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# MASTER PROGRAM

for

**THIRTEENTH INTERNATIONAL HYBRID CONFERENCE  
APPLICATION OF MATHEMATICS IN TECHNICAL AND NATURAL  
SCIENCES  
JUNE 24-29, 2021**

**All times in the program are GMT+3 (East-European time). Please  
synchronize your local time with respect to GMT and join the announced  
Zoom sessions on time.**

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**THURSDAY, JUNE 24, 2021**

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Join Zoom Meeting **08:00-12:30**

<https://us02web.zoom.us/j/82785410117?pwd=MnZGZGMxaDJPdUFVTHVpc09EVkVOU09>

Meeting ID: 827 8541 0117

Passcode: 037744

Hosted by Michail Todorov

08:30-09:00      OPENING SESSION

09:00-10:00      PLENARY LECTURE: Runzhang Xu  
Title: *Global Well-posedness of Coupled Parabolic Systems for  
Two-component Combustion*

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10:00-10:30 BREAK

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Session NUMERICAL METHODS

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- 10:30-11:00      Speaker: Xiaoyan Liu  
Title: *Modeling Data of Covid 19 Pandemic from Different Countries with an Extended SIR Model*
- 11:00-11:30      Speaker: Alexey Rukavishnikov  
Title: *Numerical Simulation for the One Stationary Nonlinear Hydrodynamics Problem in Non-convex Domain*
- 11:30-12:00      Speaker: Viktor Rukavishnikov  
Title: *On Body of Optimal Parameters in the Weighted Finite Element Method*
- 12:00-12:30      Speaker: Lyudmila Prokudina - not reported  
Title: *Numerical Simulation of the Diffusion Instability of the Oregonator*

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Lunch Break

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Join Zoom Meeting **13:45-16:00**

<https://us02web.zoom.us/j/89727675691?pwd=bWFMZ25oNk1kU1g0cEFpUHYxU1ZtQT09>

Meeting ID: 897 2767 5691

Passcode: 071421

Hosted by Michail Todorov

- 14:00-16:00      Session NUMERICAL METHODS
- 14:00-14:30      Speaker: Victoria Kornienko  
Title: *Finite-Difference Approximation of Mean Field Problem with Limited Management Resource*
- 14:30-15:00      Speaker: Alexander Martynenko  
Title: *Gravity Models for Regional Public Transport*
- 15:00-15:30      Speaker: Grigorios Tachyridis  
Title: *Band Preconditioners for Non-Symmetric Real Toeplitz Systems with Unknown Generating Function*
- 15:30-16:00      Speaker: Vesselina Vucheva

Title: *A Symplectic Fourth-order Accurate Numerical Method for the Double Dispersion Equation*

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Break

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Join Zoom Meeting 16:15-19:00

<https://us02web.zoom.us/j/87218686348?pwd=VzhuVHlxVYvK0lyZU41RnFsYjFnQT09>

Meeting ID: 872 1868 6348

Passcode: 780892

Hosted by Michail Todorov

- 16:30-17:30      Session PLENARY TALK  
Speaker: Zhijun (George) Qiao  
Title: *Hierarchy of Integrable Equations and Lax Pair*
- 17:30-19:00      Session NUMERICAL METHODS
- 17:30-18:00      Speaker: Olga Denisiuk  
Title: *Modification of the Method of Corrective Functions in Control Problems on the Accuracy of Numerical Analysis of Structures*
- 18:00-18:30      Speaker: Anke Troeltzsch  
Title: *SQP DFO – a Trust-region Based Algorithm for Generally-constrained Derivative-free Optimization*
- 18:30-19:00      Speaker: Slavi Georgiev  
Title: *Parameters Reconstruction in Modeling of Honeybee Colonies Infested with Varroa Destructor*
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- 20:00              WELCOME PARTY – THE TERRACE OF FLAMINGO GRAND HOTEL
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## FRIDAY, JUNE 25, 2021

Join Zoom Meeting 08:15-12:30

<https://us02web.zoom.us/j/82243261558?pwd=ZHhSbkxKbVITRWFhVndOaVNOaUFBUT09>

Meeting ID: 822 4326 1558

Passcode: 961208

Hosted by Michail Todorov

08:30-09:30          PLENARY LECTURE: Vladimir Shaydurov  
Title: *Reduction Dynamics for Soliton Stripes, Vortices, and Vortex Rings in Quantum Superfluids*

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09:30-10:00 BREAK

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10:00-12:30          Session SCIENTIFIC COMPUTING

10:00-10:30          Speaker: Elena Lilkova  
Title: *LMWH as a Prospective IL-6 Blocker: a Computational Study*

10:30-11:00          Speaker: Leander Litov  
Title: *Metadynamics Approach to Modeling Peptide-membrane Interactions– A Proof-of-concept Study*

11:00-11:30          Speaker: Nevena Ilieva  
Title: *A Molecular Dynamics Study of Dislocation-Interface Boundary Interactions in Lath Martensite*

11:30-12:00          Speaker: Tzvetan Ostromsky  
Title: *A Comparison of Monte Carlo Methods for Multidimensional Integrals in Air Pollution Modeling based on Latin Hypercube Sampling Edge Algorithm*

12:00-12:30          Speaker: Tiberius Frigioescu  
Title: *Image Analysis Algorithms for Measuring the Interfacial Roughness in TBCs Systems*

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## Lunch Break

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Join Zoom Meeting **13:45-16:00**

<https://us02web.zoom.us/j/81322828738?pwd=L2VWYUNHd2VSMTR1Q1lxZjFNNzhUUT09>

Meeting ID: 813 2282 8738

Passcode: 971248

Hosted by Michail Todorov

14:00-16:00      Session BIOMATHEMATICS

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14:30-15:00      Speaker: Anna Antonova  
Title: *On the Approximation of Goodwin's Business Cycle Equation by Taylor Series Expansion*

15:00-15:30      Speaker: Tatyana Perevalova  
Title: *Stochastic Effects in the Eco-epidemiological Model with Multirhythmicity*

15:30-16:00      Speaker: Astrid Rekker  
Title: *Fano Factor of Output Spike Trains for a Neuron Model Driven by Dichotomous Noise*

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## Coffee Break

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Join Zoom Meeting **16:15-18:15**

<https://us02web.zoom.us/j/87537628643?pwd=VGxXQ01CSzdVR2VWQkVPT1EyeDExUT09>

Meeting ID: 875 3762 8643

Passcode: 147494

Hosted by Michail Todorov

16:30-17:15      KEYNOTE SPEAKER: Efstathios Charalampidis  
Title: *Bifurcation Analysis Tools for Nonlinear Complex Dynamical Systems*

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17:15-18:15      Session BIOMATHEMATICS

17:15-17:45      Speaker: Souvik Roy  
Title: *A Data-driven Stochastic Framework for Treatment Assessment in Colon Cancer*

17:45-18:15      Speaker: Mikhail Antonov - cancelled  
Title: *Biomathematics Estimation of Parameters of Gas Diffusion in Carbon Nanostructures Using Molecular Dynamics Method*

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#### PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

10:00-12:30      Session NUMERICAL METHODS

10:00-10:30      Speaker: Natalia Yaparova  
Title: *Identification of an Unknown Source Term in a Heat Conduction Problem from Boundary Measured Data*

10:30-11:00      Speaker: Evgenia Karepova  
Title: *The Predictor-Corrector Mode for the Symmetric Multi-Step Methods for the Numerical Modeling of Satellite Motion*

11:00-11:30      Speaker: Dmitry Yaparov  
Title: *Computational Method for Solving Differential Equations in Dynamic Systems*

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11:30-12:00      Speaker: Atanas Ivanov  
Title: *Random Forest Regression for Statistical Modeling and*

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*Forecasting of PM10*

12:00-12:30 Speaker: Tatyana Perevalova  
Title: *Numerical Methods for Stochastic Sensitivity Analysis of 2D Chaotic Attractors*

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Lunch Break

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PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

14:00-14:30 Speaker: Nikolai Hinov - not reported  
Title: *Technological and Economic Justification for the Production of Electricity through Photovoltaic Generators*

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14:30-16:00 Session SCIENTIFIC COMPUTING

14:30-15:00 Speaker: Stanislav Harizanov  
Title: *Numerical Solution of Spectral Space-Fractional Diffusion Problems: Recent Advances and Challenges beyond the Scalar Elliptic Case*

15:00-15:30 Speaker: Alexander Vyatkin  
Title: *Conservative Semi-Lagrangian Approximation for Three-dimensional Parabolic Equation*

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15:30-16:00 Speaker: Evgenii Efimov  
Title: *Modeling of the Seismic Wavefields in Viscoelastic Soils under Pulse Impact*

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Break

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## PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

17:15-19:15      Session SCIENTIFIC COMPUTING

17:15-17:45      Speaker: Slavi Georgiev  
Title: *TSA & ML Predictive Modelling of EU Financial and Economic Indices*

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17:45-18:15      Speaker: Venelin Todorov  
Title: *Highly Efficient Stochastic Methods for Sensitivity Study of Large-scale Air Pollution Model*

18:15-18:45      Speaker: Yuri Dimitrov  
Title: *Efficient Monte Carlo Algorithms for Integral Equations*

18:45-19:15      Speaker: Stoyan Apostolov  
Title: *Advanced Stochastic Approaches for Option Pricing Based on Sobol Sequence*



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**SATURDAY, JUNE 26, 2021**

Join Zoom Meeting **08:15-12:30**

<https://us02web.zoom.us/j/81318733128?pwd=ZzkwSzdGTnN3K2hGeURGR1JaZ1VDUT09>

Meeting ID: 813 1873 3128

Passcode: 446828

Hosted by Michail Todorov

08:30-09:30          PLENARY TALK

Speaker: Daniel Dantchev/Gergana Nikolova

Title: *On Some New Results on Mathematical Modelling of the Human Body: A Short Review*

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10:00-12:30          Session APPLIED ANALYSIS

10:00-10:30          Speaker: Alexander Kerzhaev

Title: *Expansions in Papkovich–Fadle Eigenfunctions in the Polar Coordinate*

10:30-11:00          Speaker: Dmitry Zavalishchin

Title: *Modeling the Optimal Trajectories for the Movement of Objects with Variable Structure in a Viscous Medium Density Nonconstant*

11:00-11:30          Speaker: Elena Butsenko

Title: *Application of Network Economic and Mathematical Modeling of Adaptive Investment Control Optimization for Public Catering*

11:30-12:00          Speaker: Andrey Shorikov

Title: *Structure and Functions of the Intelligent Software Complex for Modeling the Solution of Optimization Problems of the Bank's Retail Block*

12:00-12:30          Speaker: Galina Timofeeva

Title: *Hierarchical Game with Random Second Player and Its*

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*Application*

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Lunch Break

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Join Zoom Meeting 13:45-16:00

<https://us02web.zoom.us/j/87545991683?pwd=VDRFK3FyME1jaHBZYUd5K0QvMzN6UT09>

Meeting ID: 875 4599 1683

Passcode: 530354

Hosted by Michail Todorov

14:00-16:00      Session APPLIED ANALYSIS

14:00-14:30      Speaker: Vyacheslav Babaylov

Title: *Calculation of the Optimal Timeout of Executing a SQL Query for Multi-Master Replication System*

14:30-15:00      Speaker: Anna Chugainova

Title: *Special Discontinuities in Solutions of Nonlinear Hyperbolic Equations*

15:00-15:30      Speaker: Irina Menshova

Title: *A Mixed Boundary Value Problem of the Theory of Elasticity for a Half-strip*

15:30-16:00      Speaker: Olga Rozanova

Title: *Mean Field Game Equations with Underlying Jump-diffusion Process  $l$*

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Break

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Join Zoom Meeting 16:30-19:00

<https://us02web.zoom.us/j/81343252320?pwd=MFVTVTN4NFppN3doaWdHdks2d1FpQT09>

Meeting ID: 813 4325 2320

Passcode: 628962

Hosted by Michail Todorov

16:30-19:00      Session APPLIED ANALYSIS

16:30-17:00      Speaker: Ivailo Nikolaev  
Title: *Mathematical Model for Studying Volumetric Losses of a Three-Rotor Hydraulic Machine with Bilateral Lantern Meshing Taking into Account Internal and External Leakages*

17:00-17:30      Speaker: Kajtaz Bllaca  
Title: *Li Coefficients on Functions Fields*

17:30-18:00      Speaker: Armend Shabani  
Title: *Enumeration of Some Families of Bargraphs*

18:00-18:30      Speaker: Svilen Popov - cancelled  
Title: *On a Timoshenko Beam System with Dampning Boundary Conditions*

18:30-19:00      Speaker: Miroslav Stoenchev  
Title: *Symmetric Diophantine Systems ??*

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#### PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

10:00-12:30      Session CONTINUUM MECHANICS  
Host:

10:00-10:30      Speaker: Dobri Dankov  
Title: *Taylor-Couette Flow in Rarefied Gas at Inhomogeneous Cylinder Wall Temperature Distribution*

- 10:30-11:00      Speaker: Irina Smolekho  
Title: *Numerical Solution of Equations Describing the Action of Electric Field on a Liquid Crystal*
- 11:00-11:30      Speaker: Ganna Shyshkanova  
Title: *Stability of Notched Cylindrical Shells under Uneven External Pressure*
- 11:30-12:00      Speaker: Anatoly Prostromolotov  
Title: *Study of Hydrodynamics and Mass Transfer Influence on Crystal Growth from Water-salt Solutions*
- 12:00-12:30      Speaker: Andrei Kolyshkin  
Title: *Stability of Combined Steady Convective Flow in a Vertical Fluid Layer with Permeable Boundaries*
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#### PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

14:00-16:00      Session MATHEMATICAL PHYSICS AND TRANSPORT PROCESSES

14:00-14:30      Speaker: Bogdan Dimitrov  
Title: *Elliptic Functions for Calculation the Propagation Time of a Signal Emitted by a Moving Satellite*

14:30-15:00      Speaker: Georgi Boyadjiev  
Title: *Strong Maximum Principle for Viscosity Solutions of Fully Nonlinear Cooperative Elliptic Systems*

15:00-15:30      Speaker: Elvin Azizbayov – not reported  
Title: *Nonlinear Inverse Boundary Value Problem for a Second-*

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*order Hyperbolic Equation with Nonlocal Condition*

15:30-16:00

Speaker: Semiha Tombuloglu - cancelled

Title: *Discrete Rogue Waves in Complex Cubic Volterra Equation*

## SUNDAY, JUNE 27, 2021

Join Zoom Meeting 08:15-12:30

<https://us02web.zoom.us/j/83917780117?pwd=RzVQSCt6cDk5QUw2VW9UbHVSdFNEdz09>

Meeting ID: 839 1778 0117

Passcode: 255946

Hosted by Michail Todorov

08:30-09:30      PLENARY LECTURE: Alexey Porubov  
Title: *Nonlinear Acoustic Metamaterials: Modeling, Localized and Periodic Waves and Their Control*

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09:30-10:00 BREAK

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10:00-11:00      Session CONTINUUM MECHANICS

10:00-10:30      Speaker: Valentin Gushchin  
Title: *On Dynamics of the Chain of Spots in Stratified Fluid*

10:30-11:00      Speaker: Igor Petrakov  
Title: *Pure Cylindrical Bending of a Laminated Composite Plate Differently Resistant to Tension and Compression*

11:00-11:30      Session APPLIED PHYSICS  
Speaker: Krasimir Angelov  
Title: *Comparison Between Two Numerical Methods for Solution of 2D Boussinesq Paradigm Equation*

11:30-12:30      Special Session devoted to PROF. CHRISTO I. CHRISTOV

11:30-12:00      Speaker: Nectarios Papanicolaou  
Title: *A Parametric Investigation of the Effect of Maxwell-Cattaneo Heat Conduction on the Photothermal Radiometric Signal*

12:00-12:30      Speaker: Vladimir Gerdjikov

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Title: *On the mKdV Equations Related to the Kac-Moody Algebras  $A_5^1$  and  $A_5^2$*

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Lunch Break

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Join Zoom Meeting 13:45-16:00

<https://us02web.zoom.us/j/82619742216?pwd=eTRNUzQrd2VRYVpEeFh1VVBuQi9mdz09>

Meeting ID: 826 1974 2216

Passcode: 976681

Hosted by Michail Todorov

Co-host: Nectarios Papanicolaou

14:00-16:00 Special Session devoted to PROF. CHRISTO I. CHRISTOV

14:00-14:30 Speaker: Nikolai Moshkin/Vladislav Pukhnachev/Sergei Meleshko

Title: *Nonlinear Waves in Viscoelastic Maxwell Continuum*

14:30-15:00 Speaker: Marios Christou

Title: *Convolution Integrals of Christov Functions*

15:00-15:30 Speaker: Nikolai Kutev/Sonya Tabakova

Title: *Oscillatory Flow of Carreau-Yasuda Fluid in a Pipe*

15:30-16:00 Speaker: Rossen Ivanov

Title: *Multicomponent Fokas-Lenells Equations*

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Break

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Join Zoom Meeting 16:30-19:30

<https://us02web.zoom.us/j/82415859287?pwd=dmh6d1BzK3VzSlhSSnZDancxcnNqdz09>

Meeting ID: 824 1585 9287

Passcode: 683433

Hosted by Michail Todorov  
Co-host: Nectarios Papanicolaou

16:30-18:30 Special Session devoted to PROF. CHRISTO I. CHRISTOV

16:30-17:00 Speaker: Ivan C. Christov  
Title: *25 Years of Dissipative Solitons*

17:00-17:30 Speaker: Abhinandan Chowdhury  
Title: *Stochastic Functional Expansion for Identifying the Effective Heat Conductivity Coefficient of Polydisperse Suspension*

17:30-18:00 Speaker: Sanichiro Yoshida  
Title: *Field Theory of Deformation and Fracture*

18:00-18:30 Speaker: Georgi Grahovski  
Title: *On Invariants of Yang-Baxter Maps*

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18:45 Official Dinner - the restaurant of Kopitoto (The Hoof) in the resort of St. Constantine and Helena  
Meeting point in front of the Sandy Beach hotel

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#### PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

10:00-12:30 Session APPLIED ANALYSIS

10:00-10:30 Speaker: Albert Gabdulhakov  
Title: *Optimization of Routes in Transport Logistics*

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- 10:30-11:00      Speaker: Iliana Raeva  
Title: *Risk Estimation Using Sensitivity Analysis of an Investment Project*
- 11:00-11:30      Speaker: Tatiana Tchemisova  
Title: *Regularization Methods of Conic Optimization*
- 11:30-12:00      Speaker: Leda Minkova  
Title: *Characterization of the I-Binomial Process*
- 12:00-12:30      Speaker: Mihaela Condruz  
Title: *Computational and Experimental Study on Investment Casted Micro-turbopump Impeller*
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#### PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

Co-host: Elena Kobilskaya

- 14:00-16:00      Special Session MIKHAIL OSTROGRADSKY 220
- 14:00-14:30      Speaker: Viktor Lyashenko  
Title: *Mathematical Model of the Thermal Process in an Infinite Cylinder Heated by a Moving Heat Source*
- 14:30-15:00      Speaker: Iryna Hvozdeva  
Title: *One Method of Trend Analysis of Technical Objects Conditions*
- 15:00-15:30      Speaker: Yulia Olevska  
Title: *Fuzzy Recognition of Proteins in 2D Electrophoresis in Population Genetics*
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15:30-16:00      Speaker: Olha Nazarova  
Title: *Method of Reducing Equality to Identities in Problems of Economics*

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*Break*

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### PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

Co-host: Elena Kobilskaya

16:30-18:30      Special Session MIKHAIL OSTROGRADSKY 220

16:30-17:00      Speaker: Oleksander Moskalenko  
Title: *Search for Scientific Information Through the Use of Machine Learning*

17:00-17:30      Speaker: Dmitry Savielov  
Title: *Theoretical Study of the Stresses Change Nature Arising in the Polymer Concrete Compacted Layer When Compacted on a Vibrating Platform with Vertically Directed Vibrations*

## MONDAY, JUNE 28, 2021

Join Zoom Meeting 08:15-12:30

<https://us02web.zoom.us/j/81444485973?pwd=bFJTV3lVKT1QxK1dORFh5TnEyK1NpQT09>

Meeting ID: 814 4448 5973

Passcode: 035492

Hosted by Michail Todorov

Co-host: Milan Stehlik

08:30-09:30        PLENARY LECTURE: Milan Stehlik  
                         Title: *Data Transformations and Transfer Functions*

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09:30-10:00 BREAK

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10:00-12:30        Special Session STOCHASTIC AND STATISTICAL  
                         MODELING

10:00-10:30        Speaker: Gleb Haynatzki  
                         Title: *Synthetic Likelihood Approximation Inference for Joint  
                         Models of Longitudinal and Survival Data with Analytically and  
                         Numerically Intractable Likelihood*

10:30-11:00        Speaker: Evdokia Slepukhina  
                         Title: *Noise-induced Bursting in the Region of Tonic Spiking  
                         Behavior in the Neuron Model with Lukyanov-Shilnikov  
                         Bifurcation*

11:00-11:30        Speaker: Petras Rupsys  
                         Title: *Mechanisms of Stochastic Analysis in the Individual-tree  
                         and Whole-stand Growth Models*

11:30-12:00        Speaker: Pavlina Jordanova  
                         Title: *Merging of Bivariate Compound Binomial Processes with  
                         Shocks*

12:00-12:30        Speaker: Evelina Veleva

Title: *Statistical Study of Particulate Matter (PM10) Air Contamination in the City of Vidin, Bulgaria*

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Lunch Break

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Join Zoom Meeting 13:45-16:00

<https://us02web.zoom.us/j/87558516958?pwd=YXpmMC8xbEZkKzVMTEtUVndiWVljQT09>

Meeting ID: 875 5851 6958

Passcode: 791746

Hosted by Michail Todorov

14:00-16:00      Session APPLIED ANALYSIS

14:00-14:30      Speaker: Adina Toma

Title: *Assessment of Temperature Uniformity and Optimization of the Heat Treat Furnace Working Area*

14:30-15:00      Speaker: Madhu Gupta

Title: *A New Optimization Approach for Sparsity Based Non-linear Reconstruction in Current Density Impedance Tomography*

15:00-15:30      Speaker: Mehsin Atteya

Title: *Symmetric n-Homosemiderivation of Rings*

15:30-16:00      Speaker: Yurii Bazylevych

Title: *General Approach to the Tasks of Decoupling of Linear Controlled Systems*

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16:00-16:30      Break

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Join Zoom Meeting 16:30-19:00

<https://us02web.zoom.us/j/85439479246?pwd=TkVmVWtMMmVkdko4eWRyR0RScjNrUT09>

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Meeting ID: 854 3947 9246

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Passcode: 027161

Hosted by Michail Todorov

- 16:30-18:30      Session MATHEMATICAL PHYSICS AND TRANSPORT PROCESSES
- 16:30-17:00      Speaker: Velizara Pencheva  
Title: *Organization of the Weekly Working Hours of Vehicle Drivers When Performing Road Transportation for Urban Logistics*
- 17:00-17:30      Speaker: Vanyo Donev  
Title: *Necessary and Sufficient Conditions for the Existence of Non-oscillating and Oscillating Solutions of Quasilinear Functional-differential Equations of Neutral Type with Constant Coefficients and Impulse*
- 17:30-18:00      Speaker: Stoyan Mishev  
Title: *Parallel Implementation of Coupled-cluster Equations for Nucleonic Matter*
- 18:00-18:30      Speaker: Yuri Bozhkov  
Title: *Remarks on the Schwarzian Mechanics*
- 18:30-19:00      Speaker: Vesselin Guerguiev  
Title: *Challenges for Modeling Nuclear Structure: Are the Proton and Neutron Masses and A-body Interactions Relevant?*
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## PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

Co-host Milan Stehlik

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- 14:00-16:00 Special Session STOCHASTIC AND STATISTICAL MODELING
- 14:00-14:30 Speaker: Vera Haynatzka  
Title: *Nonlinear Approaches for Joint Modeling of Clinical Trial Data: Convergence, Efficiency and Precision*
- 14:30-15:00 Speaker: Roman Haynatzki  
Title: *Prediction of Survival Models: A Comparison Between Machine Learning and Cox Regression*
- 15:00-15:30 Speaker: Krassimira Kostadinova  
Title: *The Polya-Aeppli Risk Model with Stochastic Premium Process and Ruin Probability*
- 15:30-16:00 Speaker: Luchezar Petrov replaced by Margarita Savova  
Title: *A Study on the Parameters of Manifold Mixup and Its Interaction with Other Regularization Techniques When Training Neural Networks*
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Break

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### PARALLEL ZOOM SESSION

Join Zoom Meeting

<https://essex-university.zoom.us/j/97032941525>

Meeting ID: 970 3294 1525

Hosted by Georgi Grahovski

Co-host Milan Stehlik

- 16:30-19:00 Special Session STOCHASTIC AND STATISTICAL MODELING
- 16:30-17:00 Speaker: Irina Bashkirtseva  
Title: *Noise-induced Excitement and Mixed-mode Oscillatory Regimes in the Chialvo Model of Neural Activity*
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- 17:00-17:30      Speaker: Ivailo Boyukliev  
Title: *Time Series Modeling and Forecasting of Deposits in Foreign Currency Using CART Ensemble and Bagging*
- 17:30-18:00      Speaker: Elitsa Raeva  
Title: *Retrospective Review of the Bulgarian Insurance Market Using Time Series Analysis*
- 18:00-18:30      Speaker: Snezhana Gocheva  
Title: *Study of the Tensile Strength of Alloy Steels Using Polynomial Regression*
- 18:30-19:00      Speaker: Snezhana Gocheva  
Title: *Using MARS for Modeling and Predicting Tensile Strength of Low Alloy Steels*
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**TUESDAY JUNE 29, 2021**

**Topic: Michail Todorov's Zoom Meeting**

**Time: Jun 29, 2021 08:15 AM Sofia**

Join Zoom Meeting **08:15-12:30**

<https://us02web.zoom.us/j/82741538398?pwd=UGQ2Zmlrc2RYcHFZR3NDa200b1pkdz09>

Meeting ID: 827 4153 8398

Passcode: 801741

Hosted by Michail Todorov

Co-host: Milan Stehlik

08:30-09:30      **PLENARY LECTURE: Svetoslav Markov/Meglana Lazarova**  
Title: *Dynamical Systems Induced by Reaction Networks with Application to Epidemiological Outbreaks*

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09:30-10:00 **BREAK**

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10:00-11:00      **Session NUMERICAL METHODS**

10:00-10:30      **Speaker: Alexandre Fedoseyev**  
Title: *Simulation of Rarefied Gas Flows – Comparison with Experimental Data*

10:30-11:00      **Speaker: Alexandre Fedoseyev**  
Title: *Numerical Simulation and Optimization of Compact High Voltage Pulsed Transformers*

11:00-12:30      **Special Session STOCHASTIC AND STATISTICAL MODELING**

11:00-11:30      **Speaker: Olga Ie**  
Title: *Analysis of the Temporal Distribution of Passenger Traffic in Road Transport for the Regional Road Network*

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11:30-12:00      Speaker: Evelina Veleva  
Title: *Time Series Analysis of the Spread of COVID-19 Infection in Bulgaria*

12:00-12:30      Speaker: Vanyo Donev  
Title: *Pragmatic Approach for Forecasting the Expected Quantity of Consumed Heat Energy*

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Lunch Break

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Join Zoom Meeting 13:30-19:00

<https://us02web.zoom.us/j/89417369373?pwd=ZXBTVHRHUmhZQ1BHV0JManQ3VHQ0UT09>

Meeting ID: 894 1736 9373

Passcode: 108634

Hosted by Michail Todorov

Co-hosts: Pavlina Jordanova, Volodymyr Kiosak

13:30-14:00      Speaker: Viktors Ajevskis  
Title: *Generalized Impulse Response Function as a Perturbation of a Global Solution to DSGE Models*

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14:00-16:00      Special Session GEOMETRY AND ITS APPLICATIONS – not reported

14:00-14:30      Speaker: Volodymyr Kiosak  
Title: *On the Stationary Model of Universe*

14:30-15:00      Speaker: Yulia Fedchenko  
Title: *Pseudo-Riemannian Spaces with Semi-reducible Metrics*

15:00-15:30      Speaker: Lilia Makarenko  
Title: *Invariant Transformations Preserving Mappings*

15:30-16:00      Speaker: Sergei Pokas  
Title: *Lie Group of the Second Degree Infinitesimal Conformal*

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*Transformations in a Symmetric Riemannian Space of the First Class*

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Break

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16:30-18:00 Special Session GEOMETRY AND ITS APPLICATIONS –  
not reported

16:30-17:00 Speaker: Olexander Lesechko  
Title: *Infinitesimal Deformations of Metrics of Pseudo-Riemannian Spaces*

17:00-17:30 Speaker: O. Latysh  
Title: *Concircular Mappings Preserving a Curvature of Multi-dimensional Platforms*

17:30-18:00 Speaker: Olena Gudyreva  
Title: *Kaehler Generalized Ricci Recurrent Spaces*

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18:00-19:00 RECAPITULATION, NOMINATIONS AND OFFICIAL  
CLOSING SESSION OF THE CONFERENCE