

16th Annual Meeting of the Bulgarian Section of SIAM

BGSIAM'21

SCIENTIFIC PROGRAM

Tuesday, December 21

09:10 – 09:20 **Opening**

Chairperson: *I. Georgiev*

09:20 – 10:00 S. Margenov, Achievements and challenges in numerical methods for multidimensional spectral fractional diffusion problems

10:00 – 10:20 Z. Dimitrova, N. K. Vitanov, An example for application of the Simple Equations Method (SesM) for obtaining exact solution of a non-linear differential equation with a non-polynomial nonlinearity

10:20 – 10:40 **Break**

Chairperson: *St. Harizanov*

10:40 – 11:00 I. Hristov, R. Hristova, I. Puzynin, T. Puzynina, Z. Sharipov, Z. Tukhliev, Newton's method for computing periodic orbits of the planar three-body problem

11:00 – 11:20 T. Alexandrova, H. Kostadinov, N. Manev, Watermarking Audio Content: Data Embedding based on Fast Fourier Transform

11:20 – 11:40 V. Boutchaktchiev, Forecasting Models for the House Price Index in Bulgaria

11:40 – 12:00 Z. Minchev, Digital Transformation Multidimensional Security Analysis with Future Quantitative Assessment

12:00 – 13:30 **Break**

Chairperson: *I. Bazhlekov*

13:30 – 13:50 M. Koleva, Z. Milovanović Jeknić, L. Vulkov, Determination of External Boundary Conditions of a Stationary Non-linear Problem on Disjoint Intervals

13:50 – 14:10 T. Gyulov, L. Vulkov, Reconstruction of the Initial Concentrations and the Mass Transfer Coefficient in a Model of Porous Media

14:10 – 14:30 A. Atanasov, S. Georgiev, L. Vulkov, Parameter Identification Analysis of Food and Population Dynamics in Honey Bee Colonies

14:30 – 14:50 **Break**

Chairperson: *Z. Minchev*

14:50 – 15:10 J. Kandilarov, L. Vulkov, Simultaneous Numerical Reconstruction of Time-dependent Convection Coefficient and Source in Magnetohydrodynamics Flow System

15:10 – 15:30 D. Parvanov, G. Mateeva, T. Balabanov, Classification of Images for Reverse Engineering of Slot Machines

15:30 – 15:50 I. Blagoev, T. Balabanov, I. Iliev, The Randomness in Shared Web Hostings

Wednesday, December 22

Chairperson: R. Ivanov

09:40 – 10:20 J. Kaplunov, B. Erbaş, N. Ege, An asymptotic theory for a functionally graded plate

10:20 – 10:40 V. Angelova, Residual bounds of a class of nonlinear matrix equations

10:40 – 11:00 **Break**

Chairperson: J. Kaplunov

11:00 – 11:20 Tz. Ostromsky, Implementation, performance and scalability of a large scale air pollution model on the new EuroHPC petascale supercomputer DISCOVERER in Bulgaria

11:20 – 11:40 I. Jordanov, Solitary travelling waves in a model for spatial-time interaction of populations

11:40 – 12:00 I. Jordanov, M. Georgieva, M. Ilieva, K. Damov, M. Iliev, Using 3D printers for visualization of nonlinear equations solutions in the learning process

12:00 – 13:30 **Break**

Chairperson: L. Vulkov

13:30 – 13:50 R. Iankov, I. Georgiev, E. Kolosova, M. Chebakov, M. Datcheva, Computational Homogenization and Parametric Study for Materials with Closed Voids

13:50 – 14:10 A. Manov, T. Ivanov, The effect of the diffusion coefficient in a mathematical model of multiple sclerosis

14:10 – 14:30 M. Zarcheva, T. Ivanov, Numerical simulations of the process of adsorption onto activated carbon in water treatment applications

14:30 – 14:50 **Break**

Chairperson: V. Angelova

14:50 – 15:10 M. Terziyska, K. Yotov, E. Hadzhikolev, Zh. Terziyski, S. Hadzhikoleva, Extreme learning DANFA model for electricity consumption prediction

15:10 – 15:30 K. Vlachkova, K. Radev, A Comparative Study of Methods for Interpolation of Convex Scattered Data using Minimum Norm Networks and Quartic Triangular Bezier Surfaces

15:30 – 15:50 S. Bushev, Knowledge – Material Science in Medicine

15:50 – 16:10 E. Atanassov, HPC Center of IICT - features and perspectives

Thursday, December 23

Chairperson: S. Margenov

09:40 – 10:20 C. Hofreither, Recent advances in rational approximation methods for fractional diffusion

10:20 – 10:40 R. Ivanov, S. Pshenichnov, M. Datcheva, Numerical validation of analytical solutions of non-stationary wave propagation problems

10:40 – 11:00 **Break**

Chairperson: N. Ilieva

- 11:00 – 11:20 P. Petkov, N. Ilieva, E. Lilkova, L. Litov, Charge-dependence of the membrane destruction modes of linear antimicrobial peptides: a case study
- 11:20 – 11:40 E. Lilkova, P. Petkov, N. Ilieva, L. Litov, Computational Modelling of the Interactions of hIFNg and heparin-derived oligosaccharides
- 11:40 – 12:00 Y. Cheng, X. Peng, P. Petkov, N. Ilieva, Local Geometry of Different Grafting Schemes of the CP4-Derived Linear Peptide onto Knotted Scaffolding
- 12:00 – 12:20 A. Slavova, V. Ignatov, Nano computing in bioinspired systems
- 12:20 – 12:30 **Closing**

The event will take place at the ZOOM platform

Topic: 16th Annual Meeting of the Bulgarian Section of SIAM

Join Zoom Meeting

<https://us02web.zoom.us/j/81658018014?pwd=RUcrNVIYRjFOSFZ5d2pYbUdpR1BMQT09>

Meeting ID: 816 5801 8014

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