SUMMIT

Annual conference, April 2024 Sofia University St. Kliment Ohridski Sofia, Bulgaria



TECHNOLOGICAL TRANSFER



National Recovery and Resilience Plan



OF THE REPUBLIC OF BULGARIA

PROGRAM 23.04 24.04.2024







23 april 2024, program summary

Aula, Rectorat, Tsar Osvoboditel Blvd 15		
8.30-9.30	8.30-9.30 Registration and complimentary coffee	
9.30-10.15	Opening ceremony	
	Plenary session	
10.15-10.30	SUMMIT: Vision, Achievements, Challenges. An Overview	p. 6
Group sessions		
10.30-12.00	Reports from Research groups 3.1.1 to 3.1.6	p. 7-8
12.00-13.00	12.00-13.00 Lunch break "Alma Mater" restaurant	
13.00-15.00	Reports from Research groups 3.1.7 to 3.1.14	p. 8-10
15.00-15.30	15.00-15.30 Coffee break	
15.30-17.30	Reports from Research groups 3.1.15 to 3.1.17 and 3.2.1 to 3.2.5	p. 10-12

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11.00-12.30	3.1.5 Computational Heterogeneous Catalysis, Prof. Hristiyan Aleksandrov Ph.D.	p. 25
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A301, Facult	y of Physics, James Bourchier Blvd 5	
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A315, Faculty of Physics, James Bourchier Blvd 5		
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House of Eu	rope, Cultural center, Georgi Rakovski str 124	
10.30-15.00	3.1.15 European Values and Social Challenges /EuVaSC/, Prof. Maria Stoicheva, PhD	p. 35











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Aula, Rectorat, Tsar Osvoboditel Blvd 15		
8.30-9.30	Registration and complimentary coffee	
9.30-10.15	Opening ceremony Address to the Conference from Official Guests	
	Plenary session	
10.15-10.30	SUMMIT: VISION, ACHIEVEMENTS, CHALLENGES. AN OVERVIEW PROF. ANASTAS GERDJIKOV, LEADER OF THE SUMMIT PROJECT, PROF. VASIL MARINOV, COORDINATOR RESEARCH GROUPS - SUMMIT	









	PRESENTATION OF THE ACTIVITIES OF THE RESEARCH GROUPS	
10.30-10.45	Prof. DSc Stoytcho Yazadjiev, Faculty of Physics, Department of Theoretical Physics. Group Name 3.1.1: Mathematical Physics and Astrophysics. Main research area of the group: General relativity, Modified theories of gravity, Relativistic astrophysics, Gravitational waves, Black holes, Gaugegravity dualities.	
10.45-11.00	Prof. Slavka Tcholakova, PhD Chemistry, Faculty of Chemistry and Pharmacy, Department of Chemical and Pharmaceutical Engineering. Research group name 3.1.2: Active formulations and materials. Main research area of the group: Soft mater.	
11.00-11.15	Assistant professor, MD, PhD, Tsvetelina Velikova, Medical Faculty. Research group name 3.1.3: GROWTH (group of researchers for opportunities in writing who are talented in healthcare). Main research area of the group: Medicine, Biology and Public Health.	







Prof. DSc Nikolav Vitanov. Member of BAS. Faculty of Physics, Department of Theoretical Physics. Research group name 3.1.4: Advanced Quantum and Optical 11 15-11 30 Technologies (AOOT). Main research area of the group: Quantum technologies. Prof. PhD, Hristiyan Aleksandrov, Faculty of Chemistry and Pharmacy, Department of Organic Chemistry and Pharmacognosv. 11.30-11.45 Research group name 3.1.5: Computational Heterogeneous Catalysis. Main research area of the group: Application of quantum chemical methods for studying of catalytic systems and reactions on them. Prof. DSc Ivo Grabchev. Faculty of Medicine, Department of Chemistry and biochemistry, 11.45-12.00 physiology and pathophysiology. Research group name 3.1.6: BAC. Main research area of the group: Bioactive compounds. Lunch break 12.00-13.00 Prof. DSc. Tony Spassov, Faculty of chemistry and pharmacy, Applied Inorganic Chemistry Department. 13.00-13.15 Research group name 3.1.7: Functional materials. Main research area of the group: Nanostructured materials for clean energy and environment.

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13.15-13.30	Assoc. Prof. Dr Lyuben Zagorchev, Faculty of Biology, Department of Biochemistry. Research group name 3.1.8: Plant parasites. Main research area of the group: Biology of parasitic plants.
13.30-13.45	Prof. Dr.Sc. Mladen Savov, Faculty of Mathematics and Informatics, Department of Probability, Operations Research and Statistics. Research group name 3.1.9: FAMMA. Main research area of the group: Stochastic processes.
13.45-14.00	Prof. d-r Roumiana Peytcheva-Forsyth, Faculty of Pedagogy, Department of Didactics. Research group name 3.1.10: DigitalEdu-SU. Main research area of the group: Digital education.
14.00-14.15	Assoc. Prof. Blagoy Uzunov, PhD, Faculty of Biology, Department of Botany. Research group name 3.1.11: Algology (Algal Collections). Main research area of the group: algae, algal cultures.
14.15-14.30	Prof. Ivan Koychev, Faculty of Mathematics and Informatics, Software technologies Department. Research group name 3.1.12: Intelligent systems. The main research area of the group: Artificial Intelligence.







14.30-14.45	Assoc. Prof. dr. Guergana Guerova, Physics Faculty, Department Meteorology and Geophysics. Research group name 3.1.13: Climate, Weather and Natural Risks (CW&NR). Main research area of the group: Earth and related environmental sciences.
14.45-15.00	Assoc. Prof. PhD, Krasimir Mitev, Faculty of Physics, Department of Atomic Physic. Research group name 3.1.14: Nuclear. Main research area of the group: Experimental nuclear and sub-nuclear physics and technology.
15.00-15.30	Coffee break
15.30-15.45	Prof. Maria Stoicheva, PhD, Faculty of Philosophy, European Studies Department. Research group name 3.1.15: European Values and Social Challenges (EuVaSC). Main research area of the group: Social sciences (Political Science, Law, Educational Sciences).
15.45-16.00	Prof. Doctor Habil Anna-Maria Kostova Totomanova, Faculty of Slavic studies, Department of Cyril and Methodius Studies and Assoc. Professor Dr. Maria Baramova, Faculty of History, Department History of Byzantium and the Balkans. Research group name 3.1.16: Digital Humanities. ICT Applications for History and Language. Main research area of the group: Digital Humanities.









16.00-16.15	Prof. DSc Desislava Yordanova, Faculty of Economics and Business Administration, Department of Business Administration. Research group name 3.1.17: SMEs digitalisation. Main research area of the group: Digitalization; Small and Medium-Sized Enterprises.
16.15-16.30	Prof. Ph.D. Bojan Popov Current affiliation: Department of Mathematics, Texas A&M University, Texas, USA. Research group name 3.2.1: NATATA. Main research area of the group: Numerical Analysis and Approximation Theory.
16.30-16.45	Prof. Valentin Valtchev Current affiliation: Laboratoire Catalyse & Spectrochimie, ENSICAEN - Université de Caen – CNRS, France. Research group name 3.2.2: ZeoNeo. Main research area of the group: Zeolitic materials for new applications.
16.45-17.00	Dr. Sotir Chervenkov Current affiliation: Disco Hi-Tec Europe GmbH, Germany. Research group name 3.2.3: New materials and photonics. Main research area of the group: Development, characterization and applications of new materials for photonics.







17.00-17.15	Sergei Ivanov, PhD Center for food biology, Sofia, Bulgaria. Research group name 3.2.4: Microbiological risks in the environment. Main research area of the group: Wastewater monitoring for pathogenic viruses and bacteriophages
17.15 – 17.30	Prof. Dr Ivo Vlaev Current affiliation: Warwick Business School, University of Warwick. Research group name 3.2.5: NUDGE: Behaviour models and Public Policy for sustainable development. Main research area of the group: Behaviour chnge, attitude change, public policy, mental health.

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Poster session for the 3.4 Groups

All day | Central lobby, Rectorat, Tsar Osvoboditel Blvd 15

- Assoc. Prof. Silvena Boteva Assessment of the effects of conservation activities implemented in the cirque of the Seven Rila Lakes
- Assoc. Prof. Petar Armyanov Efficient calculations and algorithms. Applications in solving theoretical and practical problems from various scientific areas.
- Assoc. Prof. Bilyana Rangelova Nonverbal communication research - a bridge to communication in swimming education in sports lessons in children with SEN
- Assoc. Prof. Peter A. Ivanov -Entanglement Entropy in Quantum Many-Body Systems
- Assoc. prof. Stanimir Kolev Conversion of CO₂ in Gliding and Stabilized Arc Discharges with Enhanced Gas Cooling
- 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
- Prof. DSc Nadia Zlateva Advanced Variational Analysis and Applications (AVAA)

- Assoc. Prof. Simeon Groysman Origin, Reception and Application of Modern Legal Terminology
- Assoc. Prof. Diana Atanassova, PhD Metaphrastic Hagiography in the South Slavonic Manuscript Tradition
- Assoc. Prof. Dr. Rositsa Simeonova Values and human resource management in social work - dimensions and interrelations
- Assoc. Prof. Ivanka Dakova New composite materials for selective determination of toxic forms of chemical elements in environmental samples
 - "Newly designed organic-inorganic nanocomposite membrane for simultaneous determination and speciation analysis of chromium and manganese in water samples" (Penka Vasileva and Irina Karadjova)
 - "Ionic liquid modified polymer gel for arsenic speciation" (Ivanka Dakova and Irina Karadjova)
- Assoc. Prof. Georgi Nikolaev Increase of iPSC reprogramming efficiency by cell membrane potential (Vm) modulation
- Assoc. Prof. Milena Milanova Digital Maturity of Public Libraries in Bulgaria







Poster session for the 3.4 Groups

All day | Central lobby, Rectorat, Tsar Osyoboditel Blvd 15

- Assoc. Prof. Dobrin Atanasov, PhD -Image and Narrative. Theoretical and Artistic Studies on the Visual Arts in the Context of historical, socio-cultural and scientific-technological Development
- Assoc. Prof. Silvia Varbanova, PhD -Nowadays culture of poverty – dimensons and spread among youth
- Assoc. Prof. Tina Georgieva Diplomacy in the Modern Era. Between Ideology and Practice
- Prof. DSc Neli Vasileva Model of evaluation of receptive language in preschool aged children
- Assoc. Prof. Dr. Boyan Lomev -Investigating the effect of urban mobility innovation using mode-switching time series methods
- Assoc. Prof. Dr. Elisaveta Peneva Impact of thermodynamic conditions on the development of continental and maritime thunderstorms over Bulgaria and the Black sea
- Assoc. Prof. Galina Georgieva, PhD -Algorithm literacy: socio-pedagogical aspects
- Assoc. Prof. Reneta Raykova -Investigation of the focal mechanisms of earthquakes with magnitude M≥4 in the territory of Bulgaria and its surroundings

- Prof. Adriana Damyanova, DSc The reading practices of Bulgarian students (at home and abroad)
- Prof. Anna Tzolovska PhD Movement and statics – theoretical research and artistic realizations in visual graphic and plastic arts
- Prof. DSc Klara Toneva Orthodox Theology in Dialogue
- Prof. Dr. Sc. Nikolay Popov The School Counselor between Autonomy and Control: A Comparative Study in Nine European Countries
- Assoc. Prof. Vihra Naydenova, PhD -Influence of Psychological and Social Factors on Work Engagement and Well-being in organizational context
- Prof. Silvia Nikolaeva Social and pedagogical paradigms for research and modelling of educational ecosystems
- Assoc. Prof. Maya Tcholakova, PhD -Competency-based approach in the education of social pedagogy students
- Assoc. Prof. Dimitar Zlatinov Undeclared work and informal employment in Bulgaria (Prof. Stefan Petranov, Assist. Prof. Radostina Ivcheva)











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

9.00-12.30 - Hall 1. Rectorat. Tsar Osvoboditel Blvd 15

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Integrating Science for Advances in Diagnosis and Treatment Innovations"

- Tsvetelina Velikova: Introduction
- Lvubomir Chervenkov: Exploring the Frontier of Imaging with Artificial Intelligence for prostatic cancer
- Luchesar Tomov: Pandemic Perspectives: Analyzing COVID-19 Dynamics through Advanced Modeling for Informed Strategies and Future Preparedness
- · Milena Gulinac: Deciphering the PD-L1 Roles in Immuno-Oncology: pathologist`s point of view
- Georgi V. Vasilev: Autoantibodies related to ataxia and other central nervous system manifestations of gluten enteropathy
- · Georgi Nikolaev: Stem cell therapies progress and challenges
- Discussion

- Russka Shumnalieva: CAR-T cell therapy in autoimmune rheumatic diseases
- · Dimitrina Georgieva: Unraveling the Genetic Tapestry of SARS-CoV-2: Mutations, Oncogenic Potential, and Innovative Strategies for COVID-19 Vaccination
- Hristiana Batselova: Epidemiological study of patients with COVID-19 in the largest medical facility in Bulgaria, vaccinated against SARS-CoV-2
- Stavros Gerasoudis: Immunological Challenges in Pursuit of Diabetes Therapeutics by Islet Transplantation
- · Desislava Docheva: Harmony on the Plate: Unraveling the Interplay of Dietary Factors and Reproductive Health
- · Radoslav Rangelov: Exploring Multifactorial Dimensions of Reproduction Failure with a focus on mitochondria
- Tsvetelina Velikova: COVID-19 pandemics: what do we know 4 years later
- Discussion

3.1.10 DigitalEdu-SU, Prof. Dr. Roumiana Peytcheva-Forsyth, lead researcher

9.00-12.30 - Hall 2, Rectorat, Tsar Osvoboditel Blvd 15

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Digitalization of Bulgarian Education"

- Roumiana Peytcheva-Forsyth: About the project DigitalEdu-SU: Researching the "state of the actual" of the digitalization of secondary education in Bulgaria
- B. Mizova, M. Bakracheva: The place of Bulgaria in Europe with respect to the digitalization of education – policies, priorities, indicators
- V. Delibaltova: Initial training of teachers in Sofia University – context, characteristics and problems
- R. Peytcheva-Forsyth, B. Mizova, B. Yovkova: The digital competences of teachers and university lecturers – selfevaluation through the SELFIE tool (preliminary data)
- L. Aleksieva, V. Racheva: Digitalization in the context of primary school education – research into the study documentation and digital competences of future teachers
- M. Bakracheva, B. Mizova: Teachers' attitudes towards the pedagogical integration of ICT into the teaching process and towards digital competences

- N. Nikolova, T. Malcheva, B. Kirilova, P.Mihnev: Prospects for the development of digital competences in Bulgarian secondary education in terms of teaching mathematics, informatics, computer modelling and information technologies – preliminary data
- A. Tafrova, E. Boyadzhieva, M. Kirova, M.Gaydarova, I. Georgieva, N. Raicheva: Digitalization of school education in the context of teaching natural sciences
- M.Vasileva, K. Misheva: Digitalization of school education in the context of teaching geography and history – comparative analysis and development prospects
- N. Hristova, D. Vasileva: Digitalization of school education in the context of teaching Bulgarian language and literature
- I. Dimova, P. Tsvetkov, M. Pavlov: Pedagogical application of digital technologies in foreign language teaching – advantages and challenges
- Discussion















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3.1.17 SMEs digitalization, Prof. DSc Desislava Yordanova, lead researcher

14.30-17.00 - Hall 2. Rectorat. Tsar Osvoboditel Blvd 15

12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Big Data and Digitalization of SMFs"

- · Assoc. Prof. Boryana Bogdanova, Gloria Hristova, FEBA: ML-based Al Conceptual Framework for SMEs' Digitalization Assessment: An Unstructured Data Approach
- · Assoc. Prof. Borvana Bogdanova. Gloria Hristova, FEBA: A Novel Approach for Assessing Digitalization in High-Tech and Low-Tech SMFs: The Sentiment Perspective

"Challenges to Digital Transformation of SMEs"

- · I. Mladenova, Z. Vladimirov, O. Harizanova: Organizational capabilities for SME digital transformation - evidence from Bulgaria
- · Z. Vladimirov, O. Harizanova, I. Mladenova: SMEs digitalisation – the key role of digital orientation
- Prof. DSc Desislava Yordanova. Assoc. Prof. Boryana Bogdanova, Assoc. Prof. Albena Pergelova, Gloria Hristova: Modelling the process of digital transformation in SMEs via a two-stage analytical framework
- · A. Pergelova, D. Yordanova: Characteristics of digitalized SMEs in Bulgaria

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3.1.16 ICT Applications for History And Language, Prof. DSc Anna-Maria Totomanova / Assoc. Prof. Dr. Maria Baramova, lead researchers

9.00-17.30 - Conference Hall, Rectorat, Tsar Osvoboditel Blvd 15

10.30-11.00 Coffee break / 12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Digital Humanities and Balkan Past: Mapping Sources and New Approaches"

- Maria Baramova, Christian Simeonov: Mapping the Past: Creating TEI XML Files with Geographic Data from Historical and Archaeological Sources
- Arno Strohmeyer (ÖAW): Ottoman-Habsburg Diplomatic Encounters: Digital Editions and Studies at the Austrian Academy of Sciences
- Grigor Boykov (University of Vienna):
 Geospatial Modeling of Pre-Cadastral Ottoman
 Cities: A Case Study on Plovdiv
- Chavdar Kirilov: Revealing Ottoman Routes: Data Mining Road Networks in the Balkan via Franz Weiss' 1829 Map
- Vania Racheva, Maria Baramova: Tracing Felix Kanitz: Source Analysis and Geodata Mining
- Ivan Valchev: Reality and Imagination: Ancient Monuments in 16th-19th Century Engravings
- Ivan Parvev: Digital Aspects of 18th century Balkan Area Studies. The "Habsburg connection"
- **Dimitar Iliev:** Ancient Epigraphic Documents and their Metadata in Digital World
- Daniela Stoyanova: LiDAR scanning in Archeological Reserve "Sboryanovo". New perspectives in the documentation and preservation of archaeological sites
- Discussion

"Traditional and digital approaches to the written Bulgarin heritage"

- Angel Nikolov: The monastery of St. Nicholas at the village of Bohot near Pleven: an overview of the evidence of a lost monastic institution
- A. Totomanova: Electronic Research Infrastructure for Bulgarian Medieval Written Heritage
- Maria Totomanova-Paneva: Athanasius of Alexandria's Orations Against the Arians. Glossary index
- **Desislava Uzunova:** Again on the Samuil Bakachich's translator's legacy
- Diana Atanasova-Pencheva: The Miracles of Saint Menas in the South Slavic Milieu
- Vasya Velinova: Old Slavic printed books in the collections of the Vatican Apostolic Library.
- Aneta Dimitrova: The Two Complete Slavonic Translations of John Chrysostom's Homilies on the Statues and Their Greek Sources
- Discussion







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

Assoc. Prof. Dr. Guergana Guerova, lead researcher

9.00-12.30 - Auditorium 45. Rectorat. Tsar Osvoboditel Blvd 15

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Climate, Weather and Natural Risks"

- · AProf. Guergana Guerova: Severe weather forecasting and nowcasting
- · AProf. Elisaveta Peneva: Climate feedbacks in Balkan-Black Sea region
- · AProf. Bilvana Borisova: Climate hazards and risks

- · Prof. Kliment Naydenov: Natural hazards and risks
- AProf Stelian Dimitrov: Geospatial modeling and mapping approaches and methods
- Discussion

3.2.5 NUDGE: Behaviour models, attitudes and Policy implementation for sustainable development, Prof. Dr. Ivo Vlaev, lead researcher

9.00-12.30 - auditorium 63, Rectorat, Tsar Osvoboditel Blvd 15

10 30-11 00 Coffee break / 12 30-13 30 Lunch break

"Practices in Contemporary **Public Management: Personal Determinants, Potential Benefits** and Limitations of their Application"

3.4 Projects, faculty of philosophy

11.00-12.30 - Auditorium 63, Rectorat, Tsar Osvoboditel Blvd 15

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Prospects and Challenges for the Humanities and Social Sciences in the Digital Era"

- Prof. Dr. Vesselin Dafov: Projections of "Philosophy with Children" in Kindergartens, Primary and Elementary Schools: Innovations in Philosophy, Civic Education and School Life
- Assoc. Prof. Dr. Vihra Naydenova: Impact of Psychological and Social Factors on Commitment and Well-Being in an Organizational Context
- Prof. Dr. Irinka Zinovieva: Indicators for Predicting Behavior in Virtual Social Networks
- Assoc. Prof. Milena Milanova: Digital Maturity Study of Public Libraries in Bulgaria
- Assoc. Prof. Dr. Stoycho Stoychev: Impact of Electoral Reforms on Democratic Involvement in Bulgaria and the EU (2021 -2024)

- Assoc. Prof. Dr. Anna Beshkova: Changing Semantics by Setting a New Perspective (The Language of Solidarity versus the Language of Disunity)
- Prof. Dr. Alexander Kanev: Modal Ontology and Philosophical Applications of Artificial Intelligence
- Assoc. Prof. Dr. Albena Taneva: Application and Development of the Shared Society Concept: Comparative Models of Social Inclusion
- Assoc. Prof. Dr. Ognyan Kasabov,
 Assoc. Prof. Dr. Valentina Kaneva:
 Justice in the Context of an Environmental Crisis















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

9.00-12.30 - Conference Hall, Faculty of Mathematics and Informatics, James Bourchier Blyd 5

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Recent Developments in Stochastic Processes"

- Semi-Markov evolutions and superdiffusion, Bruno Toaldo (Department of Mathematics "Giuseppe Peano" -University of Turin)
- · Asymptotics of densities of inverse subordinators Giacomo Ascione (University of Naples Federico II)
- Distributional limits of exponential functionals of heavy-tailed processes via bivariate Bernstein-gamma functions. Martin Minchev (Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski")
- Parameter estimations in a Beta-Uniform mixture model, Nikolay I. Nikolov (Sofia University "St. Kliment Ohridski". Institute of Mathematics and Informatics, Bulgarian Academy of Sciences)
- · Searching for periodic three-body orbits and computing them with high precision, Ivan Hristov, Radoslava Hristova (Faculty of Mathematics and Informatics. Sofia University "St. Kliment Ohridski")

- Exchangeable measure-valued Pólya urn sequences. Hristo Sariev (Sofia University "St. Kliment Ohridski". Institute of Mathematics and Informatics, Bulgarian Academy of Sciences)
- On the volatility structure. Dragomir Nedeltchev (Institute of Mathematics and Informatics, Bulgarian Academy of Sciences)
- Uniqueness of Wiener-Hopf factorization for Lévy processes, Mladen Savov (Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski")

3.2.1 NATATA. Prof. Boian Popov Ph.D., lead researcher

13.30-17.00 - Conference Hall, Faculty of Mathematics and Informatics, James Bourchier Blvd 5

12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Numerical analysis and applications, approximation theory and applications "

- · Boian Popoy: Invariant domain preserving approximations for the Euler equations with a tabulated equation of state.
- · Maya Stoyanova: Universal lower and upper bounds for energy of weighted spherical codes and designs.
- · Ivan Gadjev, Parvan Parvanov, Rumen **Uluchev:** Strong converse inequality for weighted approximation of functions by the Szasz-Mirakian-Kantorovich operator.
- Borislay Draganoy: Approximation by Kantorovich sampling operators in variable exponent Lebesque spaces.
- · Geno Nikolov: Regularity of the Birkhoff interpolation problem induced by certain three-row almost Hermitian matrices.
- · Georgi Bazlvankov: Numerical solutions of a revised PDE model describing multiple sclerosis progression.
- Discussion















3.1.12 Intelligent systems, Prof. Ivan Koychev, lead researcher

9.00-12.30 - auditorium 326. Faculty of Mathematics and Informatics. James Bourchier Blvd 5

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Intelligent Systems in the LLM Era"

- bgGLUE: A Bulgarian General Language Understanding Evaluation Benchmark. Momchil Hardalov, Pepa Atanasova, Todor Mihaylov, Galia Angelova, Kiril Simov, Petva Osenova, Ves Stovanov, Ivan Kovchev. Preslav Nakov, Dragomir Radev.
- · Detecting Check-Worthy Claims in Political Debates, Speeches, and Interviews Using Audio Data. Petar Ivanov, Ivan Koychev, Momchil Hardalov, & Preslav Nakov,
- Two-level Entailment Classification of Clinical Trials Enhanced by Contextual Data Augmentation, Sylvia Vassileva, Georgi Grazhdanski, Svetla Boytcheva, Ivan Koychev.
- Transformer-based Approach for Procedure Recognition and Linking in Spanish Clinical Texts. Sylvia Vassileva, Georgi Grazhdanski, Svetla Boytcheva, Ivan Koychev.
- · Transformer-based Approach for Symptom Recognition and Linking, Georgi Grazhdanski, Sylvia Vassileva, Svetla Bovtcheva. Ivan Kovchev.
- EXAMS-V: A Multi-Discipline Multilingual Multimodal Exam Benchmark for Evaluating Vision Language Models; Rocktim Jyoti Das, Simeon Hristov, Haonan Li, Dimitar Dimitrov, Ivan Koychev, Preslav Nakov

- · Gpachov at CheckThat! 2023: A Diverse Multi-Approach Ensemble for Subjectivity Detection in News Articles; Georgi Pachov, Dimitar Dimitrov. Ivan Kovchev. Preslav Nakov
- Results in Application of Modern Language Models in Creating Intelligent Search Systems. Georgi Samardzhiev, Bilyana Dobreva, Maria Nisheva.
- · Intelligent Approaches for Tailoring of Video Games. Bovan Bontchev
- Current Trends for Applying GenAl in Gamebased 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
- Challenges in building a billion-scale semantic search system on a CPU server. Simeon Emanuilov
- Conversational User Experience for Information Systems. Triffon Triffonov and Kalin Nikolov
- Alexander Dimov, 3.4. Group Project presentation: Al and Big Data for Education, Software and Information Technologies (AI-BEST)

3.2.2 ZeoNeo, Prof. Valentin Valtchev, lead researcher

3.1.5 Computational Heterogeneous Catalysis, Prof. Hristiyan Aleksandrov Ph.D., lead researcher

9.00-12.30 - Hall 401, Faculty of Chemistry and Pharmacy, James Bourchier Blvd 1

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

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

- Prof. Valentin Valtchev: "Water harvesting from air using microporous molecular sieves"
- Head Assist. Prof. Hristina Lazarova:
 Plastic Waste Conversion over a Catalyst
- Head Assist. Prof. Rusi Rusev:
 Embryonic zeolite precursors as potential absorbents of small organic compounds
- Prof. Hristiyan Aleksandrov: "DFT modeling of CO and NO oxidation on transition metal species supported on ceria"

 Assoc. Prof. Iskra Koleva: "Elucidation of the structure of Pd-based catalysts for CH4 and

CO oxidation: A DFT study"

 Prof. Petko Petkov: "First principle modelling of metal-organic frameworks: flexibility in 3D MOFs and 2D-conjugated MOFs in photoand electrocatalysis"













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3.1.6 BAC. Prof. DSc Ivo Grabchev, lead researcher

13.30-17.00 - Hall 401. Faculty of Chemistry and Pharmacy, James Bourchier Blyd 1

12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Synthesis and functional properties of new Bioactive compounds"

- Prof. Ivo Grabchev: Presentation of the scientific team of working group Bioactive compounds" and a summary of the results obtained during the first year of the project.
- Prof. Albena Yordanova: Effects of newly synthesized dendrimers on human fibroblasts and mechanism of their cellular uptake.
- Assoc. Prof. Juliana Ivanova-Tumbeva: New metal-containing chemical compounds - synthesis and characterization

- Assoc. Prof. Miglena Kandinska: Synthesis of novel quinoline, benzimidazole and pyrazoline derivatives with potential bioactivity.
- Assoc. Prof. Stanimir Stovanov: Onepot synthesis of fused-rings heterocyclic systems based on symmetrically benzofuran annulated 1.8-naphthalimides
- · Assoc. Prof. Julian Zagranvarski: Antitumor activity of newly synthesized DNA intercalating heterocyclic fused 1,8-naphthalimides
- · Dr. Ivan Minkov: "Investigation of the interaction of the hydrophobic drug indomethacin with bulk aggregates of biantennary oligoglycine as a model drug delivery system."

3.4. Group, Assoc. Prof. Dr. Martin Tsvetkov, lead researcher

Hall 401. Faculty of Chemistry and Pharmacy, James Bourchier Blyd 1

12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Superior Fenton-like activation of peroxymonosulfate over NiCo2O4/BiOBr for removal of organic pollutants"

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3.1.7 Functional materials, Prof. Tony Spassov, lead researcher

9.00-12.30 - Meeting Hall, Faculty of Chemistry and Pharmacy, James Bourchier Blvd 1

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Functional materials for clean energy and environment"

- Tony Spassov: Nanostructured and nanoporous materials for hydrogen production and storage
- Stoian Gutzov: Functional sol-gel composites
- Georgi Tsvetkov: New functional nanostructures by hydrolysis of metalammonia complexe
- Todor Dudev: Inclusion complexes of cyclodextrins with pharmaceutical and gaseous substances. The role of water in the recognition process between the "guest" molecule and the "host" molecule
- Dimitar Shandurkov: Binary luminescent composites: preparation and optical properties







3.1.2 Active formulation and materials. Prof. Slavka Tcholakova, lead researcher

13.30-17.00 - Meeting Hall, Faculty of Chemistry and Pharmacy, James Bourchier Blyd 1

12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Active formulations and materials"

· S. Tcholakova: Summary of the main scientific results obtained by research group "Active formulations and materials" during first one year of the project

Session: Phase behavior of concentrated surfactant solutions

- · D. Gazolu-Rusanova: "Rheological properties of alkyl sarcosinates solutions" by Dilek Gazolu-Rusanova, Marina Stoeva. Slavka Tcholakova
- N. Pagureva: "Temperature response of sucrose palmitate solutions: Role of ratio between monoesters and diesters" by N. Pagureva, D. Cholakova, Z. Mitrinova, N. Burdziev, S. Tcholakova

Session: Foams and emulsions

- L. Delforce: "Role of temperature and urea for surface and foam properties of nonionic surfactants with dodecvl alkyl chain" by Lucie Delforce, S. Tcholakova
- B. Petkova: "Foam properties of anionic surfactants alkyl sacrosinates and alkyl ether sulfates: similarities and differences" by Borislava Petkova, Slavka Tcholakova
- Z.Vinarov: "Surface properties and stability of antibodies" by Nevena Pagureva, Michaela Cohrs, Hristo Svilenov, Zahari Vinarov, Slavka Tcholakova
- I. Lesov: "Fmulsification in non-Newtonian solutions" by Ivan Lesov, Slavka Tcholakova

Session: Molecular dynamics simulations

• Fatmegyul Mustan: "Role of counterion on the aggregation and adsorption of LAS and SLES studied by molecular dynamics simulations" by Fatmegyul Mustan, Anela Ivanova Slavka Tcholakova

3.1.1 Mathematical physics and Astrophysics,

Prof. DSc Stoytcho Yazadjiev, lead researcher

9.00-17.00 - A 301, Faculty of Physics, James Bourchier Blvd 5

10.30-11.00 Coffee break / 12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Black holes, gravitational waves and fundamental physics"

- Christos Charmousis: "Black holes with primary scalar hair"
- Radoslav Rashkov: "On the Complexity of Dynamical systems with (in)finite (super) symmetries"
- Petia Nedkova: "Observing horizonless compact objects by the Event Horizon Telescope,"
- Tsvetan Vetsov: "Geometric optimization of thermodynamic systems"
- Galin Gyulchev: "Shadows of rotating hairy Kerr black holes coupled to time periodic scalar fields with non-flat target space"
- Nikolaos Stergioulas "TBA"





National Recovery and Resilience Plan



- Kalin Staykov: "Constraining Gauss-Bonnet gravity with binary pulsars"
- **Kiril Hristov:** "Explicit black hole thermodynamics in natural variables"
- Miroslav Radomirov: "Thermodynamic Stability of AdS Black Holes"
- Discussions







3.1.14 Nuclear, Assoc. Prof. Php. Krasimir Mitev. lead researcher

9.00-12.30 - A 315. Faculty of Physics, James Bourchier Blvd 5

10.30-11.00 Coffee break / 12.30-13.30 Lunch break

"Scientific research in experimental nuclear and subnuclear physics and technology"

- · Assoc. Prof. Kalin Gladnishki, PhD: Nuclear structure study by lifetime measurement of excited nuclear states.
- · Assoc. Prof. Stefan Lalkovski, PhD: Nuclear Data
- · Assoc. Prof. Krasimir Mitev, PhD: Recent developments in radiation detection and radionuclide metrology
- · Prof. Dr. Dobromir Pressyanov, PhD: New highly sensitive methods to measure radon-222 in the environment
- · Assoc. Prof. Mariyan Bogomilov PhD: Neutrinos: superbeams, physics and detectors
- Assoc. Prof. Venelin Kozhuharov PhD: Uncovering the dark sector

3.1.4 Advanced Quantum and Optical Technologies (AQOT),

Prof. DSc Nikolay V. Vitanov, lead researcher

13.30-17.00 - A 315, Faculty of Physics, James Bourchier Blvd 5

12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Advanced Quantum and Optical Technologies"

- Acad. Nikolay V. Vitanov: Overview of research on quantum control, quantum computing and quantum tomography.
- Assoc. Prof. Boyan Torosov: Composite quantum control.
- Ivo Mihov, PhD student: Pulse shape effects in qubit control
- Stancho Stanchev, PhD student: Quantum process tomography.
- Branislav Ilikj, PhD student: Qudit Ramsey interferometry
- Assoc. Prof. Peter Ivanov: Random matrix theory of open quantum systems.
- Venelin Pavlov, PhD student: Pulse shape effects in qubit control.
- Bogomila Nikolova, PhD student: Laserfree method for creation of two-mode squeezed state.







- Prof. Asen Pashov: Overview of research on control of molecular quantum states.
- Velizar Stoyanov, PhD student: Investigation on the fine structure of the B1∏ - c3∑+ complex in KRb.
- Assoc. Prof. Andon Rangelov: Overview of research on new optical technologies.
- Assoc. Prof. Hristina Hristova: New polarization devices.







3.2.3 New materials and photonics, pr. sotir Chervenkov, lead researcher

13.30-17.00 - A 205. Faculty of Physics, James Bourchier Blvd 5

12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"New materials and photonics"

- Alexander Dreischuh: Reliable Approach for Generating Quasi-Non-Diffracting Ressel-Gaussian Reams
- Georgi Georgiev: Tear Film/Contact Lens Interactions In Vitro and In Vivo: How Material Properties Determine Clinical Efficiency
- · Gichka Tsutsumanova: Fabrication of Nanostructures and Thin Lavers for Sensor Applications
- Jivko Kisiovski: Carbon Nanostructures in Composites with a Ceramic Matrix
- Miroslav Abrashev / Neno Todorov: Research Opportunities and Activities of Scientific Laboratory "Spectroscopy of Crystals"
- Stanislav Balouchev: Capsule-in-Capsule Design: A Wide-ranging Strategy for Controllable Prolongation of the Spin-Lattice Relaxation Time for Encapsulated Water-Soluble MRI-Contrast Agents Dispersed in Physiological Liquids

 Ivan Buchvarov: The Net Gain Bandwidth Broadening in Yb-doped Disordered Crystalline Materials - A Breakthrough in Obtaining High-energy Pulses of Extremely Short Duration

Posters:

- Veselin Donchev: Surface Photovoltage Study of Perovskite Materials and Structures for Solar Cell Applications
- Ivan Ivanov: Deposition of Carbon Nanostructures via PECVD
- (Lyuben Petrov , Kaloyan Georgiev, Anton Trifonov . Ivan Buchvarov) -
- Yb-regenerative Amplifiers of Extremely Short Laser Pulses Based on Yb:CALYO and Yb:GALGO - A Comparative Study
- Peak Performance of a Yb:CALYO Amplifier at a Megahertz Repetition Rate

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

Aula, Faculty of Biology, Dragan Tsankov Blvd 8

10.30-11.00 Coffee break / 12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Plant parasites"

- Lyuben Zagorchev: Molecular mechanisms of Cuscuta parasitism
- Denitsa Teofanova: Genetic variability of Cuscuta campestris in Bulgaria
- Poster presentations: Kalina Pachedjieva, Anita Tosheva - Species distribution and host spectrum of Cuscuta spp. in Bulgaria

3.2.4 Microbiological risks in the environment,

Sergei Veselinov Ivanov, PhD, lead researcher

Aula, Faculty of Biology, Dragan Tsankov Blvd 8

10.30-11.00 Coffee break / 12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Microbiological risks in the environment"

- **Dr. Sergei Ivanov:** Monitoring of human pathogenic viruses in urban wastewater.
- Dr. Yoana Kizheva: Phage therapy as alternative to antibiotics against multidrug resistant (MDR) bacteria. Current state of research in Bulgaria and the role of wastewater as source for isolation of therapeutic phages.
- **Dr. Anton Hinkov:** Isolation and cultivation of viruses from wastewater.







Aula, Faculty of Biology, Dragan Tsankov Blvd 8

3.1.11 Algology (Algal Collections) Assoc. Prof. Blagov Uzunov, Php. lead researcher

10.30-11.00 Coffee break / 12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Algology (Algal Collections)"

- · Living algal collections for the benefit of biotechnologies:
- · Living algal collections as a tool for biodiversity research and conservation:
- · Phycoremediation.

3.4. Group, Prof. Dr Robert Penchovsky, lead researcher

Aula, Faculty of Biology, Dragan Tsankov Blvd 8

10.30-11.00 Coffee break / 12.30-13.30 Lunch break / 15.00-15.30 Coffee break

"Targeting Riboswitches with Chimeric Antisense Oligonucleotides for Completely Rational Antibacterial Drug Development"

3.1.15 European Values and Social Challenges /EuVaSC/, Prof. Maria Stoicheva, PhD, lead researcher

Prof. Maria Stoicheva, Prib, lead researcher

10.30-15.00 - House of Europe, Cultural center, Georgi Rakovski str 124

10.30-11.00 Welcome Coffee / 11.15-13.15 Lunch break

"European Values and Social Challenges"

- · Prof. Dr Maria Stoicheva: Inauguration
- Resilience of Democracy in Times of Multiple Crises.

Prof. Dr Martin Belov, Assoc. Dr Prof. Daniel Smilov, Prof. Dr. Svetoslav Malinov, Assoc. Prof. Milen Lyubenov, Dr. Mila Moshelova

Discussion

 Relevance and Values of the Universities for the Future.

Prof. Dr Michael Byram, Prof. Dr Martyn Barrett, Assoc. Prof. Nikolina Tsvetkova

Discussion











Contract BG-RRP-2.004-0008 for the financing of project "Sofia University - Marking Momentum for Innovation and Technological Transfer" under pillar 2 "Establishing a network of research higher education institutions in Bulgaria", component "Innovative Bulgaria" from National Recovery and Resilience Plan Part of the program to accelerate economic recovery and transformation through science and innovation