAMETRIC REGRESSION, Andrzej S.  
Kozek, Macquarie University

OPTIMAL BOUNDARY KERNELS (WEIGHTINGS FOR LOCAL POLYNOMIAL REGRESSION)  
AND THE FITTED RICE CRITERION, Alexander Sidorenko and Kurt S. Riedel,  
Courant Institute

USE OF TRANSFORMATION IN KERNEL SMOOTHING, Lijian Yang, University of  
North Carolina

Tuesday, June 21, 3:45 p.m.

33. LIMIT THEOREMS AND INFINITELY DIVISIBLE LAWS  
Contributed Paper Session

ON THE INVARIANCE PRINCIPLE FOR EXCHANGEABLE RANDOM VARIABLES,  
Tien-Chung Hu and N.C. Weber, Tsing Hua University

ALMOST SURE AND CONDITIONAL INVARIANCE PRINCIPLE IN NON-GAUSSIAN  
STABLE CASE, Krzysztof Podgorski, University of North Carolina

COMPLETE CONVERGENCE, Allan Gut, Uppsala University

ESTIMATES FOR THE RATE OF CONVERGENCE IN MULTIDIMENSIONAL INVARIANCE  
PRINCIPLES, Andrei Yu. Zaitsev, St. Petersburg Branch of Steklov  
Mathematical Institute

INFINITE DIVISIBLE DISTRIBUTIONS MODULO ONE, Roel J. G. Wilms,

#### 34. EXTREME VALUES (I)

Special Topics Contributed Paper Session

Organizer: M. R. Leadbetter, University of North Carolina

Chair: H. Rootzen, Chalmers University of Technology

APPROXIMATIONS FOR POISSON-LIKE MAXIMA, Clive W. Anderson, University  
of Sheffield and Stuart G. Coles, University of Nottingham

RATE OF CONVERGENCE OF SAMPLE EXTREMES, Laurens de Haan, Erasmus  
University and Sid I. Resnick, Cornell University

CONFIDENCE SETS FOR LEVEL CONTOURS AND MAXIMA, Georg Lindgren and Igor  
Rychlik, Lund University

EXCEEDANCE MEASURES IN ACTION - PROBLEMS IN OZONE REGULATION, M.R.  
Leadbetter and L.-S. Huang, University of North Carolina

ESTIMATION OF THE DEPENDENCE FUNCTION FOR MULTIVARIATE EXTREMES BY THE  
METHOD OF SIEVES, E. Villa and Victor Perez-Abreu, Centro de  
Investigacion en Matematicas

BOOTSTRAPPING EXTREMES OF RANDOM VARIABLES AND ITS APPLICATIONS,  
Jun-ichiro Fukuchi, Iowa State University

#### 35. QUANTIZATION AND BAYESIAN INFERENCE

Contributed Paper Session

ASYMPTOTICALLY OPTIMAL QUANTIZERS OF BIVARIATE RANDOM VECTORS, Yingcai  
Su, University of Arizona and Stamatis Cambanis, University of North  
Carolina

THE EFFECT OF QUANTIZATION ON THE PERFORMANCE OF SAMPLING DESIGNS,  
Karim Benhenni, Universite Pierre Mendes and Stamatis Cambanis,  
University of North Carolina

THE KULLBACK-LEIBLER DISTANCE BETWEEN POSTERIOR DISTRIBUTIONS FOR  
DISCRETIZED AND NONDISCRETIZED DATA, Klaus Felsenstein, Technical  
University of Vienna and Klaus Potzelberger, University of Economics  
and Business Administration Vienna

BAYES INFERENCE FOR TECHNOLOGICAL SUBSTITUTION DATA WITH DATA-BASED  
TRANSFORMATION, Lynn Kuo, Jack Lee, Peter Cheng and Jeffrey Pai,  
National Chiao Tung University

ON THE LOWER BOUNDS FOR MEAN SQUARE ERROR OF EMPIRICAL BAYES ESTIMATORS  
OF A SCALE PARAMETER, Marianna Penskaya, Mining Institute, Ural Branch  
Russian Academy of Science

#### 36. STOCHASTIC PARTIAL DIFFERENTIAL EQUATIONS

Invited Paper Session and SPDE Workshop

Organizer: E. Pardoux, Universite de Provence, Marseille

Chair: G. Kallianpur, University of North Carolina

L<sub>p</sub>-THEORY FOR STOCHASTIC PARTIAL DIFFERENTIAL EQUATIONS, N. Krylov,  
University of Minnesota

TRAVELLING WAVES AND STOCHASTIC PDE, C. Mueller, University of  
Rochester

APPLICATION OF MALLIAVIN CALCULUS TO SPDE'S, E. Pardoux, Universite de  
Provence, Marseille

37. ADAPTIVE METHODS IN NON-PARAMETRIC ESTIMATION

Invited Paper Session

Organizer: G. Golubev, Institute for Problems of Information  
Transmission of the Russian Academy of Sciences

Chair: D. Nychka, North Carolina State University

AN INTRODUCTION TO ADAPTIVE ESTIMATION, S. Marron, University of North  
Carolina

LOCAL ADAPTIVITY TO INHOMOGENEOUS SMOOTHNESS: ASYMPTOTIC MINIMAX  
APPROACH, O. Lepskii, Institute for Applied Analysis and Probability,  
Berlin and V. Spokoiny, Institute of Systems Analysis of the Russian  
Academy of Science and Institute of Information Transmission, Moscow

UNBIASED RISK ESTIMATION AND SMOOTHING, G. Golubev, Institute for  
Problems of Information Transmission of the Russian Academy of Sciences

38. SOFTWARE ENGINEERING

Invited Paper Session

Organizer: S. Dalal, Bell Communications Research

Chair: E. Slud, University of Maryland

STATISTICAL SOFTWARE ENGINEERING, S. Dalal, Bellcore

STATISTICAL TESTING OF COMPUTER SOFTWARE: A REDEFINITION, J. Munson,  
University of West Florida

DESIGNING PROGRAMS TO CHECK THEIR WORK, M. Blum, University of  
California, Berkeley

Wednesday, June 22, 8:30 a.m.

39. EXTREME VALUES (II)

Special Topics Contributed Paper Session

Organizer: M. R. Leadbetter, University of North Carolina

Chair: Georg Lindgren, Lund University

SMALL VALUES FOR GAUSSIAN PROCESSES IN  $H$ , J. M. Patrik Albin, Chalmers  
University of Technology

HIGH EXCURSIONS OF GAUSSIAN FIELDS AND THEIR APPLICATIONS IN  
STATISTICS, Vladimir I. Piterbarg, Moscow State University

COMPUTING THE EXTREMAL INDEX OF MARKOV CHAINS USING THE FAST FOURIER  
TRANSFORM, Gerard Hooghiemstra and Ludolf E. Meester, Delft University  
of Technology

EXTREMES OF MULTIVARIATE MARKOV CHAINS, Roland Perfekt, Lund University

SUMS OF  $k$ -RECORD VALUES, Alexandre M. Berred, Universite du Havre

40. STOCHASTIC NETWORKS

Invited Paper Session

Organizer: A. Mandelbaum, Technion, Haifa

Chair: A. Mandelbaum, Technion, Haifa

GAME THEORETICAL ASPECTS OF QUEUING SYSTEMS CONTROL: A SURVEY OF RECENT RESULTS, N. Shimkin, Rafael Institute, Haifa

ON POSITIVE HARRIS RECURRENCE FOR MULTICLASS QUEUING NETWORKS: A UNIFIED APPROACH, J. Dai, Georgia Institute of Technology

A UNIFYING APPROACH TO OPTIMIZATION OF MULTICLASS QUEUING AND LOSS NETWORKS, D. Bertsimas, Sloan School of Management, MIT

41. M-ESTIMATORS AND MAXIMUM LIKELIHOOD

Invited Paper Session

Organizer: S. van de Geer, University of Leiden, The Netherlands

Chair: S. van de Geer, University of Leiden, The Netherlands

FRECHET DIFFERENTIABILITY AND ROBUST STATISTICS, T. Bednarski, Polish Academy of Sciences

SPACINGS AND LIKELIHOOD, Yongzhao Shao, Tufts University

A STRONG BAHADUR REPRESENTATION OF  $L_p$  REGRESSION ESTIMATORS, Xuming He, University of Illinois, Urbana

42. SURVIVAL ANALYSIS AND COUNTING PROCESSES

Contributed Paper Session

ESTIMATION OF SURVIVAL FUNCTION WITH CURRENT-STATUS DATA, Hung Chen, National Taiwan University

TESTING THE ASSUMPTION OF PROPORTIONAL HAZARDS, Goran Brostrom and Leif Nilsson, University of Umea

ESTIMATION OF MULTIVARIATE SURVIVAL DISTRIBUTIONS FROM CENSORED DATA: A COUNTING PROCESSES APPROACH, Dorota M. Dabrowska, University of California, Los Angeles

RESIDUAL LIFE FUNCTIONALS AT GREAT AGE, Holger Drees, University of Cologne and Rolf-Dieter Reiss, University of Siegen

NONPARAMETRIC HAZARDS ESTIMATION IN NEURONAL NETWORKS Klaus J. Utikal, University of Kentucky

M-ESTIMATION, GOODNESS-OF-FIT AND COUNTING PROCESSES, Alex J. Koning, Erasmus University

A SEMI-PARAMETRIC MATRIX-VALUED COUNTING PROCESS MODEL, Antonio C. Pedroso de Lima and Pranab Kumar Sen, University of North Carolina

43. RANDOM FIELDS

Contributed Paper Session

PERIODICALLY CORRELATED RANDOM FIELDS ON  $Z^2$ , Harry L. Hurd and Gopinath Kallianpur, University of North Carolina

REPRESENTATIONS OF GAUSS MARKOV RANDOM FIELDS, Sauraj Goswami and Jose M. F. Moura, Carnegie Mellon University

ON A PROBLEM OF VARIATIONAL CALCULUS FOR THE FORECAST OF LEVY'S BROWNIAN MOTION, Markus Laszlo, Eotvos Lorand University

ESTIMATING THE PARAMETERS OF A UNILATERAL FIRST ORDER SPATIAL ARMA PROCESS, S. Nandagopalan, Colorado State University and Rajesh S. Selukar, University of South Alabama



ASYMPTOTIC PROPERTIES OF EXTREMAL POINTS OF RANDOM FIELDS AND APPLICATIONS IN STATISTICS, Vladimir V. Anisimov, Kiev University

ROBUST EXTRAPOLATION PROBLEM FOR RANDOM FIELDS, M.P. Moklyachuk and S.V. Tatarinov, Kiev University

MINIMAX-ROBUST ESTIMATION PROBLEMS FOR HOMOGENEOUS ISOTROPIC ON A SPHERE RANDOM FIELDS, M.P. Moklyachuk, Kiev University

44. LIMIT THEOREMS IN PROBABILITY  
Contributed Paper Session

NORMING OPERATORS FOR GENERALIZED DOMAINS OF ATTRACTION, Mark M. Meerschaert, University of Nevada

CONVERGENCE OF RANDOM POWER SERIES WITH PAIRWISE INDEPENDENT BANACH-SPACE-VALUED COEFFICIENTS, Markus Roters, University of Trier

LIMIT THEOREMS ON LARGE AND MODERATELY LARGE DEVIATIONS FOR MARTINGALES, Ion G. Grama, Institute of Mathematics, Moldova

CENTRAL LIMIT THEOREM FOR STATIONARY LINEAR PROCESSES, Magda Peligrad and Sergey Utev, University of Cincinnati

ON THE DISSIPATION OF PARTIAL SUMS FROM A STATIONARY STRONGLY MIXING SEQUENCE, Richard C. Bradley, Indiana University

ON THE DISTRIBUTION OF QUADRATIC FORMS OF WEAKLY DEPENDENT RANDOM VARIABLES, Alexander N. Tichomirov, Syktyvkar State University

Wednesday, June 22, 10:45 a.m.

45. WALD MEMORIAL LECTURE (II)

POLYNOMIAL SPLINES AND THEIR TENSOR PRODUCTS IN FUNCTIONAL MODELING, Charles J. Stone, University of California, Berkeley

46. QUEUES AND PRIORITIES  
Contributed Paper Session

NONPARAMETRIC ESTIMATION OF THE HOLDING DISTRIBUTION OF A QUEUE WITH INCOMPLETE INFORMATION, James Pickands III and Robert Stine, University of Pennsylvania

CONTROL AND BEHAVIOUR OF SERVICE QUEUES Richard O.D. Lane, University of Queensland

A NOTE ON THE SEARCH TIME FOR THE MOVE-TO-FRONT RULE, Lars K. Holst, Royal Institute of Technology

NEW CLASS OF PRIORITY SYSTEMS AND ITS SUPPLEMENTS, G. K. Mishkoy, Institute of Mathematics, Moldova

47. MISSING DATA AND EM ALGORITHM  
Contributed Paper Session

E-M ALGORITHM GENERALIZATIONS VIA QUASI-LIKELIHOOD, Chris Heyde, Columbia University and Australian National University and Richard Morton, CSIRO

ON MISSING DATA, IGNORABILITY AND SUFFICIENCY, Abhinanda Sarkar, Stanford University

MAXIMUM LIKELIHOOD ESTIMATION VIA THE ECM ALGORITHM: COMPUTING THE ASYMPTOTIC VARIANCE, David A. van Dyk and Xiao-Li Meng, The University of Chicago and Donald B. Rubin, Harvard University

48. ESTIMATION IN SURVIVAL AND INFORMATION THEORY

Contributed Paper Session

ASYMPTOTIC NORMALITY OF EXTENDED L-ESTIMATORS AND M-ESTIMATORS FOR DOUBLY CENSORED DATA, Jian-Jian Ren, University of Nebraska-Lincoln and Mai Zhou, University of Kentucky

ON ESTIMATION OF DISTORTION IN A BINARY SYMMETRIC CHANNEL, Yi-Wen Ma, University of North Carolina

ADAPTIVE ESTIMATION PROCEDURES IN NON-STATIONARY RANDOM MEDIA, Evelina Silvestrova, Lulea University of Technology

49. RANDOM GRAPHS AND TREES

Contributed Paper Session

THE CONTOUR PROCESS OF A BINARY, SELF-SIMILAR TREE, Jochen Geiger, University of Frankfurt

$q$ -DISTRIBUTIONS ARISING FROM THE STUDY OF RANDOM GRAPHS, Davide Crippa and Klaus Simon, ETH - Swiss Federal Institute of Technology

BROADCASTING IN PARTIALLY ORDERED SETS, Kyle T. Siegrist, University of Alabama

50. SPECIAL PAPER

AN IMPROVED TANGENT APPROXIMATION, Henry E. Daniels, University of Cambridge

Thursday, June 23, 8:30 a.m.

51. LINEAR AND NONLINEAR REGRESSION

Contributed Paper Session

PLAYING THE WEIGHTING GAME: A PARTIAL ANSWER TO THE PROBLEM OF LEVERAGE, M. Markatou, Columbia University

ESTIMATION OF RANDOM COEFFICIENT REGRESSION MODELS, Vo V. Anh and Nesan Chelliah, Griffith University

REGRESSION RANK SCORES, RR-TESTS AND RR-ESTIMATORS IN LINEAR MODEL, Jana Jureckova, Charles University

MINIMAX LINEAR ESTIMATION IN LINEAR MODELS, Hilmar G. Drygas, University of Kassel

HETEROSCEDASTIC MODELS IN ANALYSIS OF VARIANCE, Christian Derquenne and Philippe Oger, Electricite de France

GOODNESS OF FIT TESTS IN PARAMETRIC NONLINEAR REGRESSION MODELS, Sylvie Huet, INRA

APPROXIMATE DISTRIBUTION OF DURBIN-WATSON TEST STATISTIC IN NONLINEAR REGRESSION MODELS, Juan Carlos Abril, National University of Tucuman and CONICET, Argentina and Koichi Maekawa, Hiroshima University

52. MEASURE VALUED PROCESSES/DIFFUSIONS

Invited Paper Session

Organizer: E. Perkins, University of British Columbia

Chair: E. Perkins, University of British Columbia

SOME MEASURE-VALUED PROCESSES WITH SINGULAR DRIFTS-HERDING INSTINCTS,

R. Tribe, Berlin Institute for Applied Analysis

SOME RECENT DEVELOPMENTS IN THE THEORY OF BRANCHING MEASURE-VALUED DIFFUSIONS, E. Dynkin, Cornell University

SOME NEW RESULTS ON SUPER-BROWNIAN MOTION AND ITS CONNECTIONS WITH PARTIAL DIFFERENTIAL EQUATIONS, J. F. LeGall, University of Paris VI

53. CHANGE POINT ANALYSIS

Invited Paper Session

Organizer: L. Duembgen, University of Heidelberg

Chair: L. Duembgen, University of Heidelberg

STRETCHED STRING CHANGE POINTS, J. Hartigan, Yale University

THE CHANGE POINT PROBLEM FOR DEPENDENT OBSERVATIONS, L. Giraitis, University of Heidelberg; R. Leipus, Virginia State University, Blacksburg; and D. Surgailis, Institute of Mathematics, Vilnius

AN ALTERNATIVE TO MIXTURES, M. Pollak, Hebrew University of Jerusalem

54. STATISTICAL METHODS IN CLIMATOLOGY

Invited Paper Session

Organizer: V. Isham, University College London

Chair: N. Reid, University of Toronto

STOCHASTIC SPATIAL-TEMPORAL MODELS OF PRECIPITATION FOR HYDROLOGY, V. Isham, University College London

A BAYESIAN APPROACH TO THE MODELLING OF SPATIAL-TEMPORAL PRECIPITATION DATA, R. L. Smith, University of North Carolina

MODELLING DAILY PRECIPITATION AS A FUNCTION OF OTHER WEATHER VARIABLES FOR CLIMATE CHANGE, A. Buishand, Royal Netherlands Meteorological Institute

55. INFERENCE FOR STOCHASTIC PROCESSES AND MARKOV CHAINS

Contributed Paper Session

ON ESTIMATION OF TAIL PARAMETERS FOR STABLE PROCESSES AND RELATED POINT PROCESS MODELS, Reinhard Hopfner, Universitat Freiburg im Breisgau and Universite Paris VI

MINIMAX ESTIMATION IN POISSON EXPERIMENTS, Yuli Gu, University of Hong Kong

STATISTICAL INFERENCE FOR POINT PROCESSES WITH INDEPENDENT LOCATIONS, Franz Streit, Universite de Geneve

STATISTICAL INFERENCE FOR BRANCHING PROCESSES WITH AN INCREASING RANDOM NUMBER OF ANCESTORS, Jean-Pierre Dion, Universite de Quebec and Nickolay M. Yanev, Institute of Mathematics, Sofia

ROBUSTNESS IN POINT PROCESSES, Renato M. Assuncao, UFMG, Brazil and University of Washington, Seattle and Peter Guttorp, University of Washington, Seattle

ESTIMATION OF THE DENSITY OF THE STATIONARY DISTRIBUTION FOR A HARRIS CHAIN, Krishna B. Athreya and Gregorio S. Atuncar, Iowa State University

KERNEL CLASSIFICATION IN HIDDEN MARKOV MODELS, Albrecht Irle, University Kiel

56. FOUNDATIONS (II)

Contributed Paper Session

A CLASS OF SYMMETRIC BIVARIATE UNIFORM DISTRIBUTIONS, Thomas S. Ferguson, University of California, Los Angeles

CHARACTERIZATION OF SOME INCOME DISTRIBUTIONS BASED ON MULTIPLICATIVE DAMAGE AND GENERATING MODELS, Bekia E. Fosam and Theofanis Sapatinas, Sheffield Hallam University

ON THE CAUCHY MEAN VALUE PROPERTY FOR PHI-MEANS, Juan A. Cuesta-Albertos, Universidad de Cantabria and Alfonso Gordaliza and Carlos Matran, Universidad de Valladolid

UBIQUITOUS SINGULAR MEASURES ASSOCIATED WITH DISCRETE CONVOLUTIONS, Chamont Wang and Arthur R. Silverberg, Trenton State College

MODEL SELECTION AND INFERENCE, Benedikt M. Poetscher, Universitat Wien

MEASUREMENT OF DIVERSITY FOR THE STOCHASTIC PROCESSES, Makarand V. Ratnaparkhi and Sharaschandra R. Adke, Wright State University

Thursday, June 23, 10:45 a.m.

57. NEYMAN LECTURE

SMOOTHING SPLINE ANOVA WITH NON-GAUSSIAN DATA, Grace Wahba, University of Wisconsin

58. BOOTSTRAP AND EDGEWORTH EXPANSIONS

Contributed Paper Session

ON EDGEWORTH EXPANSION AND MOVING BLOCK BOOTSTRAP FOR STUDENTIZED M-ESTIMATORS IN MULTIPLE LINEAR REGRESSION MODELS, S. N. Lahiri, Iowa State University

SECOND ORDER PROPERTIES OF A CORRECTED BOOTSTRAP WITHOUT REPLACEMENT, UNDER WEAK ASSUMPTIONS, Patrice Bertail, INRA

EMPIRICAL EDGEWORTH EXPANSIONS FOR SYMMETRIC STATISTICS, Hein Putter, University of Leiden

59. CHANGE-POINT ANALYSIS

Contributed Paper Session

ON SEQUENTIAL SENTENCE AND ESTIMATION PROCEDURES FOR RANDOMLY CHANGING MEAN, Yanhong Wu, University of Alberta

MULTIPLE DISORDER PROBLEM, Krzysztof Szajowski, Wroclaw Technical University

CHANGE-POINT DETECTION FOR CORRELATED OBSERVATIONS, Hyune-Ju Kim, Syracuse University

INFERENCE ON STRUCTURAL BREAKS, Miguel A. Delgado, Universidad Carlos III and Javier Hidalgo, London School of Economics

PARAMETERS-ESTIMATED EMPIRICAL PROCESSES AND CHANGE-POINT ANALYSIS, Jose A. Correa, Carleton University

60. PREDICTION

Special Topics Contributed Paper Session

Organizer: F. Seillier-Moiseiwitsch, University of North Carolina  
Chair: Marcia Gumpertz, North Carolina State University

ESTIMATIVE AND PREDICTIVE DISTANCES, A. Mitchell, Imperial College

FAILURE-TIME PREDICTION, J. Rissanen and G. Shedler, IBM Research Division

ASSESSING PREDICTION ERRORS IN REGRESSION MODELS, P. Zhang, University of Pennsylvania

PREDICTIVE ASSESSMENT OF LOGISTIC MODELS, F. Seillier-Moiseiwitsch, University of North Carolina

EXPERT JUDGEMENT IN FORECASTING: AN APPLICATION OF THE CLASSICAL MODEL TO WEATHER FORECASTING, D. Roeleven, R. Cooke and M. Kok, Technical University of Delft

61. MARKOV PROCESSES AND PARTICLE SYSTEMS  
Contributed Paper Session

CRITICAL EXPONENTS FOR RANDOM WALKS IN DIMENSIONS BETWEEN 1 AND 2, Emily E. Puckette, Duke University

UPPER AND LOWER BOUNDS OF THE RATE OF CONVERGENCE FOR NONHOMOGENEOUS BIRTH AND DEATH PROCESSES, Alexander I. Zeifman, Vologda State Pedagogical Institute

PARTICLE SYSTEMS WITH MORE THAN TWO STATES, Javier Lopez and Gerardo Sanz, University of Zaragoza

PARAMETER DERIVATION OF FUNCTIONALS OF A POISSON PROCESS, Serguei Zuyev, INRIA

62. DESIGN OF EXPERIMENTS (II)  
Contributed Paper Session

OPTIMAL DESIGN FOR GENERALIZED ADDITIVE MODELS, Werner G. Muller, University of Iowa

NEW ROBUST DESIGN STRATEGIES FOR NONLINEAR REGRESSION MODELS, Tim O'Brien, Washington State University

EXPERIMENTAL DESIGN FOR CONTINUOUS-TIME MODELS USING GRAY-BOX INFORMATION, Payman Sadegh, The Technical University of Denmark; Jan Holst, Lund Institute of Technology; Henrik Madsen, The Technical University of Denmark; and Henrik Melgaard, The Technical University of Denmark

Thursday, June 23, 1:30 p.m.

63. RATES OF CONVERGENCE FOR MARKOV CHAINS

Invited Paper Session

Organizer: P. Diaconis, Harvard University

Chair: W. L. Smith, University of North Carolina

GEOMETRIC BOUNDS FOR EIGENVALUES OF MARKOV CHAINS: A SURVEY, P. Diaconis, Harvard University

CONVERGENCE RATES FOR MARKOV CHAINS ASSOCIATED WITH SELF-ORGANIZING SEARCH, J. Fill, Johns Hopkins University

SOME OPEN PROBLEMS IN REVERSIBLE MARKOV CHAINS, D. Aldous, University of California, Berkeley

64. RESAMPLING AND BOOTSTRAP METHODS

Invited Paper Session

Organizer: J. Praestgaard, University of Iowa

Chair: L. Seymour, University of Georgia, Athens

SUBSAMPLING, D. Politis, Purdue University

VARIATIONS ON AND VARIOUS USES OF THE  $m$  OUT OF  $n$  BOOTSTRAP, P. Bickel, University of California, Berkeley

SOME RESULTS FOR RESAMPLING AND TREE STRUCTURED PROCEDURES, J. Praestgaard, University of Iowa

65. STATISTICAL METHODS IN IMAGE ANALYSIS

Invited Paper Session

Organizer: D. McClure, Brown University

Chair: D. McClure, Brown University

GRAPHICAL TEMPLATES FOR IMAGE MATCHING, Y. Amit, University of Chicago

INCORPORATING SHAPE CONSTRAINTS IN MEDICAL IMAGE RECONSTRUCTION, V. Johnson, Duke University

A GRAMMATICAL APPROACH TO CONVEX SET RECOGNITION, C. S. Raphael, Brown University

66. STOCHASTIC CALCULUS

Contributed Paper Session

ITO FORMULA FOR STRATONOVICH-OGAWA EXTENDED STOCHASTIC INTEGRAL WITH NONRANDOM KERNEL, Nicolai V. Norin, Moscow Institute of Radio Engineering, Electronics, and Automation

RELATIVE WEAK COMPACTNESS AND PROKHOROV TYPE THEOREMS FOR SETS OF MASSES ON NORMAL TOPOLOGICAL SPACES, Bruno Girotto and Silvano Holzer, University of Trieste

TOWARD A FUNCTIONAL LAW OF THE ITERATED LOGARITHM FOR THE GRASSBERGER-PROCACCIA EMPIRICAL SPATIAL CORRELATION INTEGRAL, Regis J. Serinko, The Pennsylvania State University

A GENERAL DECOMPOSITION THEORY FOR RANDOM CASCADES, Edward C. Waymire, Oregon State University and Stanley C. Williams, Utah State University

BROWNIAN FUNCTIONALS ON HYPERSURFACES IN  $R^d$ , Kimberly K.J. Kinaterder, The Ohio State University and Patrick McDonald, Denison University and The Ohio State University

MULTIPLE STOCHASTIC INTEGRALS FOR RANDOM KERNELS, Amarjit Budhiraja and G. Kallianpur, University of North Carolina

67. LONG MEMORY TIME SERIES ANALYSIS

Special Topics Contributed Paper Session

Organizer: Bonnie Ray, New Jersey Institute of Technology

Chair: Peter Bloomfield, North Carolina State University

INFERENCE FOR UNSTABLE LONG-MEMORY PROCESSES WITH APPLICATIONS TO FRACTIONAL UNIT ROOT AUTOREGRESSIONS, Ngai Hang Chen and Norma Terrin, Carnegie Mellon University

AUTOMATIC SEMIPARAMETRIC ESTIMATION OF THE MEMORY PARAMETER OF A LONG MEMORY TIME SERIES, Clifford M. Hurvich, New York University and Kaizo I. Beltrao, Escola Nacional de Ciencias Estatisticas/IBGE

ESTIMATION OF THE MEMORY PARAMETER FOR NONSTATIONARY OR NONINVERTIBLE FRACTIONALLY INTEGRATED PROCESSES, Clifford M. Hurvich, New York University and Bonnie K. Ray, New Jersey Institute of Technology

ON MAXIMUM LIKELIHOOD AND ROBUST M-ESTIMATORS FOR LONG-MEMORY PROCESSES, Jan Beran, University of Zurich

BEHAVIOR OF SOME MINIMUM DISTANCE ESTIMATORS IN THE PRESENCE OF THE LONG RANGE DEPENDENCE, Hira Khouf, Michigan State University

67a. CHAOS

Contributed Paper Session

NON PARAMETRIC ESTIMATION OF A CHAOTIC FUNCTION OF A DYNAMICAL SYSTEM, Dominique Guegan, ENSAE Timbre

STATISTICAL ESTIMATION OF LOCAL LYAPUNOV SPECTRUM: TOWARD CHARACTERIZING PREDICTABILITY IN CHAOTIC SYSTEMS, Zhan-Qian Lu, University of North Carolina

68. DESIGN OF EXPERIMENTS (I)

Contributed Paper Session

ORTHOGONAL SETS OF BIBD'S AND MAIN EFFECTS PLANS, John P. Morgan, Old Dominion University and Nizam Uddin, University of Southern Maine

THE ROBUSTNESS OF BINARY AND NONBINARY NESTED ROW-COLUMN DESIGNS UNDER THE UNAVAILABILITY OF BLOCKS: A COMPARISON, Nizam Uddin, University of Southern Maine

COMPUTATIONAL GEOMETRY OF DESIGNS RULED BY SUBDESIGNS AND COMBINABILITY OF STATISTICS, Indra M. Chakravarti, University of North Carolina

D-OPTIMAL DESIGNS IN EXPERIMENTS WITH RANDOM BLOCK EFFECTS, Manel Wijesinha, The Pennsylvania State University

U- AND D-OPTIMAL DESIGNS FOR SUPPLEMENTARY EXPERIMENTS, King Leung Chow, Hong Kong Polytechnic

ROBUST EXPERIMENTAL DESIGN FOR MODELS WITH HIGHER ORDER INTERACTIONS, Rainer Schwabe, Freie Universitat Berlin

Thursday, June 23, 3:45 p.m.

69. MARKOV PROCESSES

Contributed Paper Session

BOUNDS FOR FIRST HITTING TIME DISTRIBUTIONS FOR STOCHASTICALLY MONOTONE MARKOV CHAINS, Bo Lindqvist, University of Trondheim

THE METASTABILITY OF EXPONENTIALLY PERTURBED MARKOV CHAINS, Dayue Chen, Jianfeng Feng and Minping Qian, Peking University

EXPONENTIAL ASYMPTOTIC IN ERGODIC THEOREMS FOR PERTURBED SEMIMARKOV PROCESSES AND QUASI-STATIONARY DISTRIBUTIONS FOR METAPOPULATION MODELS, Mats Gyllenberg, Turku University and Dmitrii S. Silvestrov, Lulea University of Technology

REGENERATION FOR SINGULAR TYPE MARKOV CHAINS, E. Nummelin, University of Helsinki

ON MARKOV CHAINS AND FILTRATIONS, Peter Spreij, Free University, Amsterdam

THE PROBABILITY DISTRIBUTION OF THE WEIGHT OF THE QUERY SIGNATURE, Emily S. Murphree and Deniz Aktug, Miami University, Ohio

70. BOOTSTRAP

Contributed Paper Session

BOOTSTRAP IMPLEMENTATION OF M-ESTIMATE FOR AUTOREGRESSION AND LINEAR REGRESSION WITH INFINITE VARIANCE, Richard A. Davis, Colorado State University and Wei Wu, University of Illinois, Champaign

BOOTSTRAP INFERENCE FOR A FIRST ORDER AUTOREGRESSION WITH POSITIVE INNOVATIONS, Somnath Datta and William P. McCormick, University of Georgia

BOOTSTRAPPING IN NONHOMOGENEOUS POISSON PROCESSES, WITH APPLICATION TO RELIABILITY ESTIMATION, Georg Elvebakk, The University of Trondheim

BOOTSTRAPPED NONLINEAR ESTIMATORS, Henning Lauter, University of Potsdam

BOOTSTRAPPING FOR RESTRICTED CANONICAL CORRELATION, Shubhabrata Das, University of Montana and Pranab Kumar Sen, University of North Carolina

ON THE UNCONDITIONAL STRONG LAW OF LARGE NUMBERS FOR THE BOOTSTRAP MEAN Eusebio Arenal, Universidad de Valladolid; Juan A. Cuesta-Albertos, Universidad de Cantabria; and Carlos Matran, Universidad de Valladolid

CONTINUITY AND DIFFERENTIABILITY OF STATISTICAL OPERATORS: SOME APPLICATIONS TO THE BOOTSTRAP, Antonio Cuevas, Universidad Autonoma de Madrid and Juan Romo, Universidad Carlos III de Madrid

71. IMAGING AND SPATIAL DATA  
Contributed Paper Session

A MARKOV RANDOM FIELD MODEL FOR THE VALIDATION OF CLIMATE MODELS, Kevin J. Keen, Royal Roads Military College

BAYESIAN INFERENCE FOR POLYGONAL IMAGE MODELS, Peter Clifford and Geoff Nicholls, Oxford University

NONPARAMETRIC PROCEDURE FOR IMAGE RECOVERY, Alexander A. Georgiev and Hong Liu

DETECTING STRUCTURAL CHANGES IN A TEXTURE USING WALSH-FOURIER SPECTRAL DISTRIBUTION FUNCTIONS, Sg. Ferryanto, Satya Wacana Christian University, Salatiga, Indonesia

AREA-INTERACTION POINT PROCESSES, Adrian J. Baddeley, University of Western Australia and Maria N.M. van Lieshout, University of Warwick

INTER-EVENT DISTANCE METHODS IN SPATIAL POINT PROCESSES, Linda B. Collins, Anna Pluzhnikov and Michael L. Stein, University of Chicago

72. PROBABILITY ON BANACH SPACES  
Invited Paper Session

Organizer: M. Ledoux, Universite Paul Sabatier, Toulouse  
Chair: M. Ledoux, Universite Paul Sabatier, Toulouse

EXTREMAL PROBLEMS AND SHARP INEQUALITIES FOR SUMS OF INDEPENDENT RANDOM VARIABLES, P. Hitczenko, North Carolina State University

SMALL BALL PROBABILITIES FOR GAUSSIAN MEASURES, J. Kuelbs, University of Wisconsin

INEQUALITIES FOR LOCAL TIMES OF RANDOMLY STOPPED BROWNIAN MOTION WITH APPLICATIONS, V. de la Pena, Columbia University and University of Southern California



73. DETERMINISTIC VERSUS STOCHASTIC MODELS IN TIME SERIES ANALYSIS

Invited Paper Session

Organizer: B. LeBaron, Santa Fe Institute

Chair: R. Dahlhaus, University of Heidelberg

EMPIRICAL EVIDENCE ON CHAOTIC BEHAVIOR IN DYNAMIC ECONOMIC MODELS, B. LeBaron, University of Wisconsin, Madison

NONLINEAR ASPECTS OF EPIDEMIC DYNAMICS IN SPACE AND TIME, S. Ellner (with B. Bailey, G. Bobashev, B. Grenfell, D. Nychka, and A. R. Gallant), North Carolina State University

HYPOTHESIS TESTING IN TIME SERIES USING CONSTRAINED-REALIZATION SURROGATE DATA, J. Theiler, Santa Fe Institute

74. DESIGN AND ANALYSIS OF INDUSTRIAL EXPERIMENTS

Invited Paper Session

Organizer: Jeff Wu, University of Michigan

Chair: B. Abraham, University of Waterloo

MULTISTAGE DESIGNS IN INDUSTRIAL EXPERIMENTS, R. Keener, University of Michigan and Y. Jeong, Grand Valley State University

ANALYSIS OF LOCATION AND DISPERSION EFFECTS FOR FACTORIAL EXPERIMENTS WITH A DIRECTIONAL RESPONSE, C. M. Anderson, University of Western Ontario

A METHOD FOR CONSTRUCTING SUPERSATURATED DESIGNS, B. Tang, University of Michigan

Friday, June 24, 8:30 a.m.

75. STOCHASTIC PROCESSES (GENERAL)

Contributed Paper Session

BEYOND THE BLACK BOX: MARTINGALE EMBEDDING WITH EXPLICIT STRUCTURE, Per A. Mykland, University of Chicago

ORTHOGONAL REPRESENTATIONS FOR DISCRETE-CONTINUOUS MULTIPARAMETRIC PROCESSES, Jose M. Angulo, Maria D. Ruiz and Mariano J. Valderrama, Universidad de Granada

BERNSTEIN PROCESSES AND PAULI-TYPE HAMILTONIANS, Boualem Djehiche, The Royal Institute of Technology

ESCAPE RATES FOR TRANSIENT REFLECTED BROWNIAN MOTION IN WEDGES AND CONES, R. Dante DeBlassie and Ellen H. Toby, Texas A & M University; and Elizabeth A. Housworth, Purdue University

INCREASE OF LEVY PROCESSES, Ronald A. Doney, The University of Manchester

SMALL BALL PROBABILITY FOR FRACTIONAL LEVY BROWNIAN FIELD, Qi-Man Shao and Daoyi Wang, National University of Singapore

IDENTIFICATION OF STABLE MEASURES, John Nolan, American University

76. PROBABILITY PROBLEMS IN PHYSICS

Invited Paper Session

Organizer: G. Lawler, Duke University

Chair: T. Liggett, University of California, Los Angeles

A GROWTH MODEL WITH RATES DEPENDING ON THE NUMBER OF OCCUPIED NEIGHBORS, H. Kesten, Cornell University

CRITICAL CONDUCTANCE FLUCTUATIONS IN RANDOM RESISTOR NETWORKS, J. Wehr,

University of Arizona

CRITICAL EXPONENTS FOR RANDOM WALKS, G. Lawler, Duke University

77. LIKELIHOOD

Invited Paper Session

Organizer: B. Lindsay, Pennsylvania State University

Chair: B. Lindsay, Pennsylvania State University

EMPIRICAL BAYES METHODS FOR COMBINING LIKELIHOODS, B. Efron, Stanford University

PROJECTION-BASED ANALOGUES OF CONDITIONAL LIKELIHOODS, Bing Li, Pennsylvania State University

A NEW METHOD AND IDENTITY FOR PROVING EFFICIENCY OF (NP)MLE IN CONVEX MODELS, M. van de Laan, University of California, Berkeley

78. COMPUTER SCIENCE AND ENGINEERING (PROBABILISTIC ALGORITHMS)

Invited Paper Session

Organizer: J. M. Steele, Wharton School, University of Pennsylvania

Chair: J. M. Steele, Wharton School, University of Pennsylvania

MARKOV CHAINS, ENUMERATION AND VOLUME ALGORITHMS, L. Lovasz, Princeton University

APPLICATION OF MATCHING THEOREMS TO ALGORITHMS, P. Shor, AT&T Bell Laboratories

SYMBOLS, ALGORITHMS AND PROBABILITY, R. Burton, Oregon State University

79. U-STATISTICS AND ORDER STATISTICS

Contributed Paper Session

ASYMPTOTIC BEHAVIOR OF WEIGHTED U-STATISTICS, Hannelore Liero, University of Potsdam

WEIGHTED DEGENERATE U-STATISTICS WITH ESTIMATED PARAMETERS, Grace S. Shieh, University of Missouri

EXPONENTIAL AND KOLMOGOROV INEQUALITIES FOR U-STATISTICS, Tasos C. Christofides, University of Cyprus

CONSTRUCTIVE ASPECTS OF UNIFORM ORDER STATISTICS, P.E. Nuesch, Swiss Federal Institute of Technology

CHARACTERIZATIONS BASED ON THE DEPENDENCE STRUCTURES OF RECORD VALUES AND ORDER STATISTICS, H.N. Nagaraja, Ohio State University and Valery B. Nevzorov, University of St. Petersburg and Ohio State University

UPPER TOLERANCE LIMITS IN THE TWO-PARAMETER EXPONENTIAL DISTRIBUTION, Jeffrey J. Green, Ball State University

Friday, June 24, 10:45 a.m.

80. WALD MEMORIAL LECTURE (III)

POLYNOMIAL SPLINES AND THEIR TENSOR PRODUCTS IN FUNCTIONAL MODELING, Charles J. Stone, University of California, Berkeley

81. IMS SPECIAL INVITED PAPER

MEASURE-VALUED BRANCHING PROCESSES, Ed Perkins, University of British Columbia

82. FILTERING AND GENERAL INTEGRATION

Contributed Paper Session

ON THE CONNECTION BETWEEN STOCHASTIC SMOOTHING, FILTERING AND ESTIMATION WITH INCOMPLETE DATA, Jin Feng, University of Wisconsin

ON MINIMAX FILTRATION OF SYMBOLS IN THE SUM OF GAUSSIAN AND SMALL NON-GAUSSIAN NOISE, Mark S. Pinsker, Russian Academy of Sciences

EXPECTATION AND MARTINGALES OF POSITIVE RANDOM OBJECTS, Johan Jonasson, Chalmers University of Technology

83. GOODNESS OF FIT

Contributed Paper Session

TESTING WHETHER A COUNT VARIABLE BELONGS TO THE KATZ FAMILY, Dana Quade, University of North Carolina

A CHARACTERIZATION OF EQUALITY OF MULTIVARIATE DISTRIBUTIONS AND RELATED GOODNESS-OF-FIT TESTS, Robert Bartoszyński, Ohio State University

SOME TOPICS ON TESTING NORMALITY WITH THE EMPIRICAL CHARACTERISTIC FUNCTION, Sucharita Ghosh, WSL, Switzerland

EFFICIENCIES OF SOME TESTS OF EXPONENTIALITY BASED ON A LOSS-OF-MEMORY TYPE PROPERTY, Yakov Yu. Nikitin, St. Petersburg University

84. RANDOM MATRICES AND VECTORS, AND STOCHASTIC APPROXIMATION

Contributed Paper Session

THE SPECTRAL RADII AND NORMS OF LARGE DIMENSIONAL NON-CENTRAL RANDOM MATRICES, Jack W. Silverstein, North Carolina State University

POSITIVE DEFINITE FUNCTIONS AND ISOTROPIC RANDOM VECTORS, Alexander L. Koldobsky, University of Texas

WEIGHTED MEANS OF SLOWLY CONVERGENT PROCESSES IN STOCHASTIC APPROXIMATION, Joachim Renz, University of Stuttgart

Friday, June 24, 1:30 p.m.

85. LARGE DEVIATIONS AND PARTICLE SYSTEMS

Invited Paper Session

Organizer: F. den Hollander, University of Utrecht

Chair: F. den Hollander, University of Utrecht

LARGE DEVIATIONS AND BRANCHING PROCESSES IN A RANDOM ENVIRONMENT, A. Greven, Humboldt University, Berlin

LARGE DEVIATION BEHAVIOR OF RANDOM WALK INTERSECTIONS, S. Shlosman, University of Moscow and University of California, Irvine

LARGE DEVIATIONS AND HYDRODYNAMIC SCALING, S. R. S. Varadhan, Courant Institute

86. BAYESIAN COMPUTATION

Invited Paper Session

Organizer: J. Besag, University of Washington

Chair: I. Johnstone, Stanford University

COMPUTATIONS FOR BAYESIAN INFERENCE IN NON-STATIONARY SPECTRAL

ANALYSIS, M. West, Duke University

COMPUTATION FOR BAYESIAN GRAPHICAL MODELS, D. Madigan, University of Washington

MARKOV CHAIN MONTE CARLO COMPUTATION IN BAYESIAN INFERENCE, J. Besag, University of Washington

87. PROBABILITY IN MATHEMATICAL FINANCE

Invited Paper Session

Organizer: H. Foellmer, University of Bonn

Chair: L. Shepp, AT&T Bell Laboratories

SOME OPTIMIZATION PROBLEMS ARISING IN MATHEMATICAL FINANCE, I. Karatzas, Columbia University

A GENERAL VERSION OF THE FUNDAMENTAL THEOREM OF ASSET PRICING, W. Schachermayer, University of Vienna

ON OPTIMAL STOPPING IN OPTION PRICING, A. Shiryaev, Steklov Mathematical Institute, Moscow

88. POISSON APPROXIMATION AND EPIDEMIC PROCESSES

Contributed Paper Session

TOTAL VARIATION ASYMPTOTICS FOR POISSON PROCESS APPROXIMATIONS OF LOGARITHMIC COMBINATORIAL ASSEMBLIES, Richard Arratia, Dudley Stark, Simon Tavaré, University of Southern California

POISSON APPROXIMATION FOR POINT PROCESSES VIA MONOTONE COUPLINGS, Timothy C. Brown, Darryl Greig, University of Melbourne

COUPLING METHODS IN POISSON APPROXIMATION OF BINOMIAL PROCESSES, Jose A. Adell, Universidad de Zaragoza and Jesus de la Cal, Universidad del País Vasco

APPLICATIONS OF THE STEIN-CHEN METHOD TO SOME PROBLEMS IN COMBINATORICS AND NUMBER THEORY, Anant P. Godbole, Michigan Technological University

POISSON APPROXIMATION FOR THE FINAL STATE OF A GENERALISED EPIDEMIC PROCESS, Claude Lefevre, Université Libre de Bruxelles and Sergey Utev, Institute of Mathematics, Novosibirsk

THE FINAL SIZE OF A MULTITYPE CHAIN-BINOMIAL EPIDEMIC PROCESS, Mikael Andersson, Chalmers University of Technology

EPIDEMIC AND CLUSTERING MODELS FOR A POPULATION CONSISTING OF FAMILIES OF INDIVIDUALS, Tom Britton, Stockholm University

89. NONPARAMETRIC CURVE ESTIMATION (II)

Contributed Paper Session

EXPLORING REGRESSION USING NONPARAMETRIC ESTIMATION OF FUNCTIONALS OF CONDITIONAL QUANTILES, Alexander Samarov, Massachusetts Institute of Technology, and P. Chaudhuri and K. Doksum

CONDITIONAL GENERALIZED QUANTILES AND THEIR APPLICATION TO THE TESTING OF SYMMETRY IN NONPARAMETRIC REGRESSION, Zehua Chen, National University of Singapore

BAYESIAN INFERENCE IN NONPARAMETRIC LOGISTIC REGRESSION, Nandini Raghavan and Dennis D. Cox, The Ohio State University

ON THE USE OF KERNEL FUNCTIONS FOR THE ERROR DENSITY ESTIMATION, Zhu Yu

Li, Hiroshima University

ASYMPTOTIC NORMALITY OF GLOBAL MEASURES OF DEVIATION IN DENSITY ESTIMATION, Alain Berlinet, University of Montpellier

ASYMPTOTIC PROPERTIES OF AN ALTERNATIVE NEAREST NEIGHBOR DENSITY ESTIMATOR, Jun Yu, University of Umea

COMPUTATIONALLY EFFICIENT CLASSES OF HIGHER-ORDER KERNEL FUNCTIONS, Belkacem Abdous, Universite du Quebec a Trois-Rivieres

90. INFERENCE FOR TIME SERIES (I)  
Contributed Paper Session

ADAPTIVE ESTIMATION OF THE AUTOCORRELATION COEFFICIENT, Anton Schick, State University of New York at Binghamton

ASYMPTOTIC EFFICIENCY OF MODEL SELECTION CRITERIA IN AR PROCESSES, Alex Karagrigoriou, University of Cyprus

A GOODNESS-OF-FIT TEST FOR ARMA MODELS BASED ON SPECTRAL PROPERTIES OF THE RESIDUALS, Santiago Velilla, University

A NEW WAY TO ESTIMATE ORDERS IN TIME SERIES ANALYSIS, Hu-Ming Zhang and Ping Wang, Shan Xi University

RECURSIVE ESTIMATION AND SEGMENTATION IN SWITCHING AUTOREGRESSIONS WITH MARKOV REGIME, Ulla Holst, Georg Lindgren, Jan Holst and Mikael Thuvesholmen, University of Lund

SOME LIMIT THEORY FOR THE INTEGRATED PERIODOGRAM IN STABLE PROCESSES, T. Mikosch, Victoria University

THE PROOF OF A CONJECTURE ON ESTIMATED BDS STATISTIC, Xiaobao Wang, University of Texas at Dallas

Friday, June 24, 3:45 p.m.

91. LARGE DEVIATIONS  
Contributed Paper Session

LARGE DEVIATION PRINCIPLE FOR COMMON STATISTICAL TESTS, Narasinga Rao Chaganty, Old Dominion University

SELF-NORMALIZED LARGE DEVIATIONS AND THEIR APPLICATIONS TO STATISTICS, Qi-Man Shao, National University of Singapore

EXTREMAL LARGE DEVIATIONS IN CONTROLLED IID PROCESSES WITH APPLICATIONS TO HYPOTHESIS TESTING, Nahum Shimkin, RAFAEL Institute

LOWER BOUNDS OF THE CRAMER TYPE LARGE DEVIATION PROBABILITIES OF TESTS AND ESTIMATORS, Michail Ermakov, Mechanical Engineering Problem Institute RAN

THE LARGE DEVIATION PROBABILITIES FOR SUMS OF INDEPENDENT RANDOM  $\alpha < 2$  STABLE VARIABLES, Leonid V. Rozovsky, VNIIOkeangeologya, Saint-Petersburg

DEVIATION PRINCIPLE FOR SET INDEXED PROCESSES WITH INDEPENDENT INCREMENTS, Michel Broniatowski, IRMA, Universite Louis Pasteur

92. BAYESIAN METHODS, ROBUSTNESS AND OUTLIERS  
Contributed Paper Session

ROBUST EMPIRICAL BAYES METHODOLOGY, Melissa G. Smith, Richard L. Smith and Clarence E. Davis, University of North Carolina

SOME MODELING ISSUES FOR A SEMI-PARAMETRIC BAYESIAN ANALYSIS OF  
RANDOMIZED BLOCK DESIGNS, Christopher A. Bush, The Ohio State  
University

ROBUST PERMUTATION TESTS AND CONFIDENCE INTERVALS, John Robinson,  
University of Sydney

MINIMUM DISPARITY ESTIMATION IN PARAMETRIC MODELS, A.N. Vidyashankar,  
Iowa State University

IDENTIFICATION OF OUTLIERS IN MULTIVARIATE DATA, David M. Rocke and  
David L. Woodruff, University of California, Davis

ROBUST ESTIMATES OF ROTATION FROM BOUNDARY CROSSINGS, Daijin Ko,  
Virginia Commonwealth University and Ted Chang, University of Virginia

### 93. FINANCE

Contributed Paper Session

KELLY PRICING OF RISKS, Raoul LePage, Michigan State University

GENERALIZED STABLE MODELS FOR ASSET RETURNS, Anna K. Panorska, The  
University of Tennessee, Chattanooga

FITTING GEOMETRIC BROWNIAN MOTION: SOME COMPARISONS, Antonio F.  
Gualtierotti, IDHEAP, University of Lausanne/EPFL

PREDICTABILITY OF CONDITIONAL MOMENTS OF A TIME-VARYING DISTRIBUTION  
OF EXPECTED RETURNS ON A SMALL STOCK MARKET, Johan Knif and Kenneth  
Hogholm, Swedish School of Economics and Business Administration

ON STOCHASTIC VOLATILITY, Eckhard Platen, Australian National  
University

NORMS IN LINEAR MANIFOLDS OF THE SET OF SELF-FINANCING TRADING  
STRATEGIES, Oleg Vi. Rusakov, St. Petersburg State University

OPTIMAL STOPPING AND CONSUMPTION-INVESTMENT PROBLEMS, Abel Cadenillas  
and Suresh Sethi, University of Toronto

### 94. POISSON APPROXIMATION

Invited Paper Session

Organizer: L. H. Y. Chen, National University of Singapore

Chair: T. C. Brown, University of Melbourne

STEIN'S METHOD FOR COMPOUND POISSON APPROXIMATION, A. D. Barbour,  
University of Zurich

CONDITIONAL COMBINATORIAL STRUCTURES SUCH AS PERMUTATIONS AND  
PARTITIONS, R. Arratia, University of Southern California

POISSON APPROXIMATION FOR UNBOUNDED FUNCTIONS, L. H. Y. Chen, National  
University of Singapore

### 95. STATISTICAL ANALYSIS OF FUNCTIONAL DATA

Invited Paper Session

Organizer: B. Silverman, University of Bristol

Chair: G. Wahba, University of Wisconsin

WHAT CAN WE DO WHEN THE DATA ARE CURVES?, B. Silverman, University of  
Bristol

NON-PARAMETRIC AND SEMI-PARAMETRIC APPROACHES FOR ANALYZING SAMPLES OF  
CURVES, A. Kneip, University of Louvain

FUNCTIONAL DATA ANALYSIS AND SPECIAL PURPOSE SMOOTHING SPLINES, J. Ramsay, McGill University

96. INFERENCE FOR TIME SERIES (II)  
Contributed Paper Session

NONPARAMETRIC IDENTIFICATION OF A CLASS OF NONLINEAR TIMES SERIES SYSTEMS, Mirek Pawlak, University of Manitoba; Ronald K. Pearson, DuPont de Nemours and Co.; T. Ogunnaike, DuPont de Nemours and Co.; and F.J. Doyle, Purdue University

RECURSIVE ESTIMATION FOR SOME NONSTATIONARY-NONLINEAR MODELS, A. Thavaneswaran, University of Manitoba

DATA ADAPTIVE KERNEL ESTIMATION OF THE SPECTRAL DENSITY OF A STATIONARY TIME SERIES, Kurt S. Riedel and Alexander Sidorenko, Courant Institute, New York University

NONLINEARITY TESTS AND THE RIVERFLOW MODELLING, Alvaro M.D. Nunes, University of Macau

STATIONARISING TIME SERIES VIA THE BOX-COX TRANSFORMATION, Emmanuel Guerre, Universite Paris 6

DYNAMIC CHARACTERIZATION OF ASYMMETRICALLY DISTRIBUTED DATA, Ronald K. Pearson, DuPont de Nemours and Co.

ASYMPTOTICS OF SOME ESTIMATORS AND SEQUENTIAL RESIDUAL EMPIRICALS IN NON-LINEAR TIME SERIES, Need name and affiliation?

Saturday, June 25, 8:30 a.m.

97. NONPARAMETRIC CLASSIFICATION AND FUNCTION ESTIMATION  
Contributed Paper Session

A NEAREST NEIGHBOR CLASSIFICATION RULE FOR MULTIPLE OBSERVATIONS BASED ON A SUB-SAMPLE APPROACH, Subhash C. Bagui, University of West Florida; K.L. Mehra, University of Alberta; and M.S. Rao, Osmania University

PROJECTION PURSUIT DISCRIMINANT ANALYSIS, Jorg Polzehl, Konrad-Zuse-Zentrum fur Informationstechnik

BOOTSTRAP SELECTION OF THE SMOOTHING PARAMETER IN NONPARAMETRIC HAZARD RATE ESTIMATION, Wenceslao Gonzalez-Manteiga, University of Santiago de Compostela; Ricardo Cao, University of Coruna; and James S. Marron, University of North Carolina

BIAS CORRECTION FOR BOOTSTRAP BANDWIDTH SELECTORS, Birgit Grund, University of Minnesota and Jorg Polzehl, Zuse-Zentrum fur Informationstechnik

ESTIMATION OF QUANTILE IN SOME NONSTANDARD CASES, Xiaojing Xiang, University of Oregon

LOG-DENSITY ESTIMATION IN LINEAR INVERSE PROBLEMS, Ja-Yong Koo, Hallym University, Korea

98. PROBABILITY ON TREES  
Invited Paper Session

Organizer: D. Aldous, University of California, Berkeley  
Chair: D. Aldous, University of California, Berkeley

INTRODUCTION TO PROBABILITY ON TREES, R. Lyons, University of Indiana

INTERSECTION-EQUIVALENCE OF BROWNIAN PATHS AND BRANCHING PROCESSES, Y. Peres, University of California, Berkeley

MORE PROBABILITY ON TREES, R. Pemantle, University of Wisconsin

99. TIME SERIES ANALYSIS

Invited Paper Session

Organizer: R. A. Davis, Colorado State University

Chair: R. A. Davis, Colorado State University

LINEAR PROGRAMMING TIME SERIES ESTIMATORS, S. Resnick, Cornell University

MODELLING OF TIME SERIES BY LOCALLY STATIONARY PROCESSES, R. Dahlhaus, University of Heidelberg

METHODS AND THEORY FOR SELF-SIMILAR PROCESSES, P. Robinson, London School of Economics

100. STATISTICAL METHODS IN MOLECULAR SCIENCE

Invited Paper Session

Organizer: E. A. Thompson, University of Washington

Chair: D. Balding, Queen Mary and Westfield College, London

BAYESIAN RESTORATION OF A HIDDEN MARKOV CHAIN WITH APPLICATIONS TO DNA SEQUENCE ASSEMBLY, G. Churchill, Cornell University

MONTE CARLO LIKELIHOOD METHODS IN POPULATION GENETICS, S. Tavaré, University of Southern California

MONTE CARLO LIKELIHOOD IN GENETIC ANALYSIS, E. A. Thompson, University of Washington

Saturday, June 25, 10:45 a.m.

101. IMS SPECIAL INVITED PAPER

CURVE ESTIMATION: LOCAL FEATURES AND SHAPE CHARACTERISTICS, Enno Mammen, University of Heidelberg

102. BRANCHING PROCESSES

Contributed Paper Session

PATH PROPERTIES IN SUPERCRITICAL BRANCHING, Paul McGill, University of North Carolina

LARGE DEVIATIONS IN MULTITYPE BRANCHING PROCESS, K. B. Athreya and A.N. Vidyashankar, Iowa State University

BRANCHING RANDOM WALK IN RANDOM ENVIRONMENTS, A. N. Vidyashankar, Iowa State University

LEVEL CROSSINGS FOR BRANCHING DIFFUSIONS, K. B. Athreya, A. N. Vidyashankar, A. P. N. Weerasinghe, Iowa State University

MEASURE-BRANCHING RENEWAL PROCESS, Serik Sagitov, NAS of Kazakhstan

103. TIME SERIES STRUCTURE

Contributed Paper Session

WEAK CONVERGENCE OF AUTOREGRESSIVE PROCESSES, Martin Jacobsen, University of Copenhagen

ON CONTINUOUS TIME THRESHOLD ARMA PROCESSES, Osnat T. Stramer, Colorado



State University; Peter J. Brockwell, Royal Melbourne Institute of Technology; and Richard L. Tweedie, Colorado State University

FREQUENCY DETERMINATION FOR SOME ALMOST PERIODICALLY CORRELATED PROCESSES Dominique Dehay, IRMAR, Universite de Rennes 1, and Jacek Leskow, University of California, Santa Barbara

ON THE DISTRIBUTION OF MAXIMUM OF LINEAR PROCESSES, Serge G. Bobkov, Syktyvkar State University

PREDICTION OF  $P_n$ -WEAKLY STATIONARY PROCESSES, Volker Hosel, GSF Research Center, Munich

104. STATISTICAL APPLICATIONS IN SCIENCE  
Contributed Paper Session

STATISTICS OF SPATIALLY STRUCTURED STOCHASTIC PROCESSES MODELLING CRYSTALLIZATION OF POLYMERS, Vincenzo Capasso, Marcello De Giosa, Alessandra Micheletti, Rosamaria Mininni, University of Bari and University of Milano

BOOTSTRAP CONFIDENCE BANDS AND REGRESSION IN ANTIHAILING EXPERIMENTS, Eugenia I. Jilinskaja, Irina A. Kuznetsova, Moscow State University

STATISTICAL ANALYSIS OF THE CORRECTION FOR THE EFFECT OF DELAY ON THE REPORTING OF AIDS CASES, Cesar Sanchez-Sellero, University of Santiago de Compostela

Saturday, June 25, 1:30 p.m.

105. LAPLACE LECTURE

BAYESIAN NONPARAMETRICS BY SIMULATION, Adrian F. M. Smith, University of Nottingham

Saturday, June 25, 3:00 p.m.

106. BERNOULLI LECTURE

A NEW LOOK AT 2 BY 2 TABLES WITH APPLICATIONS TO CLINICAL TRIALS AND DISCRIMINATION, Herman Chernoff, Harvard University

Saturday, June 25, 4:00 p.m.

CLOSING CEREMONY