



SOUTH-WEST
UNIVERSITY
·NEOFIT RILSKY·

66 "IVAN MIHAILOV" STR.
2700 BLAGOEVGRAD



PROGRAM

Sixth International Conference

FMNS-2015

10 - 14.06.2015, Blagoevgrad, BULGARIA

**Conference is supported by the Ministry of Science
and Education of Republic of Bulgaria**

Patronized by
Prof. Ivan Mirchev, DSc
Rector of the South-West University
<http://www.swu.bg>

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MINI-CONFERENCE "INQUIRY-BASED APPROACH IN HIGHER EDUCATION IN MATHEMATICS AND INFORMATICS"

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GENERAL TOPICS:

Mathematics

Informatics

Computer Technologies

Geography, Ecology and Environment Protection

Physics and Technology

Chemistry

Methodology in Education

MINI-CONFERENCE "Inquiry-Based Approach in Higher Education in Mathematics and Informatics"

ROUND TABLE "Energy and Sustainable Development"

Sessions

13:30 - 15:00

15:30 - 17:00

University Conference Center "Bachinovo"

Official Dinner

20:00, 11.06.2015

University Conference Center "Bachinovo"

Cocktail Party

25-th Anniversary of Faculty of Mathematics and Natural Sciences

16:00, 12.06.2015

University Conference Center "Bachinovo"

Program Overview

Registration (10.06.2015)

13:00 – 18:30

University Conference Centre “Bachinovo”

Registration (11.06.2015)

08:00 – 10:30

University Conference Centre “Bachinovo”

Opening Ceremony

10:00 – 10:15

Central Auditorium of Conference Center
Chairman: Assoc. Prof. Stefan Stefanov, PhD

Plenary Report (11.06.2015)

10:15 – 11:00

Central Auditorium of Conference Center
"The State of the Planet - a Look from Past to Future"
Acad. Prof. Todor Nikolov, DSc

Plenary Report (11.06.2015)

11:00-11:45

"Cooperation between the Joint Institute for Nuclear Research and the
Republic of Bulgaria. Present and Future."

Prof. Latchesar Kostov, PhD

Plenary Report (11.06.2015)

11:45-12:30

"The Post-Normal Science: Features and New Trends"

Prof. Borislav Toshev, DSc

Plenary Report (11.06.2015)

12:30-13:15

" The basic features of the relief in Montenegro"

Prof. Predrag Djurovic, PhD

**Mini-conference “Inquiry-Based Approach in Higher Education in
Mathematics and Informatics”**

Conference Hall, 14.00 – 18.00, 11.06.2015

Round Table (12.06.2015) 10:45 – 13:00 Hall 4

Energy and sustainable development

**25-th Anniversary of Faculty of Mathematics and Natural Sciences
Central Auditorium, 14.00 – 16.00, 12.06.2015**

Section: Mathematics and Informatics
Hall 11

Thursday, June 11	
Chairman: <i>Assoc. Prof. Slavcho Shtrakov</i>	
14:00-14:15	Using CLIPS to Realize Quality of Life Expert System (QLIFEX) Irena Atanasova
14:15-14:30	Mathematical model of visceral leishmaniasis: Biological sense of threshold conditions Muhammad Zamir, Gul Zaman, Ahmed Elaiw
14:30-14:45	Surface fitting of the results of molecular docking and the biological activity of δ -selective enkephalin analogues Fatima Sapundzhi, Tatyana Dzimbova, Nevena Pencheva, Peter Milanov
14:45-15:00	Semi-canonical binary matrices Krasimir Yordzhev
15:00-15:15	Mathematical modelling of biomechanical relationships of flexors and extensors Gergana Koroleova, Iliya Kanelov, Stefan Stefanov, Nevena Pencheva
15:15-15:30	On the Classification of the Boolean Functions Slavcho Shtrakov, Ivo Damyanov
15:30-15:45	On a Mathematical Model Describing the Adaptive Immune Response to Viral Infection Anka Markovska
15:45-16:00	Evolution computing Asen Tochev
16:00-16:15	Building Real-Time Web Applications with SignalR and NoSQL Databases Iliya Nedyalkov, Ivo Damyanov
16:15-16:30	Reduced Differential Transform Method For Harry Dym Equation Sema Servi, Yildiray Keskin, Galip Oturanc
Coffee break	

Section: Mathematics and Informatics
Hall 11

Thursday, June 11	
Chairman: Prof. Donco Dimovski	
17:00-17:15	New approach for numerical solution of non-Newtonian Nanofluid Flow between two vertical plates. Murat Gubes, Galip Oturanc
17:15-17:30	Some properties concerning $(3,2,\rho)$ -K-metrizable spaces Tomi Dimovski, Donco Dimovski
17:30-17:45	SEPARATION PROPERTIES FOR SOME TOPOLOGIES INDUCED BY $(3,j,\rho)$ -METRICS, $j \in \{1,2\}$ Sonja Čalamani, Tomi Dimovski, Dončo Dimovski
17:45-18:00	A REVIEW ON APPLICATIONS OF GRAPH THEORY IN NETWORK ANALYSIS Besjana Tosuni
18:00-18:15	A COMPARISON OF BLOCK BOOTSTRAP PROCEDURES FOR PERIODIC TIME SERIES Lorena Margo, Lorenc Ekonomi, Eljona Milo
18:15-18:30	A Clustering Based Iterative Forward Search Algorithm to University Course Timetabling Problem Velin Krlev, Radoslava Krleva
18:30-18:45	The hybrid weighted diaphony Vassil Grozdanov, Silviya Baycheva

Section: Mathematics and Informatics
Hall 11

Friday, June 12	
Chairman: Assoc. Prof. Vasil Grozdanov	
09:00-09:15	A characterization of generalized $(m+k,m)$ -rectangular bands Valentina Miovska, Donco Dimovski
09:15-09:30	Investigation of the Role of Matrix Degradative Enzymes on the Migration of Tumor Cells Mikhail Kolev, Boiana Garkova
09:30-09:45	Optimization model of loan portfolio Krasimira Stoyanova
09:45-10:00	Extremal graphs for general sum-connectivity index with $\alpha > 1$ Rozica-Maria Tache
10:00-10:15	Risk analysis with R Language Metodi Traykov, Miglena Trencheva, Ivan Todorin, Radoslav Mavrevski, Anton Stoilov, Ivan Trenchev
10:15-10:30	Solution to Discrete Exterior Dirichlet Problem of Gravitational Potential Determination to Real Geometries Elena Kotevska, Willi Freeden
10:30-10:45	The weighted $(\mathcal{W}(b); \alpha, \beta, \gamma)$ - diaphony Silviya Baycheva
Coffee break	

Section: Mathematics and Informatics
Hall 11

Friday, June 12	
Chairman: Assoc. Prof. Vasil Grozdanov	
11:00-11:15	On an Error-Detecting Code Based on Linear Quasigroups Natasha Ilievska, Danilo Gligoroski
11:15-11:30	Quasi components in dynamical systems Martin Shoptrajanov, Zoran Misajleski, Gorgi Markovski, Nikita Shekutkovski
11:30-11:45	A note on the analytic representations of sequences in space Vesna Manova-Erakovik, Vasko Reckovski
11:45-12:00	Valuation of dependencies at a given intensity of model elements Julian Dimitrov
12:00-12:15	Study of random mosaics applicable in crack patterns designing Julian Dimitrov
12:15-12:30	A Publicly Available Cross-Platform Lemmatizer for Bulgarian Grigor Iliev, Nadezhda Borisova, Elena Karashtranova, Dafina Kostadinova
12:30-12:45	Evaluation of the Accuracy of the BGLemmatizer Elena Karashtranova, Grigor Iliev, Nadezhda Borisova, Yana Chankova, Irena Atanasova
12:45-13:00	Measurement of physical values with embedded computer systems Anton Stoilov
13:00-13:15	A Microcomputer data-acquisition system for real-time processing of measured data Anton Stoilov
13:15-13:30	Investigation of the inter-speaker variations to the acoustic characteristics of phonemes in Bulgarian language in children from 3 to 7 years Radoslava Kraleva

**Section: Computer systems and Engineering
Hall 8**

Friday, June 12	
Chairman: <i>Assoc. Prof. Valentin Hristov</i>	
12:00-12:15	Numerical modeling and computer simulations of voltage resonance. Vasil Milovanski, Nely Georgieva, Gergana Kalpachka
12:15-12:30	Output signal of eddy current transducers with non-classical coil shape during ferromagnetic objects investigation Valery Ivanov
12:30-12:45	Developing a Decoder in VHDL – a PLD Programming Laboratory Exercise Valeri Vachkov, Iliya Tinyokov
12:45-13:00	FPGAs and Wavelets on Circuit Testing based on Current Signal Measurements Sotirios Poulos, Vassilios Vassios, Dimitrios Manolakis, Georgios Bamnios, Alkis Hatzopoulos, Valentin Hristov, Dimitrios Papakostas

Section: Physics and Technologies
Hall 9

Thursday, June 11	
Chairman: Assoc. Prof. Stanko Shtrakov	
13:45-14:00	Necessity for training of experts on energy efficiency and energy management Plamen Gramatikov
14:00-14:15	X – ray and neutron diffraction of TiAl alloys Stefan Valkov, Dimitar Neov, Anatoly Beskrovny, Denis Kozlenko, Peter Petrov
14:15-14:30	Study of microstructural changes and residual stresses in electron beam welding of alloyed steels Darina Kaisheva, Gizo Bokuchava, Igor Papushkin, Peter Petrov
14:30-14:45	Study of thermal processes in electron beam surface modification of hot-work tool steels Maria Ormanova, Peter Petrov, Vladimir Angelov, Dimitar Dechev, Nikolai Ivano
14:45-15:00	Local distortion caused by the domain wall microscopic inhomogeneity Mikhail Akimov, Petr Polyakov, Ilya Gyudzhenov, Marek Tassev
15:00-15:15	Energy Potential of Agricultural Crops in Kosovo Plamen Gramatikov, Naser Sahiti, Avni Sfishta
15:15-15:30	Energy Saving Potential in Public Buildings in Kosovo Plamen Gramatikov, Avni Sfishta, Naser Sahiti
15:30-15:45	On Damping of Spin Waves in Plasma Peter A. Polyakov, Natalya E. Rusakova, Yuliya V. Samukhina, Nikita I. Samsonov, Iliya Gyudzhenov, Marek Tassev
15:45-16:00	Comparative study of two bioimpedance analyzers of body mass composition assessment Miglena Tsvetkova, Nevena Pencheva, Dimitrina Kerina
16:00-16:15	Изследване на гъби манатарки в района на Югозападна България за наличие на естествени и техногенни радиоактивни вещества Любомир Диреков
16:15-16:30	Angular correlations of relativistic $8\text{B} \rightarrow 2\text{He} + \text{H}$ fragmentation Ralitsa Stanoeva, Simeon Stanoev
Coffee break	

Section: Physics and Technologies
Hall 9

Thursday, June 11	
Chairman: Assoc. Prof. Stanko Shtrakov	
17:00 17:15	An electric pulse plant for technogenic waste processing Ayan Khassenov, Mitko Stoev, Galia Abdykova
17:15- 17:30	Research the processes of heat exchangers of the soil of different humidities Kappas Kussaiynov, Nurgul Shuyushbayeva, Stoev Mitko
17:30- 17:45	THE RESEARCH OF AERODYNAMIC CHARACTERISTICS OF A ROTATING CYLINDER WITH VARIABLE CROSS SECTION Kappas Kussaiynov, Natalia Tanasheva, Stoev Mitko
17:45- 18:00	Upgrade of the lead-free neutron monitor at BEO-Moussala Assen Tchorbadjieff, Ivo Angelov, Todor Arsov, Christo Angelov, Nina Nikolova, Aneta Boyadjieva
18:00- 18:15	Upgrade of the data acquisition system of the muon telescope at BEO-Moussala Ivo Angelov, Assen Tchorbadjieff, Svetla Dimitrova
18:15- 18:30	All-Optical Fiber Compressor Luben Mihov
18:30 18:45	Study of thermal processes in electron beam surface modification of hot-work tool steels Maria Ormanova, Peter Petrov, Vladimir Angelov, Dimitar Dechev, Nikolai Ivanov
18:45- 19:00	APPLICATION OF INDUSTRIAL WOOD RESIDUES FOR COMBINED HEAT AND POWER PRODUCTION Anna Majchrzycka
19:00- 19:15	Upgrade of the experimental setup for the study of water and aqueous solutions, A. Antonov, D. Manolev, K. Damov, S. Filatov

Section: Chemistry
Hall 3

Thursday, June 11	
Chairman: Assoc. Prof. Atanas Chapkanov	
14:00 14:45	The Dawn of Organometallic Chemistry Petr Stepnicka - Plenary lecture
14:45 15:00	Synthesis of fluorinated hydroxycinnamoyl derivatives of anti-influenza drugs and their biological activity Boyka Stoykova, Maya Chochkova, Galya Ivanova, Lubomira Nikolaeva-Glomb, Nadya Nikolova, Pavel Vojtišek, Tsenka Milkova, Martin Štícha, David Havlíček, Luchia Mukova
15:00 15:15	Synthesis and antiviral activity of the some amino acids derivatives of influenza virus drugs Radoslav Chayrov, Ivanka Stankova
15:15 15:30	New derivatives of oseltamivir with bile acids Kiril Chuchkov, Silvia Nakova, Lucia Mukova, Angel Galabov, Ivanka Stankova
15:30 15:45	Monohydroxy flavones part IV: Charge distributions Maria Vakarelska-Popovska, Zhivko Velkov
15:45 16:00	Leu-Arg analogues- synthesis, IR characterization and docking studies Tatyana Dzimbova, Atanas Chapkanov, Tamara Pajpanova
16:00 16:15	New approach for the synthesis of stapled peptides Aleksandra Kalistratova, Gilles Subra, Muriel Amblard, Emilia Naydenova, Jean Martinez
16:15 16:30	Modified quechers method for determination of methomyl, aldicarb, carbofuran and propoxur in liver I. Stoykova, T. Yankovska-Stefenova, L.Yotova, D.Danalev
Coffee break	

**Section: Chemistry
Hall 3**

Thursday, June 11	
Chairman:	<i>Assoc. Prof. Zhivko Velkov</i>
16:45 17:00	Effect the toluene in the liver Yana Koleva, Yordanka Tasheva
17:00 17:15	Synthesis of 2-fluoromethyl-7-(arylsulfanylmethyl)naphthalenes Jane Bogdanov
17:15 17:30	3-amino-1,2,4-triazine – A promising starting material for preparation of a novel class of NLO-active compounds. Matouš Kloda, Ivana Císařová, Tomáš Janda, Petr Němec, Ivan Němec
17:30 17:45	Lactobacillus plantarum AC 11 as a biocatalyst in microbial electrolysis cell Elitsa Chorbadzhiyska, Yolina Hubenova, Sophia Yankova, Dragomir Yankov, Mario Mitov
17:45 18:00	Sediment Microbial Fuel Cells as Power Sources for Small Electrical Consumers Ivo Bardarov, Yolina Hubenova, Mario Mitov
18:00- 18:15	Organic compounds as inhibitors for mild steel in 1 M H ₂ SO ₄ Temenujka Haralanova, Christian Girginov
18:15 18:30	Bilingual course in Biotechnology- Interdisciplinary model Kolarsky, V. , Marinkova, D. , Raykova R. , Danalev D., Terzieva, S.

**Section: Chemistry
Hall 3**

Friday, June 12	
Chairman: Assoc. Prof. Petko Mandjukov	
09:00 09:15	Microbial XXX Cells – Innovative Multipurpose Bioelectrochemical Systems Mario Mitov, Yolina Hubenova
09:15 09:30	Molecular Crystals for Non-Linear Optics and Their Phase Transformations Ivan Nemeč, Irena Matulkova, Ivana Cisarova, Premysl Vanek
09:30- 09:45	Nanofiber materials simultaneously photogenerating NO and $1O_2$ species Jiří Dolanský, Jiří Mosinger
09:45- 10:00	Studying the process of antimony deposition with calcium carbonate Khylysh Beisenovich Omarov, Assel Siyazova
10:00 10:15	New magnetic catalyst: nanocrystalline $CoFe_2O_4$ in CeO_2 matrix Jiri Plocek, Ondrej Vik, Alice Mantlikova, Jana Vejpravova, Jitka Vecernikova
10:15 10:30	Investigation of the etherification process under model mixture Yordanka Tasheva
Coffee break	
Chairman: Assoc. Prof. David Havlíček	
10:45 11:00	Solid phase extraction of Au (III) using silica gel modified by 4-aminoantipyrine schiff base Petranka Petrova, Irina Karadjova, Maya Chochkova, Ivanka Dakova
11:00 11:15	The Coordination and Catalytic Chemistry of a Phosphinoferrrocene Nitrile Karel Skoch, Petr Stepnicka
11:15 11:30	Pd-Au nanocomposites as anodic electrocatalysts for direct borohydride fuel cell Georgi Hristov, Elitsa Chorbadzhiyska, Mario Mitov
11:30 11:45	Inductively coupled plasma optical emission spectroscopy – determination of rare earth and platinum group of elements Nikolaya Velitchkova, Petranka Petrova, Serafim Velitchkov, Nonka Daskalova
11:45 12:00	Materials for EMI shielding Ljudmila Taneva, Kamelia Ruskova, Alexandar Lirkov

**Section: Geography, Ecology and Environment protection
Hall 7**

Thursday, June 11 <i>Ivan Drenovski</i>	
Chairman: <i>Assoc. Prof. Ivan Drenovski</i>	
14:00-14:15	Study of solid fraction of the atmospheric aerosol from Pilsen by X-ray powder diffraction, Ondřej Vik, David Havlíček
14:15-14:30	Detail analysis of the regime and territorial extend of extreme temperatures in Bulgaria, Krasimir Stoyanov, Lyubomira Guneva
14:30-14:45	Exploration of the landslide processes in the are of Delvino village, Blagoevgrad county, Miroslav Ivanov
14:45-15:00	The appreciation of the content of zinc in soils of Central Kazakhstan Manara Mukasheva, Aidar Aitkulov
15:00-15:15	Opportunities for maintaining and enhancing soil fertility for the municipality of Kyustendil, Boyko Kolev
15:15-15:30	New Localities of the Balkan Stream Frog <i>Rana graeca</i> Boulenger, 1891 (Anura: Ranidae) in South-West Bulgaria Alexander Pulev, Lidia Sakelarieva, Georgi Manolev
15:30-15:45	Some Data about Herpetofauna and Avifauna in Nature Park Belasitsa, Alexander Pulev, Lidia Sakelarieva, Nevena Malakova, Lilia Filipova, Nelina Aleksieva
Coffee break	
Chairman: <i>Assoc. prof. Krasimir Stoyanov</i>	
16:15-16:30	Spatial models for the development of Europe - attesting the most popular concepts, Hristo Dokov, Ivaylo Stamenkov
16:30-16:45	Successful integration of transport networks of Balkan countries – mission impossible?, Dessislava Poleganova
16:45-17:00	Quantitative assessment of the Bulgarian-Greek state border Boris Kolev
17:00-17:15	Marketing profile of the municipality - a chance for its economic development, Maria Shishmanova
17:15-17:30	For some socio-economic processes in Bulgarian villages, Emilia Patarchanova
17:30-17:45	ARIMA predict of consumption pattern in rural areas, Minka Anastasova, Maria Shishmanova
17:45-18:00	An Application of the EU Financial instruments for the tourism development in the rural areas in Bulgaria, Elena Aleksandrova
18:00-18:15	Students summer work programs as a way to permanent emigration in the USA, Vladimir Karadzhov
18:15-18:30	Influence of household incomes on the students' summer work programs participation, Vladimir Karadzhov

**Section: Geography, Ecology and Environment protection
Hall 7**

Friday, June 12	
Chairman: <i>Assoc. Prof. Emilia Patarchanova</i>	
09:00 09:15	Sites under the auspices of UNESCO in Bulgaria, Antoaneta Stoyneva
09:15- 09:30	Biodegradable wastes - experiment of an innovative technology for their utilization, Stefka Tsekova, Kiril Stamboliev
09:30- 09:45	Analysis of the situation in separate collection of packaging waste - Blagoevgrad Municipality, Nikolinka Atanasova
09:45- 10:00	Water resources assessment of river Botunya in terms of the risks of drought, Yordan Dimitrov
10:00 10:15	Banshtitsa river - between local, regional and strategic significance Michail Michailov, Albena Haralampieva
10:15 10:30	Mapping of morphometric indicators in small drainage basin and assessment of risk flooding, Galina Bezinska, Krasimir Stoyanov, Miroslav Ivanov
10:30 10:45	Relations between climate, glacierets and lakes in the Popluk massif, Prokletije mountains, Albania, Emil Gachev, Krasimir Stoyanov, Nadezhda Nikolova
10:45 11:00	Borders and Principal Regional Units of the Bulgarian Continental Micro Morphotecture (East Part of Balkan Peninsula) Tzanko Tzankov, Svetla Stankova
11:00 11:15	The use of liquid crystals (LC) for environment monitoring, Boyko Kolev
11:15- 11:30	Ecosystem Services and Their Valuation, Svetoslav Nikolov
11:30- 11:45	Some questions about usefulness and effectiveness of the activities for the environmental protection, Michail As. Michailov
11:45- 12:00	Environmental Alarmism: the Club of Rome and Its Critics, Nikolai Mihailov, Lidia Sakelarieva

**Section: Methodology in Education
Hall 4**

Thursday, June 11	
Chairman: Assoc. Prof. Penka Bozarova	
13:30-13:45	The benefits of applying formative assessment techniques for better student learning Sava Grozdev, Borislava Kirilova
13:45-14:00	School Portfolio in physics for teaching Electromagnetic Interaction in 9th grade Georgi Malchev
14:00-14:15	About new media in geographic education – a story with unexpected end Maya Vasileva, George Kotseff, Dessislava Poleganova
14:15-14:30	Students` opinion survey about the chemistry preparation at school Velichka Dimitrova, Magdalena Shekerliyska
14:30-14:45	The chemistry experiment – science and attraction Elitsa Chorbadzhiyska, Velichka Dimitrova, Magdalena Shekerliyska, Galina Baliova, Metodiyka Angelova
14:45-15:00	Общ алгоритъм за намиране признак за делимост на произволно просто число проф. д-р Иван Тонов, Маряна Кацарска

Section: Mini-conference "Inquiry-Based Approach in Higher Education in Mathematics and Informatics"
Conference Hall

Thursday, June 11	
Chairman: <i>Acad. Prof. Petar Kenderov, DSc</i>	
14:00-14:40	Serious Computer Games Design as Inquiry Based Learning in Teacher Education Joze Rugelj
14:40-15:20	Some Examples of the Research Approach in the Education of Mathematical Analysis Stepan Terzian
15:20-15:35	Place of the logical symbolism for revealing the logical structure of the definitions of some mathematical notions Julia Ninova
15:35-15:50	Active Learning with ICT (ALICT project) – Games Developed by Students Liliana Petkova, Reneta Shestakova
15:50-16:05	E-learning and inquiry based approach in computer science education Georgi Tuparov, Daniela Tuparova
16:05-16:20	Virtual school mathematics laboratory T. Chehlarova, G. Gachev, P. Kenderov, E. Sendova
16:20-16:35	Visualizations of algorithms and software programs Mariya Palahanova
16:35-16:50	Test system and software for evaluation the students knowledge in programming Nikolay Kirov
Coffee break	
17:00-18:00	Workshop and Discussion

Poster session

14.00 – 16.00, 11.06.2015, Lobby