



10th International Conference

2013

Minsk, Belarus

COMPUTER DATA ANALYSIS AND MODELING: THEORETICAL AND APPLIED STOCHASTICS

Program

Belarusian State University

September 10–14, 2013,



БПС-СБЕРБАНК

INFOPARK



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H. Ageeva – Visa support

O. Golos – Registration

A. Kapusta, M. Mitskevich – Conference Web site

A. Kharin – E-correspondence, reviewing process

A. Shilkin – Publishing

I. Bodiagin – Technical organization of sessions

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E. Orlova, S. Staleuskaya, N. Shenets – Social program

I. Pirshtuk, V. Voloshko – Accommodation, arrival, departure

M. Maltsev, E. Vechorko – Transport service

Conference Schedule

Tuesday	Main Building of the BSU, room 110, 4 Nezavisimosty av.	September 10
	8.00–20.00	Registration
	15.00 – 19.00	Walking city tour
Wednesday		September 11
	9.00 – 9.30	Opening ceremony
	9.30 –13.00	Plenary presentations
	14.15 – 18.00	Section presentations
	18.00 – 22.00	Welcome Party
Thursday		September 12
	9.00 – 13.00	Plenary presentations
	14.15 – 18.00	Section presentations
	19.00	Theaters
Friday		September 13
	9.00 – 13.00	Plenary presentations
	14.15 – 17.40	Section presentations
	17.40 – 18.00	Closing session
	18.00	Amateur Music Party
Saturday		September 14
	9.00–16.00	Excursion Departure
Everyday		September 11, 12, 13
	10.30 – 10.50, 15.40–16.00	Coffee Break
	13.00 – 14.15	Lunch Time
	(lunches are not included into the registration fee)	

Time and Place of Sessions

Room	R0	R0	R1	R2
Time	9.00-13.00	14.15-18.00	14.15-18.00	14.15-18.00
Sep.11	O, P	S1	S2	S4
Sep.12	P	S3	S5	
Sep.13	P	S6, C	S7	

P – Plenary, **S1–S7** – Sections, **O** – Opening, **C** – Closing

The Conference sessions will be held in the building of Lyceum of BSU, Ulianovskaya str., 8.

Scientific program

Wednesday, September 11

Time	Chair: Prof. Yu. Kharin	Plenary presentations
9.00–9.30		Opening ceremony
9.30–10.00	P. Filzmoser	<i>Opening Lecture:</i> A PROJECTION-PURSUIT METHOD FOR SPARSE ROBUST PCA
10.00–10.30	R. Fried, H. Elsaied, T. Liboschik, K. Fokianos, S. Kitromilidou	ON OUTLIERS AND INTERVENTIONS IN COUNT TIME SERIES FOLLOWING GLMs
10.50–11.20	C. Francq, S.G. Meintanis	FOURIER-TYPE ESTIMATION OF THE POWER GARCH MODEL WITH STABLE-PARETIAN INNOVATIONS
11.20–11.50	E. Stoimenova	RANK TESTS FOR MULTI-SAMPLE LOCATION PROBLEM
11.50–12.20	G.L. Shevlyakov, P.O. Smirnov, N.S. Lyubomishchenko,	SOME REMARKS ON ROBUST ESTIMATION OF POWER SPECTRA
12.20–12.50	Y.S. Mishura, K.V. Ralchenko, G.M. Shevchenko	PARAMETER ESTIMATION IN THE MODELS WITH LONG-RANGE DEPENDENCE

14.15–17.40

Section presentations

Section 1		Robust and Multivariate Data Analysis
Time	Chair: Prof. E. Stoimenova	
14.15–14.40	C. Mert, P. Filzmoser, K. Hron	SPARSE PRINCIPAL BALANCES FOR HIGH-DIMENSIONAL COMPOSITIONAL DATA
14.40–15.00	B.A. Zalesky	REGRESSION SMOOTHING KALMAN FILTER
15.00–15.20	L.K. Shiryaeva	THE JOINT DISTRIBUTION OF THE STANDARDIZED MAXIMUM AND STANDARDIZED MINIMUM FOR A NORMAL SAMPLE
15.20–15.40	D.M. Esaulov	APPLICATION OF RESIDUAL EMPIRICAL PROCESSES TO ROBUST LINEAR HYPOTHESES TESTING IN AUTOREGRESSION

16.00–16.15	M.M. Luz, M.P. Moklyachuk	ROBUST INTERPOLATION PROBLEM FOR STOCHASTIC SEQUENCES WITH STATIONARY INCREMENTS
16.15–16.30	K. Andrea, G.L. Shevlyakov, P.O. Smirnov	DETECTION OF OUTLIERS WITH BOXPLOTS
16.30–16.45	A. Doronin	SEMIPARAMETRIC ESTIMATION IN MIXTURE MODELS WITH VARYING MIXING PROBABILITIES
16.45–17.00	E.E. Zhuk	ASSIGNMENT OF MULTIVARIATE SAMPLES TO THE FIXED CLASSES BY THE MAXIMUM LIKELIHOOD METHOD AND ITS RISK
17.00–17.15	M.V. Maltsev	ON STATISTICAL ESTIMATION FOR MARKOV CHAIN OF CONDITIONAL ORDER
17.15–17.30	V.P. Kirlitsa	ABOUT D- AND A-OPTIMAL DESIGNS OF EXPERIMENTS
17.30–17.45	V.I. Lobach	ON ROBUST KALMAN FILTERING WITH USING WAVELET ANALYSIS
17.45–18.00	S.Yu. Chernov, A.Yu. Kharin	ERROR PROBABILITIES FOR SEQUENTIAL TESTING OF SIMPLE HYPOTHESES UNDER FUNCTIONAL DISTORTIONS IN THE L ₂ -METRIC

Section 2

Statistical Analysis of Time Series and Stochastic Processes

Time	Chair: Prof. R. Fried	
14.15–14.40	M.V. Boldin	ON QUALITATIVELY ROBUST SIGN TEST IN RANDOM WALK MODE
14.40–15.00	V.V. Tomashyk	PROPERTIES OF OPTIMAL STOPPING AND EXIT TIMES FOR DIFFUSION PROCESSES AND RANDOM WALKS
15.00–15.20	K. Dučinskas, M. Karaliutė, I. Šimkienė	MISCLASSIFICATION PROBABILITY BASED ON LINEAR DISCRIMINANT FUNCTION FOR SAR ERROR MODELS
15.20–15.40	A.D. Egorov	APPROXIMATE FORMULAS FOR EXPECTATION OF FUNCTIONALS FROM SOLUTION TO STOCHASTIC EQUATION WITH RANDOM MEASURE
16.00–16.20	L.A. Yanovich	ON FORMULAS OF LINEAR INTERPOLATION FOR OPERATORS GENERATED BY SOLUTIONS OF STOCHASTIC DIFFERENTIAL EQUATIONS

16.20–16.40	I.I. Dubovetska, M.P. Moklyachuk	MINIMAX EXTRAPOLATION PROBLEM FOR PERIODICALLY CORRELATED PROCESSES
16.40–17.00	V.A. Valoshka, Yu.S. Kharin	ON COMPARISON OF CLASSICAL AND CEPSTRUM-BASED FORECASTS
17.00–17.20	V.S. Mukha, M.V. Prishchepchik	MODELING OF SPATIAL QUEUES SYSTEM
17.20–17.40	I.A. Badziahin	ON PARAMETERS ESTIMATION OF AUTOREGRESSIVE TIME SERIES UNDER RIGHT CENSORING
17.40–18.00	S.V. Lobach	PREDICTION OF TIME SERIES BASED ON STATE SPACE MODEL

Section 4

Computer Simulation of Stochastic Systems

Time	Chair: Prof. Yu. Pavlov	
14.15–14.40	A. Zilinskas	ON STATISTICAL MODELS BASED MULTI-OBJECTIVE OPTIMIZATION
14.40–15.00	Y.S. Mishura, G.M. Shevchenko	PARAMETER ESTIMATION FOR DIFFUSION PROCESSES: UNKNOWN FACTS IN THE WELL-KNOWN THEORY
15.00–15.20	N.V. Kopyarova, N.A. Sergeeva	IDENTIFICATION OF NONLINEAR DYNAMICAL SYSTEMS UNDER CONDITIONS OF LITTLE A PRIORY INFORMATION
15.20–15.40	A.V. Medvedev	H-MODELS FOR NON-INERTIA SYSTEMS WITH DELAY
16.00–16.20	E.A.Chzhan, A.A.Korneeva, N.A.Sergeeva	ABOUT DATA ANALISIS IN NONPARAMETRIC IDENTIFICATION PROBLEM
16.20–16.40	M. Matalytski, T. Rusilko, A. Pankov	ASYMPTOTIC ANALYSIS OF THE CLOSED QUEUEING STRUCTURE WITH TIME-DEPENDENT SERVICE PARAMETERS
16.40–17.00	V.V. Naumenko, M.A. Matalytski	ANALYSIS OF G-NETWORK AT TRANSIENT BEHAVIOR AND ITS APPLICATION
17.00–17.20	O.M. Kiturko, M.A. Matalytski	EXPECTED INCOME OF QUEUEING STRUCTURE AND ITS APPLICATION IN TRANSPORT LOGISTIC
17.20–17.40	H. Aheyeva	ON HYPOTHESIS TESTING FOR REGRESSION MODEL UNDER CLASSIFICATION OF DEPENDENT VARIABLE
17.40–18.00	E.V. Kosareva	INCOME FORECASTING IN HM-NETWORK WITH TIME-DEPENDENT PARAMETERS

Thursday, September 12

Time	Chair: Prof. P. Filzmoser	Plenary presentations
09.00–9.30	A.M. Zubkov, M.V. Filina	DIFFERENCES BETWEEN THE PEARSON STATISTICS DISTRIBUTION FUNCTION AND (NON)-CENTRAL CHI-SQUARE DISTRIBUTION FUNCTION
09.30–10.00	Yu. S. Kharin	LONG-MEMORY DISCRETE-VALUED TIME SERIES: MODELS AND METHODS
10.00–10.30	R. Karbauskaitė, G. Dzemyda	INVESTIGATION OF THE MAXIMUM LIKELIHOOD ESTIMATOR OF INTRINSIC DIMENSIONALITY
10.50–11.20	A.V. Kolchin, E.G. Ionkina	ON ACQUISITION OF NOCICEPTIVE EVOKED POTENTIALS IN RATS CEREBRAL CORTEX
11.20–11.50	M.M. Leri, Yu.L. Pavlov	POWER-LAW GRAPHS ROBUSTNESS AND FOREST FIRES
11.50–12.15	A. Yu. Kharin	SEQUENTIAL TESTING OF PARAMETRIC HYPOTHESES: PERFORMANCE, ROBUSTNESS AND APPLICATION
12.15–12.40	D. Perrotta, M. Riani, A. Cerioli, F. Torti	SCALABILITY PROPERTIES OF A NEW FORWARD SEARCH ALGORITHM
12.40–13.05	V. Witkovský	ON THE EXACT TOLERANCE INTERVALS FOR UNIVARIATE NORMAL DISTRIBUTION

14.15–17.40

Section presentations

Section 3

Probabilistic and Statistical Analysis of Discrete data

Time	Chair: Prof. A. Zubkov	
14.15–14.40	A.M. Zubkov	IMPROVED ESTIMATES OF THE TOTAL VARIATION DISTANCE FOR INDEPENDENT EXPERIMENTS
14.40–15.00	V.I. Kruglov, A.M. Zubkov,	WEIGHT SPECTRA OF RANDOM LINEAR CODES
15.00–15.20	E.V. Korotkov, M.A. Korotkova, Y.M. Suvorova	PAIR CHANGE POINTS OF THE TRIPLET PERIODICITY OF GENES
15.20–15.40	Yu.S. Kharin, M.K. Zhurak	ON STATISTICAL ESTIMATION OF PARAMETERS FOR POISSON CONDITIONAL AUTOREGRESSIVE MODEL BY SPACE-TIME DATA

16.00–16.20	E.V. Khil	MARKOV PROPERTIES OF GAPS BETWEEN LOCAL MAXIMA IN A SEQUENCE OF INDEPENDENT RANDOM VARIABLES
16.20–16.40	D.O. Menshenin, A.M. Zubkov	HYPOTHESES TESTING FOR BINARY SEQUENCES OBTAINED BY THE NEUMANN TRANSFORM
16.40–17.00	A.A. Serov	ON THE NUMBER OF SUBFUNCTIONS OF RANDOM BOOLEAN FUNCTION WHICH ARE CLOSE TO THE AFFINE FUNCTIONS SET
17.00–17.15	A.V. Shilkin, A.L. Kostevich	ON THE POWER OF TEST FOR RANDOMNESS ON THE BASE OF LEMPEL–ZIV PREDICTOR
17.15–17.30	Y.M. Suvorova, E.V. Korotkov	STUDYING OF GENOME-SPECIFICITY OF TRIPLET PERIODICITY
17.30–17.45	A.V. Sidorenko, K.S. Mulyarchik	THE ANALYSIS OF THE AVALANCHE EFFECT IN DISCRETE CHAOTIC MAPS
17.45–18.00	E.V. Vecherko	ON STATISTICAL ANALYSIS OF EMBEDDING IN BINARY MARKOV CHAIN

Section 5

Computer Data Analysis in Applications

Time	Chair: Prof. G. Dzemyda	
14.15–14.35	J. Bernatavičienė, G. Bazilevičius, G. Dzemyda, V. Medvedev	COMPARATIVE ANALYSIS OF SIMILARITY MEASURES FOR MEDICAL STREAMING DATA
14.35–15.55	N.S. Konnova, M.A. Basarab	DIGITAL SIGNAL PROCESSING OF BLOOD FLOW VOLUME VELOCITY DOPPLER SENSOR BASED ON NONLINEAR DYNAMICS METHODS
15.55–15.15	S. Bělašková, E. Fišerová	APPLICATION OF COX REGRESSION MODEL FOR LEFT-TRUNCATED DATA
15.15–15.40	E.V. Perekhodtseva	THE MODEL OF THE STOCHASTIC OPTIMIZATION OF THE AUTOMATED FORECAST OF DANGEROUS SQUALLS AND RYNOES OVER THE TERRITORY OF BELARUS
16.00–16.15	V.A. Kovalev, V.A. Liauchuk, I.U. Safonau	EXAMINING THE FEASIBILITY OF PREDICTING DRUG RESISTANCE OF LUNG TUBERCULOSIS USING IMAGE DATA
16.15–16.30	V.A. Kovalev, M. Alilou	A STOCHASTIC RESHAPABLE CONTOUR MODEL FOR MICROSCOPIC IMAGE SEGMENTATION
16.30–16.45	M.S. Abramovich, M.M. Mitskevich	ROBUST SPATIO-TEMPORAL CLUSTER ANALYSIS OF DISEASE

16.45–17.00	M.A. Basarab, I.P. Ivanov, A.V. Kolesnikov, L.I. Kolobaev	UNIVERSITY CORPORATIVE NETWORK TRA_C ANALYSIS BASED ON THE METHODS OF NONLINEAR DYNAMICS
17.00–17.15	D.A. Viattchenin	A NEW APPROACH TO REDUCTION OF LARGE DATA SET
17.15–17.30	K. Navickaya, B. Zhelezko	THE ANALYSIS OF THE INFLUENCE OF THE INFORMATION SOCIETY'S DEVELOPMENT ON THE ECONOMIC PERFORMANCE IN REGIONS OF BELARUS
17.30–17.45	A.M. Kapusta	TWO-STEP PROCEDURE TO DETECT MODIFIED JPEG IMAGES
17.45–18.00	E.S. Makarova, V.M. Buloychik	DECISION-MAKING DURING COMPUTER SIMULATION
17.45–18.00	V.I. Nikitenok	FAST NONPARAMETRIC ALGORITHM FOR CHANGE POINT DETECTION IN STOCHASTIC PROCESS

Friday, September 13

Time	Chair: Prof. Y.S. Mishura	Plenary presentations
09.00–9.30	S. Aivazian, M. Afanasiev, V. Rudenko	SOME SPECIFICATION ASPECTS FOR THREE- FACTOR MODELS OF A COMPANY'S PRODUCTION POTENTIAL TAKING INTO ACCOUNT INTELLECTUAL CAPITAL
9.30–10.00	R. Rudzkis, A. Bakshaev	GOODNESS OF FIT TESTS BASED ON KERNEL DENSITY ESTIMATORS
10.00–10.30	Maria-Pia Victoria-Feser	GENERALIZED METHOD OF WAVELET MOMENTS FOR THE ESTIMATION OF COMPOSITE STOCHASTIC MODELS
10.50–11.15	M. Templ	PROVIDING DATA WITH HIGH UTILITY AND NO DISCLOSURE RISK FOR THE PUBLIC AND RESEARCHERS: AN EVALUATION BY ADVANCED STATISTICAL DISCLOSURE RISK METHODS
11.15–11.40	V. Todorov, P. Filzmoser	R TOOLS FOR ROBUST STATISTICAL ANALYSIS OF HIGH—DIMENSIONAL DATA
11.40–12.05	E. Fišerová, L. Kubáček	SOME REMARKS ON DECOMPOSITION OF PARTITIONED MULTIVARIATE MODELS INTO TWO SEEMINGLY UNRELATED SUBMODELS
12.05–12.30	V. Malugin	TESTING FOR STRUCTURAL HETEROGENEITY IN VECTOR AUTOREGRESSIVE MODEL BY MEANS OF STATISTICAL CLASSIFICATION METHODS

12.30–13.00 **W. Charemza, C. Díaz,
S. Makarova**

Closing Lecture: TOO MANY SKEW NORMAL
DISTRIBUTIONS? THE PRACTITIONER'S
PERSPECTIVE

14.15–17.40

Section presentations

Section 6

**Econometric and Financial
Analysis and Modeling**

Time Chair: Prof. W. Charemza

14.15–14.40 **R. Rudzkis,
R. Uzdanavičiūtė**

ECONOMETRIC MODELS OF THE IMPACT OF
MACROECONOMIC PROCESSES ON THE
STOCK MARKET IN THE BALTIC COUNTRIES

14.40–15.00 **G. A. Medvedev**

MULTIFACTOR MODELS OF TERM STRUCTURE
OF YIELD FOR ZERO COUPON BONDS

15.00–15.20 **S. P. Sidorov, P. Date, V. A. Balash,
A. R. Faizliev,
E. Korobov**

INDIVIDUAL STOCK VOLATILITY MODELLING
WITH GARCH–JUMPS MODEL AUGMENTED
WITH NEWS ANALYTICS DATA

15.20–15.40 **M.K. Kravtsov, N.M. Bareika,
A.K. Nikitsina**

EXTENDED VERSION OF ECONOMETRIC
MACROMODEL FOR FORECASTING OF THE
MAIN PARAMETERS OF SOCIO-ECONOMIC
DEVELOPMENT OF THE REPUBLIC OF
BELARUS

16.00–16.20 **I. Belovas, V. Starikovičius**

MIXED-STABLE MODELLING OF
HIGH-FREQUENCY FINANCIAL DATA:
PARALLEL COMPUTING APPROACH

16.20–16.40 **N. Hryn, V. Malugin,
A. Novopoltsev**

STATISTICAL COMPANY'S CREDIT RATINGS
AND THEIR ECONOMETRIC ANALYSIS

16.40–17.00 **A. Miksjuk**

WHAT DRIVES BELARUSIAN EXPORT?
AN ECONOMETRIC EXERCISE

17.00–17.15 **N.M. Zuev**

CALCULATION OF EUROPEAN TYPE OPTIONS

17.15–17.30 **P.M. Lappo**

FINITE-TIME RUIN PROBABILITIES IN THE
DISCRETE RISK MODEL

17.30–17.45 **A.A. Egorov**

A CONDITIONAL CONVERGENCE ANALYSIS
OF PER CAPITA INCOMES

17.45–18.00 **A.I. Zmitrovich, S.N. Zborovskiy,
A.V. Krivko-Krasko**

EXPRESS ANALYSIS OF THE FINANCIAL
CONDITION OF A COMPANY

Section 7

Survey Analysis and Official Statistics

Time	Chairs: Prof. R. Rudzkis, Prof. N.C. Bokun	
14.15–14.35	N.C. Bokun	LABOUR FORCE SURVEY: METHODOLOGICAL PROBLEMS
14.35–14.50	L.I. Karpenko, N.E. Pekarskaya	POPULATION OF THE REPUBLIC OF BELARUS ON AGE AND MARITAL STATUS
14.55–15.10	M.M. Novikov	. MODELLING OF EQUILIBRIUM ECONOMIC DYNAMICS IN GLOBAL SYSTEM OF EXPORT- IMPORT COOPERATION
15.10–15.25	L.A. Soshnikova	METHODS OF INDIRECT ESTIMATION OF THE INNOVATIVE DEVELOPMENT INTENSITY
15.25–15.40	V.I. Lialikova, G.A. Khatskevich	MODELING THE RELATIONSHIP OF THE QUALITY OF LIFE AND THE INVESTMENT ATTRACTIVENESS IN GRODNO REGION
16.00–16.15	A. Kovalev	STOCHASTIC SIMULATION MODEL OF EMPLOYMENT AND MIGRATION
16.15–16.30	A.G. Kulak	STATISTICAL ASSESSMENT OF THE LIFE POTENTIAL IN THE REGIONS OF THE REPUBLIC OF BELARUS
16.30–16.45	A.V. Larchenko	REPRODUCTIVE HEALTH SURVEY IN BELARUS
16.45–17.00	O.G. Matkovskaya	APPLICATION OF MODELS WITH THE DISTRIBUTED LAG IN THE ANALYSIS OF EKOLOGO-DEMOGRAPHIC INTERRELATIONS
17.00–17.10	E.V.Yermalitskaya	INTRODUCTION OF MODERN METHODS OF DISSEMINATION OF STATISTICAL INFORMATION
17.10–17.20	S.U. Visockij	MULTIDIMENSIONAL COMPARATIVE ANALYSIS OF INNOVATIVE ACTIVITY OF TERRITORIAL UNITS
17.20–17.30	L.E. Soshnikov	NEURAL NETWORK SIMULATION OF THE INDUSTRIAL PRODUCER PRICE INDEX DYNAMICAL SERIES
17.30–17.40	Y. Y. Sharilova	AN APPLICATION OF METHODS OF FACTOR ANALYSIS IN THE ASSESSMENT OF STATUS AND DYNAMICS OF THE AGE STRUCTURE OF THE POPULATION OF THE REPUBLIC OF BELARUS

17.40–18.00

Closing session

Chair: Prof. Yu. Kharin

Organizing Committee

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