

The 32nd Industrial Conference on
Applied and Industrial Mathematics - CAIM 2025

September 18–21, 2025, Bucharest

Conference Programme

General Schedule

Thursday, September 18, 2025

14.30-19.30	Registration Library Building, POLITEHNICA Bucharest, Splaiul Independentei 313, Bucharest
-------------	---

Friday, September 19, 2025

08.00-09.00	Registration
09.00-10.00	Opening Ceremony <i>In Memoriam Adelina Georgescu - Founder of ROMAI</i> ROOM 2.1, Library Building, POLITEHNICA Bucharest
10.00-10.30	<i>Coffee Break</i>
10.30-11.50	Plenary Session
11.50-14.00	<i>Lunch</i>
14.00-15.20	Communications
15.20-15.40	<i>Coffee Break</i>
15.40-17.00	Communications
17.00-17.20	<i>Coffee Break</i>
17.20-19.00	Communications
20.00-22.00	Official Dinner

Saturday, September 20, 2025

09.30-10.50	Plenary Session
10.50-11.20	<i>Coffee Break</i>
11.20-12.20	Communications
12.20-14.30	<i>Lunch</i>
14.30-15.30	Communications
15.30-15.50	<i>Coffee Break</i>
15.50-16.00	ROOM 2.1 <i>Closing Ceremony</i>
16.00-	ROMAI General Assembly

Sunday, September 21, 2025

	Excursion: Curtea de Arges
	Departure of participants

Plenary Sessions
Friday, September 19

Room 2.1	
Chairperson: Stelian Ion	
10.30-	<i>Alexandru Morega</i>
11.10	Flux – Flow Constructal Couplings in the Electropermeabilization of the Cell Membrane
<hr/>	
11.10-	<i>Claudia Timofte</i>
11.50	Homogenization Results for Diffusion Problems in Composites with General Imperfect Contact Conditions

Saturday, September 20

Room 2.1	
Chairperson: Dumitru Cozma	
9.30-	<i>Mihai Victor Pricop</i>
10.10	Numerical Problems in Aerospace: Regression, Optimization, Control, ODE integrator
<hr/>	
10.10-	<i>Antonela Toma</i>
10.50	Mathematical Methods for the Study of Mechanical and Physical Phenomena

PDEs
Saturday, September 20

Room 3.2

Chairperson: Silviu-Dumitru Paval

11.20- *Three families of solutions of a nonlinear fourth order partial differential equation*
11.40 **Marian Muresan**

11.40- *Computer Vision System for Animal Detection, Tracking and Behavior Analysis on Roads using*
12.00 *Deep Learning and PDE Models*
Tudor Barbu, Silviu-Ioan Bejinariu, Costica Morosanu

12.00- *On the convergence of an approximation scheme of fractional steps type, associated to a nonlinear*
12.20 *second-order anisotropic reaction-diffusion SEIRD epidemic model*
Cătălin Stoicescu, Mitică Craus, Costică Moroşanu

ODEs
Friday, September 19

Room 2.2	
Chairperson: Aurelian Cernea	
14.00- 14.20	<i>The Lie algebra of the ternary differential system of Lyapunov-Darboux type $s^3(1,6)$</i> Natalia Neagu
14.20- 14.40	<i>Lie algebra of the differential operators of $GL(3, R)$ group, admitted by the differential system $s^3(1,4)$ and the functional bases of the invariants of this system</i> Natalia Neagu, Mihail Popa
14.40- 15.00	<i>Opial's Theorem for Scalar Remotely Almost Periodic Differential Equations</i> David Cheban
15.00- 15.20	<i>Quartic differential systems with a center-focus critical point, an affine invariant straight line, and the line at infinity of maximal multiplicity</i> Vacaraş Olga
Room 2.2	
Chairperson: David Cheban	
15.40- 16.00	<i>On a sequential fractional differential inclusion</i> Aurelian Cernea
16.00- 16.20	<i>A multiple degenerate Hopf-Hopf bifurcation. Application to a finance model</i> Carmen Rocşoreanu, Mihaela Sterpu
16.20- 16.40	<i>Malaria dynamics with bimodality of incubation period in hosts in a seasonal environment</i> Mahmoud A. Ibrahim
16.40- 17.00	<i>Off-label use of epidemic modelling: assessing academic influence among your peers</i> Paul Georgescu, Prashant Srivastava, Hong Zhang
Room 2.2	
Chairperson: Carmen Rocşoreanu	
17.20- 17.40	<i>On the homogenization of polynomial dynamical systems in the plane. The case of systems arising from excitable media</i> Adela Ionescu
17.40- 18.00	<i>On the Jacobi Stability of a 3D Chaotic System</i> Florian Munteanu
18.00- 18.20	<i>Dynamics and Bifurcations of Logistic Models Applied to Water Electrolysis for Hydrogen Production</i> Maria-Liliana Bucur, Răzvan-Nicholas Bucur
18.20- 18.40	<i>On a positive semigroup associated to a nonlinear evolution model in an ordered space II</i> Cecil P. Grünfeld

ODEs
Saturday, September 20

Room 2.2

Chairperson: Paul Georgescu

- 11.20- *The problem of the center for a cubic differential system with one invariant straight line and one*
11.40 *invariant cubic*
Dumitru Cozma

- 11.40- *On the Number of Center-Affine Invariant Elements for the Differential System $s^3(1,3)$*
12.00 **Lidia Muşinschi, Victor Pricop**

- 12.00- *On a Model of Fake News Spreading Through Social Media*
12.20 **Laurance Fakihi, Andrei Halanay**

Room 2.2

Chairperson: Paul Georgescu

- 14.30- *Quadratic polynomial differential systems possessing at least one invariant ellipse and at least one*
14.50 *parabola*
Bujac Cristina, Nicolae Vulpe

- 14.50- *Multiplicity of the line at infinity in degree-six planar polynomial systems*
15.10 **Vadim Repesço**

- 15.10- *Stabilization of the nonlinear Korteweg-de Vries equation with delay*
15.30 **Chahnaz Zakia Timimoun**

Mathematical Modeling
Friday, September 19

Room 3.1	
Chairperson: Stefan-Gicu Cruceanu	
14.00-	<i>Mathematical modeling of the dense avalanche onset</i>
14.20	Oana Lupaşcu-Stamate
14.20-	<i>Asymptotic and Numerical Approaches to Capillary Flow through Narrow Domains</i>
14.40	Elena Corina Cipu
14.40-	<i>Spatial Confinement of Different Types of Nanoparticles</i>
15.00	Yeşim Özkan, Şebnem Yildiz Yar
15.00-	<i>Solutions to linear ODE systems corresponding to first-order chemical reactions and related inverse</i>
15.20	<i>problems</i>
	Victor Martinez–Luaces
Room 3.1	
Chairperson: Oana Lupaşcu-Stamate	
15.40-	<i>Water flow and erosion on vegetated surfaces. Part I</i>
16.00	Dorin Marinescu
16.00-	<i>Water flow and erosion on vegetated surfaces. Part II</i>
16.20	Ştefan-Gicu Cruceanu
16.20-	<i>Sedimentation Processes</i>
16.40	Stelian Ion
16.40-	<i>Data analysis using low-cost air quality sensors for outdoor monitoring in urban areas</i>
17.00	Alin Pohoată, Daniel Dunea, Greg Lewis, Alina Popescu, Cristina Nicolescu
Room 3.1	
Chairperson: Alin Pohoată	
17.20-	<i>Control strategies for hydraulic servomechanisms of flight controls</i>
17.40	Ioan Ursu, Adrian Toader, Mihail Sebastian Culda, Daniela Enciu
17.40-	<i>Recursive Combat Models</i>
18.00	Bogdan Gheorghe Munteanu
18.00-	<i>Modeling and Optimization of MR Fluid-Based Oleo-Pneumatic Dampers for Aircraft Landing Gear</i>
18.20	Bedirhan Aydin, Bogac Bilgic
18.20-	<i>Closed-loop model identification of the identical elements with inertia based on the underdamped step</i>
18.40	<i>response</i>
	Irina Cojuhari, Vladimir Melnic, Cărbune Viorel, Alexei Martîniuc

Mathematical Modeling
Saturday, September 20

Room 3.1

Chairperson: Victor Martinez - Luaces

11.20- *Analytical Description for the Working of the Pulsatory Liposome*

11.40 Diana R. Radnef-Constantin, Dumitru Popescu, A. A. Mocanu, V. I. Niculescu

11.40- *Applicability of a Superlinear Problem with Odd Nonlinearity*

12.00 Irina Meghea, Alina Claudia Petrescu-Niță

12.00- *Modeling Thermochemical Phenomena by Using Saddle Point Results*

12.20 Irina Meghea, Cristina-Ștefania Stamin

Room 3.1

Chairperson: Victor Martinez - Luaces

14.30- *Effect of geometric shapes of nanoparticles on toxicity*

14.50 Yeşim Özkan, Deniz Altun Çolak

14.50- *On the Mathematics of Wave Phenomena*

15.10 Raluca-Mihaela Georgescu, Eugen Vasile

Analysis
Friday, September 19

Room 2.1	
Chairperson: Omer Gök	
14.00-	<i>Stieltjes differential problems with general conditions on the boundary</i>
14.20	Bianca Satco
14.20-	<i>Generalized hyperbolic-type metrics on non-Euclidean metric spaces</i>
14.40	Marcelina Mocanu
14.40-	<i>Set optimization via the embedding function</i>
15.00	Cristina Stamate
15.00-	<i>Recent studies on the fractional integral of the Gaussian hypergeometric functions</i>
15.20	Ancuța Maria Rus, Georgia Irina Oros
Room 2.1	
Chairperson: Bianca Satco	
15.40-	<i>Applications of the differential subordination theory in univalence results involving fractional and</i>
16.00	<i>convolution operators</i>
	Daniela Andrada Bardac-Vlada, Georgia Irina Oros
16.00-	<i>On collectively some sets of operators with delay</i>
16.20	Omer Gök
16.20-	<i>Riemann-Lebesgue integrability and applications in non-additive setting</i>
16.40	Anca Croitoru, Alina Iosif, Anna Rita Sambucini
16.40-	<i>Some properties on translated and reverse topologies</i>
17.00	Gabriela Apreutesei
Room 2.1	
Chairperson: Georgia Irina Oros	
17.20-	<i>Homogenization of the diffusion-convection equation</i>
17.40	Camelia Gheldiu, Mihaela Dumitrache
17.40-	<i>Certificate of positivity in Bernstein basis</i>
18.00	Fatima Boudaoud
18.00-	<i>On the conditioning of Vandermonde matrices with mock-Chebyshev nodes</i>
18.20	B. Ali Ibrahimoglu
18.20-	<i>On absolute matrix generalizations of some factor theorems</i>
18.40	Şebnem Yıldız Yar
18.40-	<i>A generalization theorem on quasi monotone sequences</i>
19.00	Şebnem Yıldız Yar

Analysis
Saturday, September 20

Room 2.1

Chairperson: Marcelian Mocanu

11.20- *Sub-supersolution method for quasilinear Dirichlet problems with unbounded coefficient and intrinsic*
11.40 *operator*

Elisabetta Tornatore

11.40- *Coupled systems driven by Leray-Lions type operators*

12.00 **Maria-Magdalena Boureanu**

12.00- *Third-order fuzzy differential subordination and superordination results*

12.20 **Georgia Irina Oros, Loredana Iambor**

Room 2.1

Chairperson: Marcelina Mocanu

14.30- *Deep learning methods and strategies for the enhancement of computed tomography image quality*

14.50 **Zsolt Adam Balogh**

14.50- *Estimations in Hölder spaces of some weak-singular integral operators*

15.10 **Vladislav Seichiuc, Eleonora Seichiuc**

15.10- *Hidden singularities in some nonlinear BVPs. Applications to lubrication approximation for thin*
15.30 *viscous films*

C. I. Gheorghiu

Probabilities&Optimization

Friday, September 19

Room 2.3	
Chairperson: Boris Hâncu	
14.00-	<i>Nash Equilibria for Stochastic Positional Games with Average and Discounted Payoffs</i>
14.20	Dmitrii Lozovanu
14.20-	<i>A greedy algorithm for 2-restricted optimal pebbling problem</i>
14.40	Abdorreza Panahi, Gyula Y. Katona
14.40-	<i>On the degree of concordance with the discrete uniform distribution of pseudorandom number generators in the most commonly used computer applications</i>
15.00	Valentina Astafi, Alexei Leahu
15.00-	<i>Maximin Modified Discrete Uniform Distributions as Lifetime Distributions in Networks Reliability</i>
15.20	Maria Rotaru, Alexei Leahu, Valentina Astafi
Room 2.3	
Chairperson: Dmitrii Lozovanu	
15.40-	<i>Resilience for environment and resources using optimization models</i>
16.00	Valeria Cîrlan
16.00-	<i>Infinite-horizon singular H control problem</i>
16.20	Oleg Kelis
16.20-	<i>When the coalescence of two graphs is a König-Egerváry graph?</i>
16.40	Eugen Mandrescu
16.40-	<i>One efficient method for solving the linear multi-criteria optimization model in integers</i>
17.00	Tkacenko Alexandra
Room 2.3	
Chairperson: Alexei Leahu	
17.20-	<i>New formulas for skewness and kurtosis based dynamic range for gray level and color images</i>
17.40	Vasile Pătraşcu
17.40-	<i>A Framework for Sharing Staff between Outbound and Inbound Airport Processes</i>
18.00	Sultan Alodhaibi
18.00-	<i>Total Alert Time of the Stochastic Systems with Multiple Final Sequences of States</i>
18.20	Alexandru Lazari
18.20-	<i>Solving extended informational matrix games in mixed strategies</i>
18.40	Hâncu Boris, Țurcanu Călin
18.40-	<i>Censored semi-Markov chains: modelling, estimation and smmR R package</i>
19.00	Vlad Stefan Barbu

Probabilities&Optimization
Saturday, September 20

Room 2.3

Chairperson: Vlad Stefan Barbu

11.20- *Robust Estimations and Tests for Moment Condition Models*

11.40 **Aida Toma**

11.40- *First-passage time distributions of a Brownian motion observed after a random delay*

12.00 **Mario Lefebvre, Ibrahim Touré**

12.00- *How common sense can be misleading in ruin theory*

12.20 **Gheorghiță Zbăganu, Raluca Vernic, A.M. Răducan**

Room 2.3

Chairperson: Vlad Stefan Barbu

14.30- *Projective Shape Analysis for Spatial Orientation in Virtual Environments*

14.50 **Mihaela Pricop-Jeckstadt**

14.50- *Decoding EU Innovation in 2024: A Data-Driven Perspective Using EIS Indicators*

15.10 **Aldina Correia, Marta Azevedo**

Algebra&Geometry
Friday, September 19

Room 3.2	
Chairperson: Parascovia Syrbu	
14.00-	<i>Ulrich bundles on surfaces in the projective space</i>
14.20	Cristian Anghel
<hr/>	
14.20-	<i>On Manifolds with Fundamental Group Generated by Hyperbolic Translations</i>
14.40	Florin Damian
<hr/>	
14.40-	<i>On the curvatures of the Kähler golden manifolds</i>
15.00	Cristina Elena Hreţcanu
<hr/>	
15.00-	<i>On Some Results from Classical Geometry Treated in Indefinite Metric</i>
15.20	Cătălin Şterbeţi
Room 3.2	
Chairperson: Florin Damian	
15.40-	<i>Some Open Problems in the Theory of Topological Quasigroups and Groupoids</i>
16.00	Liubomir Chiriac, Natalia Josu, Natalia Lupashco
<hr/>	
16.00-	<i>On the distribution of $\alpha p^2 + \beta$ modulo one and square-free numbers</i>
16.20	Tatiana Todorova
<hr/>	
16.20-	<i>On a prolongation of quasigroups using two transversals</i>
16.40	Elena Cuzneţov, Parascovia Syrbu
<hr/>	
16.40-	<i>On n-ary T-quasigroups with a prescribed maximum number of distinct parastrophes</i>
17.00	Rotari Tatiana, Syrbu Parascovia
Room 3.2	
Chairperson: Cătălin Sterbeti	
17.20-	<i>Geometrical Description of the Orbital Types in the Hydrogen Atom</i>
17.40	Diana R. Radnef-Constantin, Sorin Radnef
<hr/>	
17.40-	<i>Subcategories \mathcal{B}-semireflexive</i>
18.00	Dumitru Botnaru, Olga Cerbu
<hr/>	
18.00-	<i>About some commutative operations with classes of subcategories</i>
18.20	Dumitru Botnaru, Alina Turcanu
<hr/>	
18.20-	<i>On the Solutions of Diophantic Equations $7^x + 15^y = z^2$ and $13^x + 12^y = z^2$</i>
18.40	Boris Țarălungă
<hr/>	
18.40-	<i>On the spectrum of conharmonic curvature tensor of six-dimensional Kählerian submanifolds in Cayley algebra</i>
19.00	Mihail Banaru, Galia Banaru
<hr/>	

Computer Sciences
Saturday, September 20

Room 3.2

Chairperson: Tudor Barbu

14.30- *Bessarabian Idioms: Insights from AI-Powered Image generator and Language Models*

14.50 **Titchiev Inga, Caftanатов Olesea**

14.50- *Evaluating the Performance of SVD and KNN Algorithms in Recommender Systems*

15.10 **Andreea Milosteanu, Alexandra - Maria Borş, Simona Mihaela Bibic**

15.10- *New Mathematical Frontiers in Post-Quantum Cryptography: Research Challenges and Applications*

15.30 **Silviu-Dumitru Pavăl**