

20th Annual Meeting of the Bulgarian Section of SIAM

BGSIAM'25

TIMETABLE

10.12.2025

11.12.2025

12.12.2025

09:00-09:30	<i>Registration</i>				
09:30-09:40	<i>Opening</i>				
09:40-10:40	Borodich	09:30-10:30	Chwastyk	09:30-10:30	Vassilev
		10:30-10:50	<i>Coffee break</i>	10:30-10:50	<i>Coffee break</i>
10:40-11:00	<i>Coffee break</i>	10:50-11:15	Ilieva	10:50-11:15	Vasilev
11:00-11:25	Vitanov	11:15-11:40	Bouyghf	11:15-11:40	Borisov
11:25-11:50	Harizanov	11:40-12:05	Vlachkova	11:40-12:05	Chervenkov
11:50-12:15	Todorov	12:05-12:30	Tchipev	12:05-12:30	Hristov
12:15-14:00	<i>Lunch</i>	12:30-14:00	<i>Lunch</i>	12:30-12:40	<i>Closing</i>
14:00-14:25	Chalakova	14:00-14:25	Slavova		
14:25-14:50	Rashevski	14:25-14:50	Markov		
14:50-15:15	Iankov	14:50-15:15	Lambov		
15:15-15:40	Ostromski	15:15-15:40	Armyanov		
15:40-16:00	<i>Coffee break</i>	15:40-16:00	<i>Coffee break</i>		
16:00-16:25	Balabanov	16:00-16:25	Traneva		
16:25-16:50	Stanchov	16:25-16:50	Tranev		
16:50-17:15	Gjorgiev	16:50-17:15	Kirilov		
17:15-17:40	Georgiev	17:15-17:40	Atanasov		
		17:40-18:00	BGSIAM Annual Report		
		18:00	<i>Poster session and reception</i>		

SCIENTIFIC PROGRAM

Wednesday, 10.12.2025

09:00 – 09:30 **Registration**

09:30 – 09:40 Opening

09:40 – 10:40 *Invited talk:* **F.M. Borodich**, Z. Gao, A. Pepelyshev, X. Jin, Synthesis of Engineering Surfaces and Models of Friction

10:40 – 11:00 **Coffee break**

11:00 – 11:25 K.N. Vitanov, **N.K. Vitanov**, Exact Solutions to the Nonlinear Model Equation for Waves in Microtubules

11:25 – 11:50 **S. Harizanov**, D. Slavchev, N. Kosturski, Efficient a Priori Estimates on the BURA Error with Respect to the Right-Hand-Side

11:50 – 12:15 **V. Todorov**, V. Traneva, S. Tranev, Y. Dimitrov, Improved Monte Carlo Approaches to Pricing Multi-Dimensional European Options

12:15 – 14:00 **Lunch break**

14:00 – 14:25 **G. Chalakova**, M. Datcheva, R. Iankov, Application of Computational Strategies and Numerical Methods for Mechanical Characterization of Micro-Scale Volumes and Thin-Layered Materials

14:25 – 14:50 **M. Rashevski**, S. Slavtchev, M. Datcheva, R. Stoykov, M. Ganchev, D. Dzhonova, D. Kolev, Numerical Modeling of the Temperature Field of Seasonal Borehole Thermal Energy Storage – Case Study

14:50 – 15:15 **R. Iankov**, M. Datcheva, Numerical and Experimental Evaluation of Natural Poroelastic Acoustic Materials Using COMSOL

15:15 – 15:40 **T. Ostromsky**, M. Raykovska, C. Kabadzhova, N. Petkov, P. Georgiev, Towards Creating 3D Virtual Reality in a Wild Cave by Using LiDAR and Photogrammetric Technology with Dedicated Markers

15:40 – 16:00 **Coffee break**

- 16:00 – 16:25 V. Saykov, I. Dimitrov, R. Batalski, D. Tsvetanov, G. Doldurov, L. Doldurova, **T. Balabanov**, Linear Congruent Generator Imitation in Slot Machine Gambling Games
- 16:25 – 16:50 **J. Stanchov**, S. Fidanova, Optimizing the Outsourced Knitwear Manufacturing
- 16:50 – 17:15 **S. Gjorgiev**, E. Stoimenova, A. Gacovska–Barandovska, On Estimation Procedures of Odd Lindley–Half Logistic Model, its Properties and Applications
- 17:15 – 17:40 **D. Georgiev**, S. Apostolov, On a continuity of Solutions in Parametric Optimization Problems

SCIENTIFIC PROGRAM

Thursday, 11.12.2025

- 09:30 – 10:30 *Invited talk:* **M. Chwastyk**, Numerical Techniques for Studying Intrinsically Disordered Regions and Phase Behavior in Proteins
- 10:30 – 10:50 ***Coffee break***
- 10:50 – 11:15 **N. Ilieva**, From viral protein to antiviral lead
- 11:15 – 11:40 **F. Bouyghf**, M. El Ghomari, A. El Ichi, The Tubal Arnoldi Method for Tensor Function Approximation
- 11:40 – 12:05 **K. Vlachkova**, An Improved Algorithm for Scattered Data Interpolation using Quartic Triangular Bézier Surfaces
- 12:05 – 12:30 **N. Tchipev**, Minimal Colorings for Parallelization of Nearest-neighbour Operations on Cartesian Grids
- 12:30 – 14:00 ***Lunch break***
- 14:00 – 14:25 **A. Slavova**, V. Ignatov, Artificial Intelligence Algorithm for Studying Scalar Field Propagation in the Space-Time of Schwarzschild Black Hole
- 14:25 – 14:50 **B. Markov**, P. Koprinkova-Hristova, Continuous-Time Actor–Critic Control of the Mountain Car Benchmark Using Spiking Neural Networks in the NEST Simulator
- 14:50 – 15:15 **I. Lambov**, C. Lambov, Developing an AI-powered Tutor Using RAG
- 15:15 – 15:40 I. Ivanov, K. Shegunov, N. Shegunov, **P. Armyanov**, A Framework for Generation of Synthetic Samples Simulating RNA-seq Data from Steady State Distributions of Gene Regulatory Networks
- 15:40 – 16:00 ***Coffee break***
- 16:00 – 16:25 **V. Traneva**, S. Tranev, Three-Dimensional Circular IF Zero Point Method for Transportation Problems

- 16:25 – 16:50 V. Traneva, **S. Tranev**, V. Todorov, Elliptic Intuitionistic Fuzzy Quad Model for Project Workforce Productivity Assessment
- 16:50 – 17:15 **A. Kirilov**, E. Atanassov, S. Ivanovska, S. Yordanov, I. Georgiev, On the Effectiveness of Various Quantum-Computing-Based Algorithms for the MaxCut Problem
- 17:15 – 17:40 **I. Atanasov**, S. Fidanova, Dynamic Port Knocking – A Cryptographic Hash-Based Approach to Time-Dependent Access Control
- 17:40 – 18:00 **BGSIAM Annual Report**
- 18:00 **Poster session and reception**

List of Posters

1. I. Georgiev, P. Georgiev, D. Mihaylova, S. Trifonova, **G. Evtimov**, 2D Documentation from 3D Laser Scanning of Architectural Heritage – Ochusha Church
2. P. Georgiev, V. Petrova, **M. Raykovska**, N. Petkov, G. Vasilev, G. Evtimov, Annual 3D Digital Documentation of the “Kazlacha” Neolithic Circular Enclosures: Integrating Multispectral Drone Photogrammetry into a Long-Term Archaeological Monitoring Workflow
3. **V. Kolev**, N. Petkov, Key Challenges in Reconstructing Three-Dimensional Architecture from a Historical Photograph
4. **E. Lilkova**, P. Petkov, N. Ilieva, L. Litov, Designing targeted therapeutics: computational insights and cyclotide engineering
5. S. Margenov, **D. Slavchev**, On parallel scalability and energy efficiency in solving dense linear systems
6. **I. Nachev**, M. Raykovska, V. Kolev, N. Petkov, P. Osenova, Y. Konstantinova, D. Ivanov, A. Zlatkov, Presenting Research Project “Growing but not Getting Old: Semantic and 3D Technologies for the History of Streets and Buildings in Sofia”
7. M. Raykovska, I. Georgiev, N. Prahov, Z. Zhelyazkov, K. Velkovsky, P. Georgiev, **N. Petkov**, F. Bruno, M. Cozza, F. Buffone, S. Krinidis, A. Dimara, F. Figurella, M. Pieri, I. Boujmil, S. Paolacci, Integrating Blue Culture Technologies for the Protection, Monitoring, and Virtual Exploration of Underwater Cultural Heritage: The BCThubs Project
8. **Mir. Raykovska**, M. Tsvetkov, S. Trifonova, I. Georgiev, M. Kostadinova, M. Mourdjeva, A Quantitative Micro-CT Protocol for Voxel-Based Evaluation of Regenerative BoneVolume

SCIENTIFIC PROGRAM

Friday, 12.12.2025

09:30 – 10:30 *Invited talk:* **G. Vassilev**, Time Dependent Heston Model

10:30 – 10:50 ***Coffee break***

10:50 – 11:15 **G. Vasilev**, M. Raykovska, S. Harizanov, L. Pashova, N. Petkov, M. Borisov, P. Georgiev, T. Ostromski, K. Jones, G. Evtimov, S. Trifonova, I. Lirkov, Development and Cross-Platform Validation of a Workflow for Recognizing New Generation Universal Ground Control Coded Targets in Photogrammetric Software

11:15 – 11:40 **M. Borisov**, S. Harizanov, PGT-Toolkit: Advancing Photogrammetry Workflows with Novel Human-Readable Coded Targets (HRCTs)

11:40 – 12:05 **H. Chervenkov**, K. Slavov, Evaluation and Projection of Heating and Cooling Demand Period Parameters in Southeast Europe Using EURO-CORDEX

12:05 – 12:30 **I. Hristov**, R. Hristova, Searching for Periodic Orbits of the Planar Three-Body Problem and Investigating their Linear Stability

12:30 ***Closing***

The event will be held in hybrid mode:

On-site at the Joint Innovation Centre of the Bulgarian Academy of Sciences
Sofia 1113, [Acad. G. Bonchev Str. Bl. 26B](#)

and

Online at the ZOOM platform

Topic: BGSIAM'25

Join Zoom Meeting

[TBA](#)

Meeting ID: TBA

Passcode: bgsiam25