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BOOK OF ABSTRACTS

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Aleksandar TOMIC, Sean MULHOLLAND & Kurt ROTTHOFF
Boston College, **USA**

NCAA March Madness and Academic Peer Rankings

Abstract: Higher education system in the United States is unique in the sense that many institutions operate athletic programs through participation in National Collegiate Athletics Association (NCAA). At the very top, these efforts, particularly in American football and basketball rival international professional teams in terms of resources, facilities and, most importantly, media attention they generate, especially in the United States. On the other hand, given that there are over 3,000 institutions of higher education in the United States, students and parents face a daunting task of picking a college, while institutions constantly try to find ways to disseminate information about their quality to potential students. Over the years, US News and World (USNWR) Report Annual College Ranking has emerged as a widely known and used source of information on institutions' quality. Consequently, universities spend considerable amount of effort to ensure favorable rankings in the publication. USNWR collects quite a bit of data on institutions, and a major component of their ranking is the peer assessment score. This is a score derived from a widely distributed survey of university administrators who are asked to weigh in on academic reputation of other institutions. We examine whether there is a relationship between athletic success (and corresponding media attention) and peer assessment score in USNWR rankings. Building on previous investigations of the relationship between athletic success and school quality, we analyze the effect of appearances, wins, and surprise "Cinderella" runs in the NCAA men's basketball tournament on the peer assessment score of the U.S. News and World Report's annual rankings. We find that reaching the Sweet Sixteen is associated with a peer score increase of 0.3 percent for National Universities, which is almost equal to the average decline witnessed by National Universities. Peer scores increase by 2.2 percent for National Liberal Arts Colleges earning a Sweet Sixteen birth, which is 6.1 times the average decline in our National Liberal Arts Colleges sample. Schools making a Cinderella run see a positive boost relative to non-Cinderella teams.

Biography: Dr. Aleksandar (Sasha) Tomic is the Associate Dean and Senior Program Director of MS in Applied Economics and MS in Applied Analytics at Boston College. He is also Associate Professor of the Practice in the Department of Economics. In addition he teaches courses in Economics and Finance at Harvard University and Boston University. Dr. Tomic has published widely in peer-reviewed international journals on topics in applied microeconomics, public choice, economics of education, and quantitative methods. He holds a Ph.D. in Applied Economics from Clemson University.

Milos VULANOVIC, Nebojsa DIMIC, Vanja PILJAK & Laurens SWINKELS
EDHEC Business School, **FRA**

ESG Thematic Bonds in Emerging Markets: Risk, Uncertainty, and Ambiguity

Abstract: We examine the impact of risk aversion, ambiguity, and uncertainty (geopolitical and economic) on the ESG thematic bond markets in emerging countries. We analyze ESG sovereign (both USD and local currency denominated) and corporate bond markets on the aggregate and regional levels. Increasing levels of risk aversion and economic uncertainty are associated with significant declines in both ESG thematic sovereign and corporate emerging bond returns. On the contrary, ambiguity exhibits a positive impact on bond market returns. Finally, geopolitical risk shows significant negative relationship only in certain regions. Our study provides new evidence on the impact of risk, uncertainty, and ambiguity on the ESG thematic bond markets1 in emerging countries. We build on the foundations from risk aversion, uncertainty, and ambiguity literature (see, e.g., Keynes, 1921; Knight, 1921; Ellsberg, 1961; Bernanke, 1983; Bekaert et al., 2022; Izhakian 2017; 2020) emphasizing their essential importance as determinants of financial returns and risk premiums. Furthermore, understanding how various uncertainty sources affect the pricing of sustainable assets is an important aspect of portfolio risk management, given that ESG has become a top priority for governments, corporations, and investors (Hornuf and Yüksel, 2023; Feldhütter et al., 2024). Moreover, sustainable investment has become increasingly significant in recent years, attracting increased attention from academics (e.g., Krüger 2015; Riedl and Smeets 2017; Krüger et al., 2020; Bauer at al., 2021; Barber et al., 2021; Inderst, R., & Opp, 2025). In our analysis, we cover a wide spectrum of uncertainties originating from economic, risk aversion, ambiguity, and geopolitical sources. Economic uncertainty and risk aversion are proxied by the measures developed by Bekaert et al. (2022), who created an asset pricing model in which conditional volatility is driven by variation in both economic uncertainty and risk aversion.2 Economic uncertainty reflects shocks originating from fundamental factors. Risk aversion relates not only to shocks from fundamental factors but also to shocks from non-fundamental factors (e.g., investor sentiment; see Baker and Wurgler, 2006). In particular, the Economic Uncertainty measure represents a financial proxy to economic uncertainty, and it is based on a calculation of financial variables at high frequency. Time- varying risk aversion measure is represented by the Risk Aversion Index, calculated as a function of 6 financial instruments (the term spread, credit spread, a detrended earnings yield, realized and risk-neutral equity return variance, and realized corporate bond return variance).3 Geopolitical risk is proxied by the news-based measure of global geopolitical risk.

Biography: Milos Vulanovic, Ph.D, teaches at EDHEC Business School. He holds a Ph.D. in Financial Economics from The Graduate Center at City University of New York. His teaching experience includes City University of Hong Kong, Western New England University, Baruch College, Yeshiva University, Pace University.His research interests include empirical corporate finance, mergers and acquisitions, venture capital and specified purpose acquisition companies. His papers have been published in number of financial economics journals including Journal of Economic Behavior & Organization, European Financial Management, Energy Journal, Journal of International Money and Finance, Journal of International Financial Markets, Institutions and Money

Branislav JEVTIC
University of Belgrade, Faculty of Sport and Physical Education, **SRB**

University professor, researcher, lecturer, writer... and/or manager of scientific – social – personal optimization

Abstract: It is well known that every production activity takes place according to a specific method and technology. In other words, it is not possible to realize a utilitarian and competitive product without an affirmed know-how that is established around verified methods, procedures, techniques, skills... an optimized process. Using the example of sports, this means that competition result, as its one of the main outcomes, is preceded by the application of verified sports training methods, sports medicine, current and advanced technology, etc. which are used to plan, organize, operationalize and optimize the factors of the direct (coach, training and competition programs etc.) and indirect (society, politics, media, science etc.) environment of the athlete. That is why, among other things, sports are part of higher education in all World vide education systems. The theory of optimization "as much as possible", has found application in sport and sciences in context related to it. "Possible", as an adverb clause, in this context, should be understood as is an expression of the cognitive and practical limits of the current theory application, just as the sciences related to sports are cognitively limited and insufficient in solving challenges of praxis and its development. In regard of this paper, optimization theory is recognized as potential cognitive tools in: 1. Recognized the missing fundamental theories of sports in contemporary university programs. The reason for this missing should be sought in the limited capacities of lecturers, students, curriculum, didactics etc. but also in the non-existing the system of graduate qualities check, distinct competencies and occupations, labor market needs etc. 2. Enforced sport itself in understanding its system, capacity and direction of development through high education. Accordingly, the goal of this paper is the deduction the facts about: a) Steps in optimizing the profession of "university professor" for the current system of sciences and established sports praxis, b) Contextualization for the university curriculums that lead to a better "version" of professors, students, profession etc. c) Directing of the sports higher education capacity towards the implementation of the Third Mission or the mission of the university in the development of society.

Biography: Dr Branislav Jevtić, PhD, full professor at the Faculty of Sports and Physical Education, University of Belgrade, was born in Nikšić, where he completed primary and secondary school. Graduate, master and doctoral degree completed at the University of Belgrade. He specialized at the CONI Institute in Rome and the IOC in Lausanne. As sports director of the Olympic Committee of Serbia, he led the Serbian Olympic delegations at the OG in Beijing (2008), Vancouver (2010), London (2012); YOG in Singapore (2010), Innsbruck (2012). He is the recipient merit of the recognition of the Olympic Committee of Serbia.

Boris POPOVIC
University of Novi Sad, Faculty of Sport and Physical Education, **SRB**

Improving Motor Competence in Preschoolers Through Daily Physical Activity: A Controlled Intervention Study

Abstract: Introduction: Physical inactivity has emerged as a significant global public health issue, contributing to a wide range of adverse health outcomes across the lifespan (Guthold et al., 2018). In childhood, regular physical activity plays a fundamental role not only in promoting physical health but also in supporting cognitive and social development (Wang, 2022). Developing motor competence during the early years is essential for fostering a physically active lifestyle and has been identified as a key predictor of continued physical activity into adolescence and adulthood (Robinson et al., 2015). Despite this, many children do not engage in sufficient daily physical activity to support optimal motor development. Given the importance of early motor competence for long-term health and activity behaviors, there is a growing need to assess the effectiveness of structured physical activity programs in early childhood (Martins et al., 2024). Therefore, the aim of this study was to investigate the effects of a nine-month daily physical activity intervention on motor competence in 6-year-old children. Methods and materials: A total of 145 preschool children (mean age = 6.47 ± 0.39 years; mean height = 123.07 ± 6.17 cm; mean weight = 24.57 ± 4.48 kg) from 14 kindergartens in Sombor, Vojvodina, participated in this randomized controlled trial. Children were randomly assigned to either an experimental group (n = 69; 34 boys) or a control group (n = 76; 41 boys), with kindergartens evenly distributed across the two groups. The experimental group engaged in a structured physical activity program (45 minutes/day, five days/week) over nine months, while the control group followed the standard preschool curriculum. Motor competence was assessed pre- and post-intervention using the Kiphard–Schilling Body Coordination Test (KTK). Results: Controlling for age and gender, ANCOVA demonstrated that the experimental group significantly outperformed the control group on all motor coordination measures. The largest effects were observed in moving sideways (F = 34.76), followed by total KTK score (F = 30.81) and walking backwards (F = 18.11). Smaller but statistically significant differences were found in hopping for height (F = 4.97) and jumping sideways (F = 4.75). Conclusions: This study provides strong evidence for integrating daily organized physical activity into preschool curricula. Promoting diverse physical activities within early education not only enhances motor competence but also contributes to better physical health and cognitive development. These outcomes emphasize the need for policy frameworks that prioritize movement-based learning in early childhood education settings.

Biography: Prof. dr. Boris K. Popović is a full professor at the Faculty of Sport and Physical Education, University of Novi Sad, where he teaches at all academic levels. He has authored or co-authored over 120 scientific papers, including 13 indexed in the SCI list and more than 20 in the M20 category. His academic output also includes books, monograph chapters, and numerous conference presentations. Prof. Popović has participated in over 15 research projects at the provincial, national, and international levels, including TEMPUS, ERASMUS, and IPA. His research interests span motor development, physical activity, and sports science.

Veselin MASLAK
University of Belgrade, Faculty of Chemistry, **SRB**

Functionalization of fullerene C60 by cycloaddition reactions

Abstract: In our research, we have designed and synthesized new fulleropyrrolidine dyads and triads using the Prato reaction. In the dyads, the fullerene molecule is covalently linked to a phthalimide unit, while in the triads, two fullerene units are symmetrically attached to a pyromellitic diimide platform. Electrochemical studies have shown that the properties of these compounds depend on the spatial arrangement and distance between electroactive components, as well as their electronic structure. Methanofullerenes are traditionally synthesized via the Bingel–Hirsch reaction between fullerene and diethyl malonate. However, by employing β-ketoesters as active methylene compounds, it is possible to obtain not only methanofullerenes but also furanofullerenes through oxidative cycloaddition. In our laboratory, we have developed an efficient and selective synthetic procedure for producing these compounds by optimizing reaction parameters. As starting materials, we used β-ketoesters derived from polyhydroxyalkanoates, biodegradable polymers. The resulting furanofullerenes exhibit excellent chemical and physical properties. They are synthesized in high yields under mild conditions and display good solubility in various organic solvents. Their electronic characteristics and strong light absorption make them attractive candidates for applications in organic electronics, particularly in the fabrication of photovoltaic devices and next-generation organic solar cells. By linking two furanofullerene units to a sugar-based platform, such as isomannide or isosorbide, we obtained molecules with a dumbbell-like spatial organization. These electron-deficient molecules are capable of forming supramolecular complexes with electron-donor components such as [10]cycloparaphenylene. The interaction between these two components leads to the formation of pseudorotaxanes, which can serve as models for studying host–guest systems and potentially as functional elements in molecular machines.

Biography: Veselin Maslak is a full professor at the Faculty of Chemistry at the University of Belgrade. He was born in Bijelo Polje in 1970, where he completed primary and secondary school. He graduated from the Faculty of Chemistry in 1994, received his master's degree in 1999, and defended his doctoral dissertation in 2004. As a DAAD scholar, he stayed in the laboratory of Professor H.U. Reisig, at the Free University in Berlin, from October 1 to 31, 2001. The period from February 24, 2005 to February 25, 2006. he spent at the Ohio State University in the laboratory of Professor Jovica Badjić, where he trained in the field of supramolecular chemistry. He published 50 scientific papers in international journals, which were cited more than 700 times (index 15).

Mirjana RADANOVIC
University of Novi Sad, Faculty of Sciences, **SRB**

Unlocking Potential: Schiff Bases Metal Complexes – Possibilities and Perspectives

Abstract: Schiff bases are an interesting group of compounds due to one-pot synthesis, diverse binding modes, and thus structural features of their metal complexes. They have been studied for use as catalysts, sensors, functional materials in electronic and optical devices, models for metalloenzymes in bioinorganic chemistry, corrosion inhibitors, components in supramolecular assemblies and coordination polymers, and above all, therapeutic agents with versatile biological activity (Figure). The latter, being the most urgent and attractive application, has been the focus of our research for many years. We have synthesized and structurally characterized dozens of metal complexes with aminoguanidine Schiff bases and investigated their antioxidant and antimicrobial activity, as well as their interactions with the drug cisplatin. However, despite their promise, introducing new metal-based compounds into clinical use remains extremely challenging. Strict drug approval regulations, extensive toxicity testing, and long evaluation timelines significantly slow down their transition from laboratory research to practical medical application. Thus, our research group has recently extended its interests to understanding the structure-property relationships to enable the design of new materials with improved characteristics for use in solar technologies. First, numerous complexes were examined in terms of their photoluminescence, and those with the best optical properties were selected for further investigation. Namely, the use of Schiff bases and their metal complexes in the field of dye-sensitized solar cells, as well as nowadays the most popular perovskite solar cells, seems very promising. Novel findings also suggest the potential of these compounds in designing smart windows. For the purpose mentioned above, different synthetic approaches and conditions were implemented, with the main aim of obtaining single crystals of suitable quality for X- ray diffraction experiments. To provide a consistent and coherent approach throughout the research, the use of the Cambridge Structural Database was implemented. This provided valuable insight into the frequency of certain coordination modes and enabled the comparative analysis of the new complexes with the known ones.

Biography: Dr. Mirjana Radanović is an Associate Professor at the Faculty of Sciences, University of Novi Sad. She teaches lectures on Introduction to Laboratory Practice, Coordination Chemistry, and Advanced Inorganic Chemistry. The focus of her scientific interest is syntheses, physicochemical, and structural characterization of new metal complexes with bioactive Schiff bases, with various applications. She co-authored 36 scientific papers in international journals and was cited 229 times, according to SCOPUS; her Hirsch index is 10. She is a member of the Presidency of the Serbian Crystallographic Society, a member of the Serbian Chemical Society, and the European Crystallographic Association.

Olivera KONTIC VUCINIC
University of Belgrade, Faculty of Medicine, **SRB**

Rising Cesarean Section Rates: Primary Medical Consequences and Public Health Implications

Abstract: In recent decades, the global rise in cesarean section (CS) rates has become a major concern for maternal and child health, especially in regions such as the Western Balkans, where CS rates have escalated dramatically. While cesarean delivery is an essential intervention when medically indicated, its overuse carries significant risks without improving outcomes. According to recent national reports, CS rates in countries of the Western Balkans—including Serbia, Bosnia and Herzegovina, Montenegro, and North Macedonia—have reached or exceeded 35–45%, far above the WHO-recommended threshold of 10–15%. This paper examines the primary medical consequences of increased CS rates, focusing on short- and long-term outcomes for women and newborns in the context of regional healthcare systems. In the short term, cesarean birth is associated with increased maternal morbidity: higher rates of hemorrhage, infection, thromboembolism, and anesthetic complications. Postoperative recovery is often prolonged, and subsequent access to adequate postpartum care remains uneven in parts of the region. For neonates, cesarean delivery is linked to higher risks of transient tachypnea, respiratory distress syndrome, and delayed adaptation, particularly when performed electively before 39 weeks of gestation. Breastfeeding initiation is frequently delayed, with implications for early bonding and infant immunity. Long-term maternal risks include uterine scarring, infertility, and increased likelihood of placenta previa and placenta accreta spectrum disorders in future pregnancies—conditions that significantly contribute to maternal morbidity and mortality. These risks are particularly problematic in health systems already facing shortages of experienced obstetricians, anesthesiologists, and intensive care resources. Emerging data from the region also indicate a correlation between cesarean birth and higher prevalence of childhood obesity, asthma, and type 1 diabetes, raising concerns about long-term public health impact. Structural factors—such as fear of litigation, limited access to continuous labor support, cultural normalization of surgical delivery, and uneven implementation of clinical guidelines—contribute to the persistent overuse of CS. This paper emphasizes the urgent need for coordinated regional strategies to optimize delivery practices, strengthen midwifery care, support vaginal birth after cesarean (VBAC), and improve informed consent processes. Reducing unnecessary CS is critical not only for improving individual health outcomes but also for preserving healthcare system sustainability in the Western Balkans.

Biography: Prof. dr Olivera Kontic-Vucinic is a Professor of Obstetrics and Gynecology at the University of Belgrade and Head of the Department for Human Reproduction and Reproductive Genetics at the University Clinical Centre of Serbia. A specialist in high-risk pregnancy and fetal therapy, she has authored over 200 scientific publications. She completed postdoctoral training at Yale University. She has served as President of the South East European Society for Perinatal Medicine and currently leads the Gynecological and Obstetrical Section of the Serbian Medical Society. Prof. Kontic-Vucinic is a frequent speaker at major perinatal and reproductive medicine conferences.

Ksenija KORAC
Texas Tech University Health Science Center Graduate School for Biomedical Sciences, **USA**

Studying circadian disruption in pancreatic ductal adenocarcinoma

Abstract: Our long-term goal is to understand the role of the circadian clock in pancreatic ductal adenocarcinoma (PDAC) to shift the therapeutic landscape for patients with this lethal cancer. The circadian clock is a highly conserved molecular feedback loop where cell-autonomous cycling of the core clock genes (e.g. BMAL1, PER1, PER2) controls the expression of numerous other genes to regulate functions such as apoptosis, proliferation, metabolism and immune function. Research has shown that malignant tumors, including pancreatic ductal adenocarcinoma, can dampen the circadian clock to accelerate cancer progression making it an attractive target in cancer therapy. Existing evidence shows that BMAL1 suppression in PDAC leads to a more aggressive phenotype and worse prognosis. To investigate the role of the clock disruption in PDAC, we created and validated a Kras- and p53-mutant PDAC cell line with a disrupted clock, by knocking out the core circadian clock gene BMAL1 which is essential for clock function. We performed syngeneic heterotopic tumor implant studies and found that clock-disrupted PDAC demonstrated substantially increased tumor growth in vivo compared to PDAC with an intact clock. Secondly, we developed a first of its kind patient-derived xenograft approach to discern circadian parameters and identify which patient cancers harbor an intact versus suppressed clock. RNA sequencing of the tumors over 24 hours revealed a striking suppression of BMAL1 expression in patients who presented with a more aggressive disease. Thirdly, to assess the possibility that dysregulation of BMAL1 in PDAC drives a more aggressive phenotype through rewiring of the tumor metabolism, we assessed oxygen consumption rate and glycolytic flux in our KPC-WT and KPC-BKO cells and found marked differences in mitochondrial respiration and glycolytic function. Overall, targeting the circadian clock in cancer presents a promising therapeutic strategy with the potential to improve patient prognosis through the development of novel treatment approaches.

Biography: Dr. Ksenija Korac is a postdoctoral researcher at the University of Wisconsin in Madison, with a research focus on circadian disruption in pancreatic ductal adenocarcinoma. She earned her Ph.D. in Biomedical Sciences with a concentration in Biochemistry, Cell, and Molecular Biology from Texas Tech University Health Sciences Center, where her dissertation explored the anticancer potential of Carbidopa through modulation of the aryl hydrocarbon receptor in pancreatic cancer. Dr. Korac has published her work in several peer-reviewed journals and gave talks at multiple national and regional conferences.

Milenko KUJOVIC
LVR-Klinikum Düsseldorf & Kliniken der Heinrich-Heine-Universität Düsseldorf, **DEU**

The Future of Neuropsychiatry: Conceptual and Developmental Horizons

Abstract: Neuropsychiatry, positioned at the intersection of neurology and psychiatry, is increasingly recognized as a key discipline in contemporary medicine. It provides an integrative approach to disorders that encompass both somatic and psychological dimensions, thereby transcending the traditional boundaries of its parent fields. At its core, neuropsychiatry examines neurological disorders that manifest with psychiatric symptoms — a complexity frequently encountered in conditions such as epilepsy, Parkinson's disease, multiple sclerosis, stroke, and dementia. Epidemiological data underscore the substantial burden of psychiatric manifestations in these disorders, highlighting the imperative for early detection, thorough diagnostics, and personalized therapeutic approaches. The nosological framework of neuropsychiatry necessitates dual expertise in neurology and psychiatry, enabling a synergistic diagnostic and therapeutic approach. Particularly, patient-centered care—focused on tailored diagnostics and therapies—has demonstrated superiority over standardized protocols by enhancing clinical outcomes, minimizing adverse effects, and strengthening the physician–patient relationship. In parallel, the field is experiencing significant innovation through advanced neurostimulation methods such as repetitive transcranial magnetic stimulation (rTMS), transcranial direct current stimulation (tDCS), electroconvulsive therapy (ECT), vagus nerve stimulation (VNS), deep brain stimulation (DBS), and transcranial pulse stimulation (TPS) considerably broaden the therapeutic repertoire. These modalities open new perspectives for treatment-resistant depression, psychosis, and other complex neuropsychiatric syndromes, thereby positioning neuromodulation as a future cornerstone of the discipline. Beyond technological innovation, neuropsychiatry embodies a genuinely interdisciplinary paradigm. The Düsseldorf model serves as an exemplary framework, illustrating how the integration of neurology, psychiatry, neuropsychology, physiotherapy, creative therapy and state-of-the-art diagnostics can provide high-quality, patient-centered care. Adapting such approaches to Montenegro offers substantial opportunities: with a well-trained workforce and a rising demand for specialized services, the country is well positioned to develop into a regional center of excellence. Strategic investments in infrastructure, education, and innovative therapies promise not only to reduce dependence on treatment abroad but also to strengthen Montenegro's international scientific and medical standing.

Biography: Dr. Milenko Kujovic is Lecturer at the Faculty of Medicine, Heinrich Heine University Düsseldorf, and holds several leadership positions at LVR-Klinikum Düsseldorf – Clinics of the Heinrich Heine University Düsseldorf, including Head of the Department of Neuropsychiatry, Head of the Center for Brain Stimulation, Head of the Clinical Trial Center, and Deputy Head of General Psychiatry I. He leads the research group Brain Stimulation and Predictive Modeling, investigating the effects of neurostimulation on brain function and behavior, and developing predictive approaches to optimize individualized treatment. He contributes to national and international projects and holds multiple certifications in neurology and psychiatry.

Aleksandar VIDENOVIC
Harvard Medical School, Division of Sleep Medicine Harvard, **USA**

Artificial intelligence in early detection, diagnosis, and monitoring of Parkinson's disease

Abstract: Parkinson's disease (PD) is the second most common neurodegenerative disorder. Despite significant research advances, we still do not have precise biomarkers for early detection and therapeutic agents that prevent and/or delay the disease process. Delayed and incorrect diagnosis create challenges for the clinical care of patients with PD. Artificial Intelligence (AI) is a technology that is based on neural networks. Machine learning algorithms are methods used by AI systems to conduct their tasks by generating output values from given input data. Artificial Neural Networks are being developed to innovate new treatments for certain neurodegenerative diseases such as PD. We collaborate with colleagues from the Massachusetts Institute of Technology (MIT) on employing AI to accurately and reliably identify individuals who have PD. We employed a newly developed AI-based system at MIT for detecting PD, predicting disease severity, and tracking disease progression over time using nocturnal breathing. The model was evaluated on a large dataset comprising 7,671 individuals. The AI model detected PD with an area-under-the-curve of 0.90. The model also estimated PD severity and progression in accordance with the Movement Disorder Society Unified Parkinson's Disease Rating Scale ($R = 0.94$, $P = 3.6 \times 10–25$). Importantly, this model can assess PD in the home setting in a touchless manner, by extracting breathing from radio waves that bounce off a person's body during sleep. These results highlight its potential role as a new digital biomarker for PD, which performs well both as a PD diagnostic and progression biomarker. It is objective, noninvasive, and easy to measure on an ongoing basis in the person's own home. This work demonstrates the potential of AI in transforming clinical care and therapeutic development for a wide range of neurodegenerative and other disorders. It also highlights the significance of the team science approach and multidisciplinary collaborations.

Biography: Dr. Aleksandar Videnovic is a Professor of Neurology at Harvard Medical School, Chief of the Division of Sleep Neurology at Mass General Brigham, and Director of the Program on Sleep, Circadian Biology, and Neurodegeneration at Massachusetts General Hospital. As a clinician-scientist, Dr. Videnovic has devoted his research to the interface of sleep, circadian biology, and brain health, biomarker discovery in neurodegenerative disorders, and the development of new therapies for neurological disorders. He leads numerous international research projects and serves in leadership roles at national and international societies in neurology and sleep medicine.

Bojana RADOMAN
University of Veterinary Medicine, Vienna, **AUT**

Stress, Decision-Making, and Collective Challenges: Intersections of Immunology, Behaviour, and Climate Responsibility

Abstract: Stress is a complex biopsychosocial phenomenon that significantly affects human well-being and social behaviour. In recent years, and especially following the COVID-19 pandemic, the interaction between stress and the immune system has been highlighted by many interdisciplinary studies. While short-term exposure to stress can benefit the immune system due to the innate fight-or-flight response, chronic stress increases vulnerability to disease, leads to immune dysregulation, and influences decision-making processes. In high-stakes environments such as academia, students and researchers are exposed to academic and familial stressors for prolonged periods of time. According to recent studies, such conditions correlate with reduced academic performance, cognitive exhaustion, and elevated levels of depression among academics. The effects of stress are not confined to individual health but extend to cognitive functioning, emotional regulation, and social dynamics. Chronic stress can impair executive functioning, reduce attentional control, and increase susceptibility to cognitive biases. These mechanisms are crucial to understanding how individuals and groups respond to complex societal challenges, particularly those that require long-term thinking and cooperative action. Beyond individual implications, stress also plays a crucial role in shaping collective behaviours in response to global crises such as climate change. Although recognised as a collective responsibility, climate action, despite significant efforts, continues to face numerous challenges due to intergenerational asymmetries, cognitive overload, and decision paralysis. Emotional responses to climate threats, such as anxiety and helplessness, may further reduce motivation to act, especially in contexts where institutional support is limited. To ensure more effective climate communication strategies and behavioural interventions, it is essential to better understand how pro-social motivation is generated and how stress, in the first place, influences moral reasoning and risk perception. This conceptual contribution synthesizes evidence from behavioural science and immunology, as well as climate ethics. It highlights how stress influences attention, motivation, and moral reasoning, with direct effects on academic functioning and societal engagement. The aim is to examine the dynamic interplay between stress, cognitive biases, and collective responsibility, with the purpose of stimulating interdisciplinary dialogue on how stress physiology and decision science can inform climate communication, education, and institutional resilience.

Biography: Bojana Radoman completed undergraduate and master's studies in biochemistry at the Faculty of Chemistry, University of Belgrade, and obtained her PhD at the University of Natural Resources and Life Sciences (BOKU, Vienna), focusing on glycosylation of recombinant proteins. She has worked at several universities in Vienna, contributing to biochemical, behavioural, and immunological research, especially in proteomics and preclinical models. She has published several scientific papers and mentored students. Currently, she is a postdoctoral researcher at the University of Veterinary Medicine (Vetmeduni, Vienna), focusing on immunology and translational research. Independently, she is engaged in behavioural research, mental health, and science communication.

Milena TERZIC & Jelena BAJAC
University of Novi Sad, Faculty of Technology, **SRB**

From Medicinal Plants to Personalized Nutrition: Innovative Extraction, Drying, and 3D Food Printing Approaches

Abstract: Medicinal plants are a rich source of bioactive molecules with well-documented biological and pharmacological potential. Their use in the development of superfoods and innovative functional products is becoming increasingly important as they meet the growing demand of modern consumers for natural, safe and effective solutions to maintain health and prevent chronic diseases. Despite this potential, traditional extraction and processing methods are often limited by low stability of ingredients, poor bioavailability and variability in chemical composition, which overall limits the biological effectiveness of herbal preparations and reduces their commercial value. Innovative technologies based on green solvents and environmentally friendly processes offer promising solutions to these challenges. Water, ethanol, their mixture, glycerol, natural deep eutectic solvents, and supercritical CO_2 enable selective and efficient extraction while reducing the environmental footprint and preserving the integrity of the bioactive molecules. In parallel, the use of ultrasonic and microwave-assisted extraction, supercritical fluid extraction, and subcritical water extraction significantly shortens processing time, increases yield and ensures better protection of thermolabile compounds. These approaches lead to a more efficient use of medicinal plants and to a more consistent quality of the extracts. Equally important are innovative drying technologies such as spray drying, freeze drying and fluidized bed drying. These techniques help to preserve the functional properties of the extracts, extend shelf life and produce stable powder forms suitable for various applications. In addition, the combination of advanced extraction and drying methods with micro- and nano-encapsulation increases the stability of sensitive bioactive molecules, improves their bioavailability and enables controlled release at the target site. These technological advances are particularly important for the emerging field of 3D food printing, which requires stable, customizable and nutrient-enriched ingredients. Powdered extracts and encapsulated bioactive compounds from medicinal plants can be integrated into printable food matrices. This enables the development of personalized superfoods and functional products tailored to individual health needs. This article aims to provide an overview of current research directions in the valorization of medicinal plants. The focus is on the integration of green solvents, innovative extraction and drying technologies, and 3D food printing to develop sustainable, high-quality functional products. This multidisciplinary approach highlights the potential of combining natural resources with advanced technologies to create personalized, effective and environmentally friendly innovations for the food, pharmaceutical and nutraceutical industries.

Biography: Dr. Milena Terzić is a senior research associate at the University of Novi Sad, Faculty of Technology, Serbia. She has four years of experience as a lecturer in Technological Operations I and II. Her research focuses on the optimization of modern extraction and drying techniques for the development of functional food products from wild plants, their characterization in vitro evaluation of biological and pharmacological activities. She participates in projects for the valorization of medicinal plants and industrial waste. Dr. Terzić is active in international collaborations, conferences and as a journal editor/reviewer and has authored over 20 SCI-indexed publications.

Ana VUCUROVIC
National institute of biology, Ljubljana, **SVN**

Invisible Pathways: Understanding the Environmental Persistence, Diversity and Epidemiology of Plant Viruses in Agroecosystems

Abstract: In the face of global challenges such as climate change, resource scarcity, and the shift toward sustainable agriculture, understanding the environmental spread of plant viruses is crucial. While many plant viruses transmit through direct contact, infected planting material, or vectors, emerging research suggests they may also persist and move through less obvious routes—such as water, soil, and organic fertilizers. These alternative pathways, often overlooked, may play a significant role in the health of crops, ecosystems, and food systems. Our research looks into these hidden aspects of plant virus epidemiology using traditional diagnostics and advanced genomic tools, especially high-throughput sequencing (HTS). Building on several years of virome research in diverse agroecosystems, we have investigated the presence, diversity and survival of plant viruses in crops, surrounding vegetation, and the environment. These studies reveal a surprising complexity in the interactions between plants, viruses, and the environment, providing new data that enhances our understanding of plant virus ecology. Currently, we focus on assessing the persistence and infectivity of environmentally resilient plant viruses in non-traditional matrices under realistic agricultural conditions. By integrating classical virological methods, molecular biology, bioinformatics, and environmental monitoring, we aim to develop more effective surveillance systems and contribute to science-based risk assessment and disease management strategies. This interdisciplinary approach advances plant health research and offers insights relevant to environmental science, public policy, and sustainable development. Additionally, our work highlights the importance of considering environmental variables and their impact on pathogens, which is crucial for developing comprehensive management strategies. Our results emphasize the value of international collaboration in fostering innovation and capacity building. In regions like the Western Balkans, where agriculture is both a cultural heritage and a key economic sector, strengthening regional cooperation and knowledge exchange is essential for building resilient and future-ready agricultural systems. By leveraging the expertise and resources of the international collaborations, including scientific diaspora, we can drive significant advancements in plant health and sustainable agriculture.

Biography: Ana Vučurović earned her PhD in 2013 from the University of Belgrade – Faculty of Agriculture (Belgrade, Serbia) where she worked from 2013 to 2020, at the Department of Phytopathology. Since 2020, she has been at the National Institute of Biology (Ljubljana, Slovenia), contributing to research and diagnostics in virology and phytoplasmas. Her research work focuses on plant virus and fungal diseases, diagnostics, and high-throughput sequencing. She has authored over 180 scientific publications and conference abstracts, reflecting her active engagement in both national and international research communities. Ana Vučurović is a member of several professional organizations.

Balsa TERZIC
Old Dominion University, **USA**

Societal Impact of X-Ray Radiation: From Fundamentals to Applications

Abstract: X-ray radiation has become a cornerstone of modern science and technology, with wide-ranging applications across medicine, industry, security, and fundamental research. This talk focuses on the foundational physics of X-ray generation and highlights the emerging role of advanced sources, particularly inverse Compton scattering (ICS) sources, in shaping future societal impact. We begin by revisiting the fundamental principles of X-ray production, including bremsstrahlung, synchrotron radiation, and, in particular, the physics of inverse Compton scattering—where low-energy photons gain energy by interacting with high-energy electrons. ICS provides a compact and tunable method of generating high-brilliance, quasi-monochromatic X-rays, bridging the gap between large-scale synchrotron facilities and conventional laboratory sources. These compact sources are poised to democratize access to high-quality X-rays, making advanced imaging and analysis capabilities available to a broader range of institutions and regions. The physics of ICS combines elements of quantum electrodynamics, special relativity, and accelerator physics. The talk delves into key parameters that govern ICS emission—such as electron beam energy, laser pulse properties, and scattering geometry—highlighting how precise control of these variables enables compact, brilliant X- ray sources with quasi-monochromatic spectra and low emittance. Unlike conventional synchrotrons or X-ray tubes, ICS sources offer the potential for tabletop-scale systems capable of producing X-rays with properties rivaling those of large-scale facilities. The talk explores how ICS sources can transform fields such as medical diagnostics, materials characterization, and cultural heritage preservation by enabling high-resolution, low-dose imaging with improved accessibility. We delve into recent developments in accelerator and laser technologies that have made ICS sources more practical and scalable, and we examine their potential to support portable and decentralized X-ray systems. In parallel, we consider the broader societal context: how fundamental physics continues to drive innovation, and how a deeper understanding of photon-electron interactions is essential for the responsible advancement of X-ray technologies. By grounding the discussion in physics fundamentals and highlighting the disruptive potential of inverse Compton sources, this talk offers a forward-looking perspective on how X-ray science will continue to shape society in the decades ahead.

Biography: Balša Terzić is a Professor & Graduate Program Director in the department of physics at Old Dominion University in Norfolk, Virginia, USA. He was born in Podgorica in 1974, and attended Matematička Gimnazija in Belgrade before moving to the USA. In 1995, he received a BS in mathematics and computer science from Liberty University in Lynchburg, Virginia. He earned his PhD in mathematics from Florida State University in 2002, where he studied chaos in elliptical galaxies. Balša's interdisciplinary research, spanning mathematics, physics and computer science, includes inverse Compton sources of x-ray radiation, high-performance computation, nonlinear dynamics and general relativity.

Petar VELICKOVIC
Google DeepMind / University of Cambridge / Clare Hall, Cambridge, **GBR**

LLMs as GNNs (to understand how they generalise)

Abstract: Decoder-only Transformers, the prevalent large language model (LLM) architecture at the time of writing this Abstract, are actually secretly (?) graph machine learning models under the hood, operating over a graph of tokens. I will start off by concretely demonstrating this result. A natural question then arises: can we leverage this knowledge to make sense of how data propagates within LLMs – and potentially even make meaningful improvements by tinkering with their graph topology? It is possible to answer this question in the affirmative—in fact, the specific choice of graph structure implied by the decoder-only setting turns out to be harmful for dataflow, from the perspective of (m)any metrics of graph "health" known to graph theory. I will provide two examples of these issues; while I remain cognisant of the rapid pace of research in this space, I hope they serve as useful inspiration. Firstly, because of the fully-connected causal structure of the leveraged graph in modern LLMs, messages are always passed fully across all allowed pairs of tokens. This can lead to a challenging phenomenon known as overmixing (Barbero et al., 2025) wherein the model loses the fidelity of information about individual tokens, as they rapidly mix with other tokens' embeddings across different layers. A complementary issue arises due to the causality of the computational graph, coupled with the fact that only the last token's embedding is used to predict the next one. The causal graph necessarily induces a form of token asymmetry, with earlier tokens having significantly more paths to the last token's embedding than later ones. This leads to the over-squashing problem (Barbero et al. 2024): as information is asymmetrically compressed into the final token's embedding, early tokens have a significantly higher influence over it (in terms of the Jacobian, ∂y[n]/∂x[v], for input token at position v). This asymmetry is so pronounced that it is possible to show that, in the limit where the number of decoder-only Transformer layers goes to infinity, only the first token influences the final predictions.

Biography: Petar Veličković is a Senior Staff Research Scientist at Google DeepMind, Affiliated Lecturer at the University of Cambridge, and an Associate of Clare Hall, Cambridge. He holds a PhD in Computer Science from the University of Cambridge (Trinity College), obtained under the supervision of Pietro Liò. His research concerns aligning neural networks to (classical) computation, to assess and improve their out-of-distribution generalisation ability. Particularly, he focuses on neural algorithmic reasoning, graph representation learning and categorical and geometric deep learning. For his contributions, he is recognised as an ELLIS Scholar in the Geometric Deep Learning Program.

Nikola BABUCIC
Universität Hamburg, Archäologie und Kulturgeschichte des antiken Mittelmeerraumes, **DEU**

Archaeological Research in Montenegro: Perspectives for Future Development

Abstract: Archaeology in Montenegro has a long tradition, particularly in the conservation and presentation of prominent sites such as Doclea, Risan and various monumental fortifications along the Adriatic coast. While these efforts have ensured the protection of significant parts of the country's cultural heritage, systematic academic research and teaching in archaeology remain underdeveloped. To date, Montenegro lacks a dedicated institute of archaeology that could combine higher education with long-term fieldwork projects. This institutional gap limits the integration of modern research methodologies and the training of future generations of archaeologists. My research, rooted in Classical Archaeology and with a strong focus on geophysical prospection, aims to demonstrate how fieldwork in Montenegro can be advanced in gradual but sustainable steps. Drawing on experience from international projects in Italy, Cyprus, Jordan, Spain and Turkey, as well as ongoing collaborations with local institutions in Germany, I propose a framework for the further development of archaeological field research in Montenegro. The first step is the application of non-invasive methodologies, such as ground-penetrating radar, magnetometry, and electrical resistivity, which allow for the exploration of archaeological sites without destructive intervention. These methods provide rapid and reliable datasets that can serve as the basis for targeted excavations and the preservation of cultural heritage. Secondly, the creation of an archaeological map that integrates geophysical data with GIS-based tools offers an interpretive environment in which archaeological features can be contextualized on both a local and regional scale. Such a digital platform would enable new perspectives on settlement patterns, urban development, and cultural interactions within the region. Equally important is the integration of these approaches into teaching and training. By involving students and young researchers from Montenegro in fieldwork and digital analysis, knowledge transfer can be secured and expanded. International cooperation, particularly within the European and Mediterranean research landscape, can provide both expertise and resources for capacity building. Finally, I argue that sustainable archaeological field research in Montenegro requires a step-by-step approach: starting with pilot projects, continuing with interdisciplinary collaboration, and culminating in the establishment of long-term research infrastructures. In this way, Montenegro can develop into an important hub for archaeological and geophysical research in the Balkans.

Biography: Nikola Babucic (PhD, University of Hamburg) is a Classical archaeologist specializing in geophysical prospection and digital methods in archaeology. He is currently a Research Associate at the Institute for Archaeology and Cultural History of the Ancient Mediterranean, University of Hamburg. His fieldwork experience covers projects in Montenegro, Germany, Italy, Cyprus, Jordan, Mozambique, Spain, Turkey, and Armenia. His research focuses on non- invasive methodologies, the development of archaeological maps, and knowledge transfer through teaching and international cooperation. He has published widely on geophysics in archaeology and is committed to fostering sustainable research infrastructures.

Srdjan REDZEPAGIC
University Côte d'Azur, **FRA**

The Future of the Europe: Balkans vs European Union

Abstract: The fall of the Berlin Wall at the end of 1989 symbolically marked the beginning of the transition from the socialist system to a market economy. Shortly after this historic event, communist political regimes ushered the Central and Eastern European Countries (CEECs), the Baltic States, and the Commonwealth of Independent States (CIS) into a new era—known in literature as the "post-socialism" era. The governments of these systems initiated the necessary reforms to "transition" these socialist economies to capitalist economies and to move as quickly as possible to a new political and economic system based on democracy and the free market. In general, economic transition can be defined as a shift from a centrally planned economy to a market economy, marked by both the persistence of elements of the old system and the emergence of characteristics of the new system. By successively taking as its object of analysis the four key elements of the transition to the market, namely its overall logic, the economic policies implemented, the privatization strategy and the external opening, this thesis proposes to evaluate the upheavals that the CEECs have experienced from a macroeconomic point of view. The specificity of the transition economy, born at the time of the fall of the Berlin Wall, and following the analysis of planned economies, focuses on three dimensions: price liberalization, opening of borders and privatization. Whether these objectives have been achieved or not, the notion of transition economy is no longer limited today to the modes of intervention and the expertise of international organizations. The countries that were preparing to become members of the EU were, moreover, almost all members of the Organization for Economic Cooperation and Development (OECD) and the North Atlantic Treaty Organization (NATO). Relates to the Balkans and according to the current political and social criteria, two groups of countries can be distinguished: "the Balkans, members of the European Union": Bulgaria, Croatia, Greece, Romania and Slovenia; "the Balkans in waiting": Albania, Bosnia and Herzegovina, Kosovo (Under in accordance with United Nations Security Council Resolution 1244), North Macedonia, Montenegro, Serbia and Turkey. This article explains the position and progress of Balkan countries on their way to the EU, especially analyzing economic aspects of it.

Biography: Srdjan REDZEPAGIC is a professor of economics and a scientific researcher in the field of economic sciences. Employed at the Universite Cote d Azur in Nice (France), he is Director of the Balkan Institute of Science and Innovation of the Universite Cote d Azur (BISI), and active lecturer at Luxembourg School of Business and International University of Monaco. He has extensive experience international and European projects. He has over a hundred published scientific papers and is the editor of more than ten internationally recognized editions of books. He is the editor-in-chief of the scientific journal Balkan Economic Review.

UCG
University of Montenegro

Simpozijum
Dani naučne dijaspore
Symposium
Scientific Diaspora Days
16–17/10/2025

16. OKTOBAR (ČETVRTAK) – Zgrada rektorata UCG

09:00 - 09:30	**Otvaranje skupa** Prof. dr **Nedeljko Latinović**, predsjednik programskog odbora Prof. dr **Anđela Jakšić-Stojanović**, ministarka prosvjete, nauke i inovacija **Mirsad Azemović**, ministar dijaspore
	Predsjedavajući: prof. dr **Stevo Popović** i doc. dr **Jovan Đurašković**
09:30 - 10:00	**Aleksandar Tomić** *NCAA March Madness and Academic Peer Rankings*
10:00 - 10:30	**Miloš Vulanović** *ESG Thematic Bonds in Emerging Markets: Risk, Uncertainty, and Ambiguity*
10:30 - 11:00	**Branislav Jevtić** *University professor, researcher, lecturer, writer... and/or manager of scientific – social - personal optimization*
11:00 - 11:30	**Kafe pauza**
	Predsjedavajući: prof. dr **Stevo Popović** i prof. dr **Željko Jaćimović**
11:30 - 12:00	**Boris Popović** *Improving Motor Competence in Preschoolers Through Daily Physical Activity: A Controlled Intervention Study*
12:00 - 12:30	**Veselin Maslak** *Functionalization of fullerene C60 by cycloaddition reactions*
12:30 - 13:00	**Mirjana Radanović** *Unlocking Potential: Schiff Bases Metal Complexes - Possibilities and Perspectives*
13:00 - 15:00	**Pauza za ručak**
	Predsjedavajući: prof. dr **Nataša Popović** i dr **Maša Ždralević**
15:00 - 15:30	**Olivera Kontić-Vučinić** *Rising Cesarean Section Rates: Primary Medical Consequences and Public Health Implications*
15:30 - 16:00	**Ksenija Korać** *Studying circadian disruption in pancreatic ductal adenocarcinoma*
16:00 - 16:30	**Milenko Kujović** *The Future of Neuropsychiatry: Conceptual and Developmental Horizons*
16:30 - 17:00	**Kafe pauza**
	Predsjedavajući: prof. dr **Nataša Popović** i dr **Maša Ždralević**
17:00 - 17:30	**Aleksandar Videnović** *Artificial intelligence in early detection, diagnosis, and monitoring of Parkinson's disease*
17:30 - 18:00	**Bojana Radoman** *Stress, Decision-Making, and Collective Challenges: Intersections of Immunology, Behaviour, and Climate Responsibility*

17. OKTOBAR (PETAK) – Zgrada rektorata UCG

	Predsjedavajući: prof. dr **Nedeljko Latinović** i prof. dr **Goran Popivoda**
09:00 - 09:30	**Milena Terzić** *From Medicinal Plants to Personalized Nutrition: Innovative Extraction, Drying, and 3D Food Printing Approaches*
09:30 - 10:00	**Ana Vučurović** *Invisible Pathways: Understanding the Environmental Persistence, Diversity and Epidemiology of Plant Viruses in Agroecosystems*
10:00 -10:30	**Balša Terzić** *Societal Impact of X-Ray Radiation: From Fundamentals to Applications*
10:30 -11:00	**Kafe pauza**
	Predsjedavajući: prof. dr **Gojko Joksimović** i prof. dr **Nedeljko Latinović**
11:00 - 11:30	**Petar Veličković** (online) *LLMs as GNNs (to understand how they generalise)*
11:30 - 12:00	**Nikola Babucić** *Archaeological Research in Montenegro: Perspectives for Future Development*
12:00 - 12:30	**Srđan Redžepagić** *The Future of the Europe: Balkans vs European Union*
12:30 - 13:00	**Kafe pauza**
13:00 - 14:30	**Okrugli sto: *Saradnja naučne dijaspore sa istraživačima u Crnoj Gori***
14:30	**Ručak**