

SUMMIT

Second Annual Conference, April 2025

Sofia University St. Kliment Ohridski

Sofia, Bulgaria



SOFIA UNIVERSITY
MARKING MOMENTUM
FOR INNOVATION AND
TECHNOLOGICAL TRANSFER



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National Recovery and Resilience Plan



OF THE REPUBLIC OF BULGARIA

PROGRAM

01.04.2025

02.04.2025



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01 april 2025, program summary

Aula, Rectorat, Tsar Osvoboditel Blvd 15		
9.00-10.00	Registration and complimentary coffee	
10.00-10.30	Opening ceremony	
10.30-11.00	SUMMIT: Second Year Overview, Prof. Gerdjikov, Prof. Marinov	p. 9
11.00-13.00	Poster session for the 3.4 Groups - Questions and Answers	p. 9
12.00-14.00	Lunch break, "Alma Mater" restaurant	
16.00-16.30	Coffee break	

Central lobby, Rectorat, Tsar Osvoboditel Blvd 15		
All day	Poster session for the 3.4 Groups	p. 21

Aula, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.1.15 European Values and Social Challenges /EuVaSC/, Prof. Maria Stoicheva, PhD	p. 11



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01 april 2025, program summary

Hall 1, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.1.7 Functional materials, Prof. Tony Spassov	p. 12
Hall 2, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.1.14 Nuclear, Assoc. Prof. PhD, Krasimir Mitev	p. 13
The Egg Conference Hall, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.1.16 ICT Applications for History And Language, Assoc. Prof. Dr. Maria Baramova / Prof. DSc Anna-Maria Totomanova	p. 14
Conference Hall, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.1.13 Climate, Weather and Natural Risks (CW&NR), Assoc. Prof. Dr. Guergana Guerova	p. 15
Auditorium 23, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.1.8 Plant parasites, Assoc. Prof. Dr Lyuben Zagorchev	p. 16
	3.2.4 Microbiological risks in the environment, Sergei Veselinov Ivanov, PhD	p. 17
	3.1.11 Algology (Algal Collections), Assoc. Prof. Blagoy Uzunov, PhD,	
Auditorium 45, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.1.1 Mathematical Physics and Astrophysics, Prof., DSc Stoytcho Yazadjiev	p. 18
Auditorium 63, Rectorat, Tsar Osvoboditel Blvd 15		
14.00-18.00	3.2.5 NUDGE: Behaviour models, attitudes and Policy implementation for sustainable development, Prof. Dr. Ivo Vlaev	p. 19

02 april 2025, program summary

Hall 1, Rectorat, Tsar Osvoboditel Blvd 15		
9.00-13.00	3.1.9 GAMMA, Prof. Dr. Sc. Mladen Savov	p. 26
14.00-18.00	3.1.2 Active formulation and materials, Prof. Slavka Tcholakova	p. 27

Hall 2, Rectorat, Tsar Osvoboditel Blvd 15		
9.00-13.00	3.1.12 Intelligent systems, Prof. Ivan Koychev	p. 28
14.00-18.00	3.1.17 SMEs digitalization, Prof. Dr. Desislava Yordanova	p. 29

The Egg Conference Hall, Rectorat, Tsar Osvoboditel Blvd 15		
9.00-13.00	3.1.4 Advanced Quantum and Optical Technologies (AQOT), Prof. DSc Asen Pashov	p. 30
14.00-18.00	3.2.1 NATATA, Prof. Bojan Popov Ph.D.	p. 31

Conference Hall, Rectorat, Tsar Osvoboditel Blvd 15		
9.00-13.00	3.1.10 DigitalEdu-SU, Prof. Dr. Roumiana Peytcheva-Forsyth	p. 32
14.00-18.00	3.2.3 New materials and photonics, Dr. Sotir Chervenkov	p. 33



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02 april 2025, program summary



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01 April 2025

Auditorium 23, Rectorat, Tsar Osvoboditel Blvd 15		
9.00-13.00	3.1.5 Computational Heterogeneous Catalysis, Prof. Hristiyan Aleksandrov Ph.D. 3.2.2 ZeoNeo, Prof. Valentin Valtchev	p. 34

Auditorium 45, Rectorat, Tsar Osvoboditel Blvd 15		
9.00-13.00	3.1.6 BAC, Prof. DSc Ivo Grabchev	p. 35
14.00-18.00	3.1.3 GROWTH, Assist. Prof., MD Tsvetelina Velikova Ph.D.	p. 36

Auditorium 65, Rectorat, Tsar Osvoboditel Blvd 15		
15.00-19.00	Social Transformation: Education, Digitization, Organisational and Institutional Change	p. 38





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Aula, Rectorat, Tsar Osvoboditel Blvd 15	
9.00-10.00	Registration and complimentary coffee
10.00-10.30	Opening ceremony Address to the Conference from Official Guests
10.30-11.00	SUMMIT: SECOND YEAR OVERVIEW prof. Anastas Gerdjikov , Leader of The SUMMIT Project, prof. Vasil Marinov , Coordinator research groups - SUMMIT
11.00-11.30	Poster session for the 3.4 Groups- Questions and Answers

01 April 2025

Poster session for the 3.4 Groups

All day

Central lobby, Rectorat, Tsar Osvoboditel Blvd 15

Lunch break

**01 and 02
April**
12.00-14.00

“Alma Mater” restaurant

Coffee break

01 April
16.00-16.30

Central lobby – for the groups in the Aula, Hall 1, Hall 2 and the Egg.
South Wing lobby – or the groups in Auditoriums 23, 45, 63
In front of the Conference Hall – for the group inside

02 April
10.30-11.00
16.00-16.30

Central lobby – for the groups in Hall 1, Hall 2 and the Egg.
South Wing lobby – or the groups in Auditoriums 23, 45, 63
In front of the Conference Hall – for the group inside

3.1.15 European Values and Social Challenges /EuVaSC/

Prof. Maria Stoicheva, PhD., lead researcher

14.00-18.00 - **Aula, Rectorat**

16.00-16.30 Coffee break

European Values and Social Challenges (EuVaSC)

Opening speech

Professor Maria Stoicheva,
Leader of the SUMMIT EUVaSc
research group

Panel I: Stability and Resilience of Democracy

Chair: Svetoslav Malinov

Participants:

Daniel Smilov (Sofia University St. Kliment Ohridski) - **Centrist and Radical Populism: Reasons for Radicalisation**

Martin Belov (Sofia University St. Kliment Ohridski) - **Crisis, Emergency, and Normalcy - Legal, Socio-Legal, and Imaginary Perspectives**

Milen Lyubenov (Sofia University St. Kliment Ohridski) - **The pro-Russian far right and party system polarization. Bulgaria, Slovakia and Romania in comparative perspective**

Discussion

Panel II: Values and Interests in Contemporary Politics

Chair: Daniel Smilov

Participants:

Svetoslav Malinov (Sofia University St. Kliment Ohridski) - **Changing Paradigms in Contemporary Politics**

Eiríkur Bergmann (Bifröst University, Iceland) - **The Value of Truth: Populism and Conspiracy Theories**

Mila Moshelova (Sofia University St. Kliment Ohridski) - **The Radical Right: Values and Interests**

Discussion



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OF THE REPUBLIC OF BULGARIA

01 April 2025

3.1.7 Functional materials, Prof. Tony Spassov, lead researcher

14.00-18.00 - **Hall 1, Rectorat**

16.00-16.30 Coffee break

Prof. Tony Spassov

„Materials for hydrogen production and storage. Metal hydride/air batteries“

Prof. Spas Kolev

“Development of polymer inclusion membranes and beads for separation in industry and chemical analysis”

Prof. Todor Dudev

„Encapsulation of chemical substances by cyclodextrins. Host macrocycle's internal cavity hydration”

Prof. Stoyan Gutzov

“Gold nanoparticles in a silica matrix - preparation and properties”

Prof. Georgi Tsvetkov

“Novel oxide nanostructures with diverse functionality”

Kalina Myashkova, R1

„PIMs for extraction of thiocyanate and zinc ions“



3.1.14 Nuclear, Assoc. Prof. PhD, Krasimir Mitev, lead researcher
14.00-18.00 - Hall 2, Rectorat
16.00-16.30 Coffee break

Assoc. Prof. Krasimir Mitev

Opening and overview of the group activities

Assoc. Prof. Krasimir Mitev

Novel radon detectors and networks. Advances in monitoring of indoor Radon dynamics (WP3).

Assoc. Prof. Kalin Gladnishki

Report on the activities in WP1 for the second year of the project SUMMIT (WP1)

Assoc. Prof. Stefan Lalkovski

Nuclear data work package status report (WP2)

Prof. Dobromir Pressyanov

Fine spatial distribution of radon and thoron studied by innovative compact and sensitive detectors. (WP4)

Assoc. Prof. Mariyan Bogomilov

European Spallation Neutrino Super Beam: Prospective and Physics Reach (WP5.1)

Assoc. Prof. Venelin Kozhuharov

Searching for new light particles with PADME: new detectors for new physics (WP5.2)



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01 April 2025

3.1.16 ICT Applications for History And Language,

Assoc. Prof. Dr. Maria Baramova / Prof. DSc Anna-Maria Totomanova, lead researchers

14.00-18.00 - **The Egg Conference Hall, Rectorat**

16.00-16.30 Coffee break

Maria Baramova, Ivan Valchev, Kristiyan Simeonov: **DigitalSEE: Unveiling the Tapestry of Balkan Heritage (18th – 19th Century)**

Dimitar Iliev, Kristiyan Simeonov: **A TEI-Compliant Dataset for Historical Data from DigitalSEE Collection**

Chavdar Kirilov: **New Life for an Old Map: A Digital Version of Felix Kanitz's Original-Karte von Donau Bulgarien und dem Balkan**

DigitalSEE: Future Perspectives

Angel Nikolov: **An unpublished request for financial support from the brotherhood of the monastery of St. Theodore Tiron and St. Theodore Stratelates near Perushtitsa to the Russian Tsar Aleksei Mikhailovich from 1648. Text and context.**

Margaret Dimitrova: **The Hybrid Language of Josif Bradati's Collection of Sermons against Witches as Compared to the Language of Slavonic-Bulgarian History of Paisii of Hilandar**

Anna-Maria Totomanova: **The mysteries surrounding manuscript № 105 from the Zograf Monastery library**

Vassya Velinova, Maria Totomanova-Paneva: **Catalogue of the newly acquired Slavonic manuscripts in the library of the Center for Slavo-Byzantine Studies "Prof. Iv. Dujcev" in the period 2000-2025**

3.1.13 Climate, Weather and Natural Risks (CW&NR),

Assoc. Prof. Dr. Guergana Guerova, lead researcher

14.00-18.00 - **Conference Hall, Rectorat**

16.00-16.30 Coffee break

**Severe weather forecasting and
nowcasting** AProf. Guergana Guerova

Air-quality monitoring and modelling
AProf. Reneta Dimitrova

**Climate feedbacks inBalkan-Black Sea
region** AProf. Elisaveta Peneva

Discussion WP1

Climate hazards and risks
AProf. Bilyana Borisova

Natural hazards and risks
Prof. Kliment Naydenov/
Prof. Janko Gerdjikov

**Geospatial modeling and mapping
approaches and methods**
AProf Stelian Dimitrov

Discussion WP2



National Recovery and Resilience Plan



01 April 2025

3.1.8 Plant parasites, Assoc. Prof. Dr Lyuben Zagorchev, lead researcher

14.00-18.00 - **Auditorium 23, Rectorat**

16.00-16.30 Coffee break

Lyuben Zagorchev, Denitsa Teofanova
Annual report of Plant parasites working group

Kalina Pachedjieva
Distribution, hosts and habitats of Cuscuta species in Bulgaria

Stefan Savov
Hormonal governing of Cuscuta interactions

Bianka Marinova
Gene expression profile of Arabidopsis thaliana, challenged with Cuscuta infection

3.1.11 Algology (Algal Collections), Assoc. Prof. Blagoy Uzunov, PhD, lead researcher

14.00-18.00 - **Auditorium 23, Rectorat**

16.00-16.30 Coffee break

Maya Stoyneva-Gärtner, Miroslav Androv,
Georg Gärtner, Kristian Ivanov & Blagoy Uzunov

New lithophytic algae deposited in ACUS



3.2.4 Microbiological risks in the environment, Sergei Veselinov Ivanov, PhD, lead researcher
14.00-18.00 - Auditorium 23, Rectorat
16.00-16.30 Coffee break



1. First year of the national wastewater monitoring program - what we did and what we still want to achieve

Sergei Ivanov, Stoyan Shishkov, Anton Hinkov, Yoana Kizheva, Mihaela Belouhova, Zoltan Urshev, Petya Angelova, Silvia Mileva, David Binev, Kamelia Syarova, Kalin Atanasov

2. Characterization of Enterococcus faecalis and Escherichia coli - specific bacteriophages, isolated from waste water facilities in Bulgaria.

Yoana Kizheva, Sergei Ivanov, Yoana Gladicheva, Tsveta Dimova, Maria Pandova, Petya Hristova, Zoltan Urshev, Stoyan Shishkov

01 April 2025

3.1.1 Mathematical Physics and Astrophysics

Prof., DSc Stoytcho Yazadjiev, lead researchers

14.00-18.00 - **Auditorium 45, Rectorat**

16.00-16.30 Coffee break

Stoytcho Yazadjiev,
Overview of group's work in the second year of the project

Jose Antonio Font,
Update on the LIGO-Virgo-KAGRA searches of gravitational waves

Kalin Staykov,
Neutron stars in Gauss-Bonnet gravity - constraints and observable effects

Galin Gylchev,
Images of shadows and thin accretion disks around Kerr black hole with scalar hair

Petya Nedkova,
Observational signatures of horizonless compact objects in the electromagnetic spectrum: accretion disk images and polarization

Radoslav Rashkov,
"On complexity in holography: conformal and warped".

Kiril Hristov,
Equivariant topological strings.

Tsvetan Vetsov and
Miroslav Radomirov,
Optimal Control of Quantum Harmonic Oscillator in External Magnetic Field.

3.2.5 NUDGE: Behaviour models, attitudes and Policy implementation for sustainable development,

Prof. Dr. Ivo Vlaev, lead researcher

14.00-18.00 - **Auditorium 63, Rectorat**

16.00-16.30 Coffee break

Prof. Ivo Vlaev,

Behavioral Finance – Identifying Effective Techniques for Improving Timely Tax Collection

Prof. Tatyana Tomova, Assoc. Prof. Simeon Petrov, Assoc. Prof. Elena Kalfova

Public Servants' Attitudes Toward Environmental Policies: Alienation or Commitment.

Environmental Policy Instruments: Preferences and Attitudes.

Assoc. Prof. Boris Popivanov, Dr. Dimitar Ganev
Justifying Environmental Policies: The Alleged Public Opinion Resistance

Assoc. Prof. Svetlina Koleva, Prof. Sonya Karabelova, Prof. Snezhana Ilieva,

Assoc. Prof. Kaloyan Haralampiev

Visible and Invisible Threats - Aspects of Eco-Anxiety

Dr. Bilyana Bazovska, Prof. Sonya Karabelova
Theoretical Model for Social Transformation - Downshifting. Career Metamorphosis, Well-being and Mental Health

Prof. Sonya Karabelova, Prof. Ivo Vlaev, Assoc. Prof. Kaloyan Haralampiev, Dr. Velina Hristova
Eco-Anxiety - Behaviour and Policies

Prof. Sonya Karabelova, Prof. Snezhana Ilieva, Assoc. Prof. Kaloyan Haralampiev, Assoc. Prof. Svetlina Koleva
Values and Pro-environmental Behaviour

Ch. assistant Dr. Georgi Kirilov
Nudging and Gambling Addiction Prevention



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Poster session for the 3.4 Groups	
All day	Central lobby, Rectorat

Prof. Krasimira Aleksova, Dsc
Perceptual Linguistics

Assoc. Prof. Lora Spiridonova, PhD
Preschool Teachers' Competence Fields And Their Significance From The Perspectives Of Students, Teachers, Principals, And University Lecturers

Prof. Ivayla Pantcheva
Polyether Ionophores And Their Metal Complexes

Prof. Ivayla Popova, PhD
Shared Academic Spaces Research On The Impact Of Shared Academic Spaces On Student Motivation And Achievements

Assoc. Prof. Dr. Katerina Shtereva
Assessment Of Expressive Language In Early Childhood: A Pilot Study And Perspectives For Standardization

Assoc. Prof. Silvena Boteva
Effects Of Macrophyte Removal On The Sediment Microbial Activity In High Mountain Lakes

Assoc. Prof. Petar Armyanov
Efficient Calculations And Algorithms

Prof. Dr. Robert Penchovsky
Creation Of Software Systems For Computer-aided Design Of Rapid Allosteric Ribozymes That Sense The Presence Of Sequence-defined Oligonucleotides And A Database Of Clinically Relevant Human Genetic Variation

Assoc. Prof. Ognyan Kassabov
Justice In The Context Of Eco-crisis

Assoc. Prof. Bozhidar Nedev, PhD
Behavioral Biases In Conflict Resolution In Financial Sector

Prof. Sonia Ilieva
Nanoconfined Monomethine Cyanine Dye – Fluorogenic Probe For Cells Staining And Nucleic Acids Visualization

Assoc. Prof. Dr. Stoycho P. Stoychev
Evaluating The Impact Of Machine Voting On Voter Turnout In Bulgaria (2021-2023)

Assoc. Prof. Antoniya Valcheva
Study Of High-luminosity Objects In The Field Of Galaxies From The Local Volume

Assoc. Prof. Noemi Stoichkova
Literary History In The 21st Century: Global Models And Bulgarian Practices



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Poster session for the 3.4 Groups

All day

Central lobby, Rectorat



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Prof. Nadia Zlateva
Advanced Variational Analysis And Applications (Ava)

Assoc. Prof. Aleksandar Dimov, PhD
Artificial Intelligence And Big Data For Education, Software And Information Technologies

Assoc. Prof. Dr. Rossitsa Simeonova
Values And Human Resource Management In Social Work – Dimensions And Interrelations (Second phase: Managerialism in social services study)

Assoc. Prof. Ivanka Dakova
Synthesis And Characterization Of Ion-imprinted Polymeric Materials For Solid-phase Extraction Of Sn(II) Species

Assoc. Prof. Georgi Nikolaev Georgiev
Establishment And Characterization Of New Human Embryonic Stem Cell Line

Assoc. Prof. Valentina Ganeva, PhD
Pulsed Electric Field Pretreatment Enhances the Enzyme Hydrolysis of Baker's Yeast

Assoc. Prof. Silvia Varbanova, PhD
Beneath The Surface: The Culture Of Poverty Among Youth In Relative Poverty

Prof. Sylvia Ilieva
Non-communicable Diseases In Bulgaria: Knowledge, Behaviors, And Risk Profiles

Assoc. Prof. Stefan Miletiev, PhD
Shared Spaces, Tolerance And Volunteering

Prof. Dr. Robert Penchovsky
Design Of Antisense Oligonucleotides Linked To Cell Penetrating Oligopeptides As New Antibacterial Agents Against Resistant Human Pathogenic Bacteria

Assoc. Prof. Dimitar Zlatinov
Challenges For Bulgaria's Human Capital In Eu Convergence

Prof. Dr. Sc. Nikolay Popov
National Model of the American School Counselor Association (ASCA)

Prof. Neviana Krasteva, D.sc.
Gamification In Education And The Workplace

Assoc. Prof. Dr. Boyan Lomev
Investigating The Effect Of Urban Mobility Innovation Using Mode-switching Time Series Methods

Poster session for the 3.4 Groups	
All day	Central lobby, Rectorat

Assoc. Prof. Yonka Parvanova
**Selection And Qualification Of
Headteachers Of Educational Institutions
In The System Of Pre-school And School
Education**

Assoc. Prof. Zdravka Krasteva
**Applying The Principles Of Effective
Interviewing (Méndez Principles) In Pre-
trial Criminal Proceedings In Bulgaria**

Assoc. Prof. Silvia Tsvetanska
**Educational Drama In The Training For
Social Workers**

Assoc. Prof. Simeon Groysman
**Origin, Reception And Application Of
Modern Legal Terminology**

Assoc. Prof. Milena Milanova
**Models For Digital Maturity And Strategies
For Digital Transformation Of Glam
Institutions In Bulgaria**

Assoc. Prof. Albena Taneva, PhD
**Application And Development Of The
Shared Society Concept: Comparative
Models Of Social Inclusion**

Assoc. Prof. Bilyana Rangelova
**Improving The Health Status Of Children
With Sen Through Swimming Education
And Training**

Prof. V. Dafov
**Philosophy With Children's Projections
In Kindergartens, Primary And Lower
Secondary Schools: Innovations In
Philosophy, Civic Education And School Life**
Assoc. Prof. Dr. Peycho Petkov
Complex Systems Modelling

Assoc. Prof. Gergana Fyrkova
Gamification In Education

Assoc. Prof. Ivanka Tsacheva
**Selection Of High Affinity Recombinant
Antibodies Against Human Complement
Protein C3**

Assoc. Prof. Violeta Kotseva, PhD
**Bulgarian Communities Abroad: Between
Inherited And Invented Identities**

Assoc. Prof. Kalin Kalinov
**Observations On The Attitudes Of Teachers
And Students Towards The User Interface Of
Remote Learning Systems**

Prof. Neda Balkanska
**Application Of Alternative And
Augmentative Communication In The
Educational Institutions In Bulgaria**

Assoc. Prof. Maya Tcholakova, PhD
**Competency-based Approach In The
Education Of Social Pedagogy Students**



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Poster session for the 3.4 Groups

All day

Central lobby, Rectorat

Prof. Dimo Penkov, Phd

**The Christian Apology Against The
Dualism Of Eastern Christian Heresies In
The Panoplia Dogmatica By Euthymios
Zigabenos**

Prof. Adriana Damyanova, Dsc

**The Reading Practices Of Bulgarian
Students /in Bulgariе And Abroad/**

Assoc. Prof. Vihra Naydenova, Phd

**Influence Of Psychological And Social
Factors On Work Engagement And Well-
being In Organizational Context – First
Empirical Results 2024-2025**

Prof. Dsc Klara Toneva

Orthodox Theology In Dialogue

Assoc. Prof. Stanimir Kolev

**Optimization of magnetically accelerated
gliding arc discharge for CO2 conversion
at atmospheric pressure**

Assoc. Prof. Elena Tasheva- Terzieva

**Digitization Of Materials From
The Zoological Collection Of
Sofia University “St. Kliment Ohridski”
(BFUS)**

Prof. Silvia Nikolaeva

**Social And Pedagogical Paradigms For
Research And Modelling Of Educational
Ecosystems In Bulgaria**

Assoc. Prof. Reneta Raykova

**Focal mechanisms: first results by
application of INPAR method in
Bulgarian region**



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3.1.9 GAMMA, Prof. Dr. Sc. Mladen Savov, lead researcher

9.00-13.00 - **Hall 1, Rectorat**

10.30-11.00 Coffee break

The inverse first-passage time problem for stochastic processes

Mladen Savov

Inferring unobservable parameters of the Heston Model

Dragomir Nedeltchev

General Pólya urn model with null part,

Yoana Chorbadzhiyska

Critical Markov branching processes with infinite mean immigration

Maroussia Slavtchova-Bojkova

Reliability properties of k-out-of-n systems with several cold standby units

Nikolay I. Nikolov

Bidirectional language models through the lens of finite state machines: a theoretical perspective

Stefan Gerdjikov

On the probability of n equidistant points in high-dimensional lattices

Martin Minchev

3.1.2 Active formulation and materials,

Prof. Slavka Tcholakova, lead researcher

14.00-18.00 - **Hall 1, Rectorat**

16.00-16.30 Coffee break

S. Tcholakova: **Summary of the main scientific results obtained by research group “Active formulations and materials” during second year of the project**

Discussion

Z. Mitrinova: **“Interplay between cosurfactants and electrolytes for worm-like micelles formation”** by Z. Mitrinova, Z. Valkova, S. Tcholakova

N. Pagureva: **“Salt-induced gelation of nonionic sucrose ester dispersions”** by Diana Cholakova; Nevena Pagureva; Monika Hristova, S. Tcholakova

L. Delforce: **“Enhancing Foam Properties: Exploring the Impact of Chain Length, Temperature, and Salting-Out in Sucrose Esters”** by Lucie Delforce, S. Tcholakova

B. Petkova: **“Mixtures of lauroyl sarcosinate and alkyl polyglycosides: foam and film behaviour”** by Borislava Petkova, Slavka Tcholakova

I. Lesov: **“Role of dispersion nanostructure for bubble dissolution under pressure”**

by I. Lesov, H. Alexandrov, B. Ivanov, J. Delavoipiere, S. Tcholakova

D. Gazolu-Rusanova: **“Emulsifying properties of sodium N-lauroyl sarcosinate”** by D.

Gazolu-Rusanova, Anna Quero, Z. Mitrinova, S. Tcholakova

Z. Vinarov: **“Mechanisms of dissolution and crystallization of amorphous glibenclamide”**

by V. Petkov, Z. Vinarov, S. Tcholakova

Fatmegyul Mustan: **“Revealing the mechanism of self-assembly of different classes of surfactants by molecular dynamics simulations”**

by Fatmegyul Mustan, N. Pagureva, Anela Ivanova, Slavka Tcholakova

Discussion



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02 April 2025

3.1.12 Intelligent systems, Prof. Ivan Koychev, lead researcher

9.00-13.00 - **Hall 2, Rectorat**

10.30-11.00 Coffee break

Intelligent Systems in the Era of large AI models

Reserch group presentation. Ivan Koychev

Multimodal Sentiment Analysis: Recognizing Sentiment in Memes. Georgi Vankov, Dimitar Iljanov, Dimitrov, Ivan Koychev, Preslav Nakov.

Generating Phonetic Embeddings for Bulgarian Words with Neural Networks. Lyuboslav Karev, Ivan Koychev.

EurLexSummarization – A New Text Summarization Dataset on EU Legislation in 24 Languages with GPT Evaluation. Valentin Zmyicharov, Ivan Koychev, Todor Tsonkov

Transformer-based approach for symptom recognition and multilingual linking. Sylvia Vassileva, Georgi Grazhdanski, Ivan Koychev, Svetla Boytcheva.

Medical Term Extraction and Linking in Bulgarian Using Large Language Models. Sylvia Vassileva, Svetla Boytcheva, Ivan Koychev.

Large Scale Entity Linking to SNOMED CT Using Pretrained Deep Learning Models on MIMIC-IV-Note. Anna Aksenova, Sylvia Vassileva, Svetla Boytcheva

Transformer-Based Disease and Drug Named Entity Recognition in Multilingual Clinical Texts: MultiCardioNER challenge. Anna Aksenova, Aleksis Datseris, Sylvia Vassileva, Svetla Boytcheva

Semeval-2024 task 4: Multilingual detection of persuasion techniques in memes, Dimitar Dimitrov, Firoj Alam, Maram Hasanain, Abul Hasnat, Fabrizio Silvestri, Preslav Nakov, Giovanni Da San Martino

Overview of the CLEF-2024 CheckThat! Lab task 2 on subjectivity in news articles, Julia Maria Struß, Federico Ruggeri, Alberto Barrón-Cedeño, Firoj Alam, Dimitar Dimitrov, Andrea Galassi, Georgi Pachov, Ivan Koychev, Preslav Nakov, Melanie Siegel, Michael Wiegand, Maram Hasanain, Reem Suwaileh, Wajdi Zaghouani

Overview of the CLEF-2024 CheckThat! Lab task 3 on persuasion techniques, Jakub Piskorski, Nicolas Stefanovitch, Firoj Alam, Ricardo Campos, Dimitar Dimitrov, Alípio Jorge, Senja Pollak, Nikolay Ribin, Zoran Fijavž, Maram Hasanain, Purificação Silvano, Elisa Sartori, Nuno Guimarães, Ana Zwitter Vitez, Ana Filipa Pacheco, Ivan Koychev, Nana Yu, Preslav Nakov, Giovanni Da San Martino

Post-ocr text correction for Bulgarian historical documents, Angel Beshirov, Milena Dobрева, Dimitar Dimitrov, Momchil Hardalov, Ivan Koychev, Preslav Nakov

Intelligent Search in News Streams and Automated Analysis of News Articles. Maria Nisheva, Alexandrina Karakehayova, Kristian Atanasov

Intelligent Approaches for Tailoring of Video Games. Boyan Bontchev

Current Trends for Applying GenAI in Game-based Learning. Albena Antonova, Boyan Bontchev

Personalization in Educational Video Games. Valentina Terzieva, Boyan Bontchev

Intelligent Adaptation of Difficulty and NPC Behavior in Serious Video Games for Learning. Ivan Naydeniov, Ilko Adamov, Boyan Bontchev.

Collaboration with Bulgarian National Radio. Boris Velichkov, Kazimir Nikolaev, Ivan Koychev

Discussion of future research direction.

Closing. Ivan Koychev

3.1.17 SMEs digitalization,

Prof. Dr. Desislava Yordanova, lead researcher

14.00-18.00 - **Hall 2, Rectorat**

16.00-16.30 Coffee break

„Women-led SMEs and digital transformation”,

Z. Vladimirov, I. Mladenova, O. Harizanova

„SMEs digitalization seen through the “emotional” lens of customers experience: A novel methodology for extraction of NLP-driven knowledge”,

B. Pelova, G. Hristova

“Mapping Research on Digital Transformation in Family Business: A Bibliometric Analysis”,

D. Yordanova, A. Pergelova, Thuy Nhung Tran

Discussion



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OF THE REPUBLIC OF BULGARIA

02 April 2025

3.1.4 Advanced Quantum and Optical Technologies (AQOT), Prof. DSc Asen Pashov, lead researcher

9.00-13.00 - **The Egg Conference Hall, Rectorat**

10.30-11.00 Coffee break

Nikolay Vitanov
Overview of WP1-WP3

Kaloyan Zlatanov
Composite Molmer-Sorensen gate

Ivo Mihov
Pulse-shape control on IBM Quantum

Stancho Stanchev
Composite single-qubit gates

Hristo Tonchev
Suppression of leakage in superconducting qubits

Branislav Ilic
Quantum teleportation on IBM Quantum

Nayden Nedev
Dynamical decoupling on IBM Quantum

Peter A. Ivanov
Super-Heisenberg scaling of the quantum Fisher information using spin-motion states
Bogomila S. Nikolova
Mechanical Squeezed Kerr Oscillator based on Tapered Ion Trap.

Bogomila S. Nikolova
Quantum sensing and metrology in asymmetrical ion traps

Venelin P. Pavlov
Quantum Fisher Information as a measure for many-body localization.

Andon Rangelov
Polarization control using quantum optical analogues

Asen Pashov
Coupled channels treatment of the double minimum state $61\Sigma^+$ in RbCs

Velizar Stoyanov
Hyperfine structure and line intensities of selected (B-c) -> (a) fluorescence bands in KRb, NaK and NaRb



3.2.1 NATATA, Prof. Bojan Popov Ph.D., lead researcher
14.00-18.00 - The Egg Conference Hall, Rectorat
16.00-16.30 Coffee break

Numerical analysis and applications, approximation theory and applications

Bojan Popov: **Invariant domain preserving approximations of the Lagrangian hydrodynamics equations.**

Maya Stoyanova: **PULB pairs of codes found in the \$E_8\$.**

Rumen Uluchev, Ivan Gadjev, Parvan Parvanov: **Higher order approximation of continuous functions by Goodman-Sharma type operators.**

Ivan Gadjev: **Hardy Inequalities in L_p and l_p .**

Borislav Draganov: **Approximation by Kantorovich sampling operators in weighted variable exponent Lebesgue spaces.**

Geno Nikolov: **Simple bounds for the extreme zeros of Jacobi polynomials.**

Georgi Bazlyankov: **Pattern formation in a Keller-Segel type system.**



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02 April 2025



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OF THE REPUBLIC OF BULGARIA

02 April 2025

3.1.10 DigitalEdu-SU,

Prof. Dr. Roumiana Peytcheva-Forsyth, lead researcher

9.00-13.00 - **Conference Hall, Rectorat**

10.30-11.00 Coffee break

I – session

DIGITALIZATION IN BULGARIAN EDUCATION – ANALYSIS OF DATA FROM EMPIRICAL RESEARCH IN SECONDARY SCHOOLS

Opening of the conference and presentation of the activities of the DigitalEdu-SU research group from the second year of the project: Researching the “state of the actual” of digitalization in secondary education)

Prof. Roumiana Peytcheva-Forsyth –
lead scientist of the research group

Digital Education in Bulgaria in the context of the EU Digital Education Action Plan

Prof. Harvey Mellor, emeritus reader,
Institute of education: UCL

Digital maturity of Bulgarian secondary schools - the perspective of school principals, teachers, students and parents

Prof. Rumiana Peytcheva-Forsyth,
assoc. prof. Bistra Mizova, d-r Veronika Racheva

The digital professional competencies of Bulgarian teachers in a self-assessment perspective – implications for educational practice

Assoc. prof. Bistra Mizova, prof. Rumiana Peytcheva-Forsyth

Preparing future teachers for the digital transformation in education: Exploring the views and practical strategies of university lecturers

Assoc. prof. Lyubka Aleksieva

Case study on factors for school digitalization - the perspectives of pedagogical specialists from three Bulgarian schools

D-r Maria Petkova and PhD student Devil Kulev

Discussion

II session

PREPARING TEACHERS FOR WORK IN A DIGITAL EDUCATIONAL ENVIRONMENT – DATA FROM EMPIRICAL RESEARCH

**Pedagogical digital competencies - what teachers
need to know and be able to do based on the teacher
preparation curricula**

Prof. Vasia Delibaltova

**Real versus declared strategies for developing digital
pedagogical competencies in the training programs of
future teachers at Sofia University “St. Kliment Ohridski”
– the perspectives of students and their teachers**

Assoc. prof. Blagovesna Yovkova

Integrating digital technologies into science education in Bulgaria

Assoc. Prof. Elena Boyadzhieva, Assoc. Prof. Milena Kirova,
Prof. Adriana Tafrova, Assoc. Prof. Nadezhda Raycheva,
Assoc. Prof. Maya Gaydarova and Dr. Ivelina Kotseva

Expected digital competence of first-year students at the Faculty of Mathematics and Informatics

Assoc. Prof. Nikolina Nikolova and Assoc. Prof. Temenuzhka
Malcheva

The role of digital technologies in the training of students - future foreign language teachers at the Faculty of Classical and Modern Philology of Sofia University

Assoc. Prof. Irena Dimova, Dr. Mihal Pavlov and
Dr. Plamen Tsvetkov

Digital competencies of the geography and history teacher in the Bulgarian school – fundamental principles, opportunities, and limitations

Assoc. Prof. Maya Vasileva & Dr. Katya Misheva

Discussion

3.2.3 New materials and photonics,

Dr. Sotir Chervenkov, lead researcher

14.00-18.00 - **Conference Hall, Rectorat**

16.00-16.30 Coffee break

Alexander Dreischuh
Beam and Pulse Shaping Using Optical Vortices: Recent Results. L. Stoyanov, N. Dimitrov, M. Zhekova, N. Gorunski, A. Dreischuh

Georgi Georgiev
From Neumann Equation of State to Surface Tension Component Theories: Induced Surface Polarization as a Unifying Concept of Surface Energetics. G. Georgiev, S. Balouchev, M. Bacheva

Kaloyan Genkov
Plasmonic Hot Spots in Conductive Ag Nanowire Meshes. K. Genkov, A. Zyapkov, and G. Tsutsumanova

Jivko Kisiovski
Negative Permittivity of N-graphene-ceramic Matrix Composite Obtained by Plasma Enhanced CVD. Zh. Kis'ovski, I. Ivanov, S. Marinov, V. Vachkov, G. Popov, and M. Eneva

Neno Todorov
Raman-active Phonons in Pseudobrookite CoTi₂O₅: Polarized Raman Spectra and Lattice Dynamical Calculations. N. D. Todorov, M. V. Abrashev, and V. G. Ivanov

Stanislav Balouchev
Minimally Invasive Long-term Monitoring of the Extracellular Oxygen Concentration in the Aquatic Microenvironment. M. Micheva, K. Landfester, S. Balushev

Veselin Donchev
Study of GaSb Micro-islands Deposited on Si Substrates with Ag Catalytic Nanoparticles. V. Donchev, K. Kirilov, M. Milanova, P. Vitanov, H. Dikov, A. Jaffré, P. Ralova, P. Elenkin

V. Ivanov
One-dimensional Ordered Phases of [Mo₆Br₁₄]²⁻ Molecular Anions in Single Walled Carbon Nanotubes – Synthesis, Characterization, Applications. V. Ivanov

Ivan Buchvarov
Thermo-optical Characterization of Yb Doped Crystals for High-Performance Ultrafast Lasers. L. Petrov, K. Georgiev, A. Trifonov, I. Buchvarov

Ivan Buchvarov
Study of Chirped Pulse Amplification Performance of Yb:CALYGLO Laser Crystal. L. Petrov, K. Georgiev, A. Trifonov, I. Buchvarov

02 April 2025

3.1.5 Computational Heterogeneous Catalysis,

Prof. Hristiyan Aleksandrov Ph.D., lead researcher

3.2.2 ZeoNeo,

Prof. Valentin Valtchev, lead researcher

9.00-13.00 - **Auditorium 23, Rectorat**

10.30-11.00 Coffee break

Synthesis, applications, and quantum-chemical modelling of catalytic materials

Prof. Hristiyan Aleksandrov

"Brief introduction of the project and the group"

Prof. Francesc Viñes (University of Barcelona, Spain)

"C in and out; interstitial and vacancy effects in heterogeneous catalysis"

Assoc. Prof. Iskra Koleva

"DFT modeling of complexes of CO with mono- and bimetallic nanoparticles"

Boyana Sabcheva

"Theoretical investigation of the interaction of a boron atom with transition metal nanoparticles"

Dr. Masoomeh Keyhanian

"DFT modeling of stability and reducibility of Sm doped CeO₂ systems"

Assist. Prof. Kristina Simeonova, Prof. Petko Petkov

"DFT Modelling of 2D conjugated polymers with specific electronic properties"

Prof. Valentin Valtchev

"Small pore zeolite for CO₂ and CH₄ separation"

Assoc. Prof. Rusi Rusev

"New data on the preparation and adsorption properties of embryonic zeolite precursors"

Head Assist. Prof. Hristina Lazarova

"Catalytic activity of cobalt- and nickel-modified embryonic zeolites in the reaction of hexane"

3.1.6 BAC,

Prof. DSc Ivo Grabchev, lead researcher

9.00-13.00 - **Auditorium 45, Rectorat**

10.30-11.00 Coffee break

Prof. Ivo Grabchev

Summary of the results achieved by Working Group 3.1.6 during the second year.

Microbiological activity of new 1,8-naphthalimide derivatives.

Prof. Albena Jordanova

Molecular mechanisms of action of dendrimers with antibacterial activities on model lipid membranes

Assoc. Prof. Stanimir Stoyanov

Efficient method for weak-nucleophile functionalization of 1,8-naphthalimides

Prof. Yulian Zagraryanski

New powerful building block molecules in 1,8-naphthalimide chemistry

Assoc. Prof. Juliana Ivanova

Metal complexes of salinomycin with potential applications as antidotes and antitumor agents.

Assoc. Prof. Megkena Kandinska

Novel benzylidenemalononitriles, benzimidazole and pyrazoline derivatives. Application as metal ion detection sensors, antifungal and antiviral agents.

Assoc. Prof. Ivan Minkov

Model studies of the effect of Spike glycoprotein from SARS-CoV-2 on DOPC membrane monolayers

02 April 2025

3.1.3 GROWTH,

Assist. Prof., MD Tsvetelina Velikova Ph.D., lead researcher

14.00-18.00 - **Auditorium 45, Rectorat**

16.00-16.30 Coffee break

Bridging Science and Innovation: Advances in Diagnosis, Therapy, and Translational Medicine

I session: Biomarkers, diagnostics and pre-clinical studies

Tsvetelina Velikova

**Welcome notes and Annual report of 3.1.3.
GROWTH - 2024**

Sjoerd Miedema, Dimitrina Miteva, Kremena
Naydenova, Vasil Dimitrov, Tsvetelina Velikova
**Gene expression of cytokines IL-17 and IL-33
in plasma and nasal lavage fluid of patients
with allergic rhinitis and bronchial asthma**

Kremena Naydenova, Dimitrina Miteva, Vasil
Dimitrov, Tsvetelina Velikova
Cytokines:

**IL-6, IL-13, IL-17, IL-23, IL-27, and IL-33 in
Allergic Respiratory Diseases: A Critical
Analysis of original results**

Adriana Angelova, Stanislava Zlateva, Poli
Dimcheva, Petar Stoilov, Antoaneta Mihova,
Rosen Mihaylov, Blagovesta Pencheva,
Tsvetelina Velikova
**Factors Influencing Adjusted Risk For
Preeclampsia: A Bulgarian Cross-Sectional
Study**

Petar Stoilov, Antoaneta Mihova, Rosen
Mihaylov, Blagovesta Pencheva, Stanislava
Zlateva, Poli Dimcheva, Marinela Kalcheva,
Tsvetelina Velikova

**Comparative analysis of two IGRA tests for
determining the specific response against
m. Tuberculosis infection**

Marinela Kalcheva, Stanislava Zlateva, Rosen
Mihaylov, Blagovesta Pencheva, Betina
Angelova, Monika Boncheva, Poli Dimcheva,
Petar Stoilov, Antoaneta Mihova, Tsvetelina
Velikova

**Anti-Nuclear Antibodies Determination
– Matches And Discrepancies Between
Different Methods For Detection**

Dimitrina Miteva, Georgi V Vasilev, Tsvetelina
Velikova

**Interleukin-17A: A Key Cytokine in
Neurodegenerative Diseases**

Milena Gulinac, Tsvetelina Velikova
**Inflammatory stromal response in
neoplastic disease**

II session: COVID-19 and other infections

Emilia Naseva, Verginiya Ivanova, Hristiana Batselova, Latchezar Tomov, Tsvetelina Velikova
Four Years Post-Pandemic of SARS-CoV-2: Insights from a Bulgarian Online Survey

Snezhina Lazova, Georgi H Vasilev, Margarita Ganeva, Anna Dasheva, Borislav Ganev, Iren Tzotcheva, Albena Telcharova, Latchezar Tomov, Tsvetelina Velikova

National MISC Register with an Algorithm for Diagnosing and Monitoring Children with MISC, Designed for Use in Future Pandemics Caused by Similar Viruses – A Concept for Pandemic Preparedness

Georgi V Vasilev, Nadzhie Gorelyova, Georgi H Vasilev, Dimitrina Miteva, Iren Tzocheva, Snezhina Lazova, Tsvetelina Velikova
Neurological manifestations of MIS-C: a case-based literature review

Eleonora Stamenova, Tsvetelina Velikova
Post-COVID treatment options: case-based review

Hristiana Batselova, Kiril Atliev, Karen Djambazov, Latchezar Tomov, Tsvetelina Velikova
Analysis of Post-Vaccination Reactions After Administration Of Pediatric BNT162b2 Vaccine Against COVID-19

Latchezar Tomov, Assen Tchordadjieff, Stavros Gerasoudis, Tsvetelina Velikova, Hristiana Batselova
Exploring the possible relationship between Covid-19 and scarlet fever in the UK

III session: Therapy

Ruska Shumnalieva, Ivan Padjen, Simeon Monov, Tsvetelina Velikova
Emerging role of CAR T cell and Bispecific T cell engager therapy in rheumatology

Maria Kokudeva, Tsvetelina Velikova
Immunomodulatory treatment protocols for infertility patients

Tsvetelina Velikova, Antoaneta Mihova, Rosen Mihaylov, Blagovesta Pencheva
Immunophenotyping in children before and after inosine acedoben dimepranol administration

Lyubomir Chervenkov, Mladen Doikov, Tsvetelina Velikova, Gancho Kostov, Bozhidar Hristov
The Future of Magnetic Resonance Imaging

Petar Kalaydzhiyev, Gergana Voynova, Radostina Ilieva, Natalia Spasova, Angelina Borizanov, Elena Kinova, Georgi H Vasilev, Tsvetelina Velikova, Assen Coudev
Cardiometabolic benefits of dual GLP1-RA and SGLT2i therapy in patients with HFpEF, T2DM, obesity, and obstructive sleep apnea: a prospective study

Periklis Siliogkas
Acute right heart failure due to pulmonary embolism from thrombi from cardiac pacemaker wire remnants

DISCUSSION and closing remarks



National Recovery and Resilience Plan



OF THE REPUBLIC OF BULGARIA

02 April 2025

Social Transformation: Education, Digitization, Organisational and Institutional Change

15.00-19.00 - **Auditorium 65, Rectorat**

16.00-16.30 Coffee break

Social Transformation: Education, Digitization, Organisational and Institutional Change

Assoc. Prof. Vihra Naydenova

„Influence of Psychological and Social Factors on Work Engagement and Well-being in organizational context - first empirical results 2024-2025“

Prof. Plamen Kalchev and Prof. Irina Zinovieva

„Cyberbullying among students: from attractiveness of the idea to real actions.“

Assoc. Prof. Stoycho Stoychev

Evaluating the Impact of Machine Voting on Voter Turnout in Bulgaria (2021-2023)

Assoc. Prof. Milena Milanova

„Digital Maturity Models and Digital Transformation Strategies of GLAM Institutions in Bulgaria“

Prof. Vesselin Dafov

„Agreement on and taking care of philosophical sessions facilitated through the Philosophical wondering method.“

Assoc. Prof. Anna Beshkova

„Changing Semantics by Setting a New Perspective (Language of Solidarity vs. Language of Division)“

Prof. Alexander Kanev

“Modal Ontology and Philosophical Application of Artificial Intelligence”

Assoc. Prof. Valentina Kaneva,

Assoc. Prof. Ognyan Kasabov

“Justice in The Context of an Environmental Crisis“

Assoc. Prof. Albena Taneva

The Importance of Shared Society in a Disrupted World



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