

# Advances in Applications of Analytical Methods for Solving Differential Equations (Symmetry 2024)

**22 — 26 January 2024**

## Conference Program

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*Accurate as of: January 21, 2024*

*Time Conversion Table*

Thai+3	Moscow+7	C.Europe+9	GMT+10	CST+16	Queensland, Vladivostok
Thai+1	Moscow+5	C.Europe+7	GMT+8	CST+14	China, Irkutsk, Perth
Thai	Moscow+4	C.Europe+6	GMT+7	CST+13	Thailand, Novosibirsk, Krasnoyarsk (KRAT)
Thai-1.5	Moscow+2.5	C.Europe+4.5	GMT+5.5	CST+11.5	India
Thai-2	Moscow+2	C.Europe+4	GMT+5	CST+11	Pakistan, Yekaterinburg, Ufa
Thai-3	Moscow+1	C.Europe+3	GMT+4	CST+10	Armenia, United Arab Emirates
Thai-4	Moscow	C.Europe+2	GMT+3	CST+9	Moscow, St.Petersburg, Saudi Arabia, Turkey (MSK)
Thai-5	Moscow-1	C.Europe+1	GMT+2	CST+8	Greece, Egypt, Moldova, South Africa
Thai-6	Moscow-2	C.Europe	GMT+1	CST+7	Austria, Czechia, France, Germany, Norway, Italy, Spain
Thai-12	Moscow-8	C.Europe-6	GMT-5	CST+1	New York, North Carolina, Massachusetts, Ontario (EST)
Thai-13	Moscow-9	C.Europe-7	GMT-6	CST	Alabama, Minnesota, Saskatchewan (CST)

**Monday, 22 January 2024**

Thai/KRAT	Moscow	Ctr.Europe	US CST	
12.50 – 13.00	8.50 – 9.00	6.50 – 7.00	23.50 – 0.00	Video Presentation on Academician Lev Ovsyannikov
13.00 – 13.25	9.00 – 9.25	7.00 – 7.25	0.00 – 0.25	<b>Opening Ceremony</b> <i>Chair: Chaiyasena, A. P.</i>
13.00 – 13.05	9.00 – 9.05	7.00 – 7.05	0.00 – 0.05	Opening Address by <b>Assoc. Prof. Dr. Anan Tongraar</b> Rector, Suranaree University of Technology
13.05 – 13.10	9.05 – 9.10	7.05 – 7.10	0.05 – 0.10	Opening Remarks by <b>Prof. Dr. Alexander I. Aptekarev</b> Co-director, Moscow Center of Fundamental and Applied Mathematics
13.10 – 13.15	9.10 – 9.15	7.10 – 7.15	0.10 – 0.15	Opening Remarks by <b>Prof. Dr. Sibusiso Moyo</b> Deputy Vice-Chancellor for Research, Innovation and Postgraduate Studies, Stellenbosch University
13.15 – 13.20	9.15 – 9.20	7.15 – 7.20	0.15 – 0.20	Opening Remarks by <b>Prof. Dr. Eugene Ermanyuk</b> Director, Lavrent'ev Institute of Hydrodynamics Russian Academy of Sciences (Siberian Branch)
13.20 – 13.25	9.20 – 9.25	7.20 – 7.25	0.20 – 0.25	Welcoming Remarks by <b>Prof. Dr. Santi Maensiri</b> Dean, Institute of Science Suranaree University of Technology
13.30 – 13.55	9.30 – 9.55	7.30 – 7.55	0.30 – 0.55	<i>Chair: Moyo S.</i> <b>Dorodnitsyn V. A.</b> [A01] Symmetries and conservation laws for differential equations, difference equations and second-order delay ODEs
13.55 – 14.20	9.55 – 10.20	7.55 – 8.20	0.55 – 1.20	<b>Kaptsov O. V.</b> [A02] Contact mappings of jet spaces
14.20 – 14.45	10.15 – 10.45	8.20 – 8.45	1.20 – 1.45	<b>Chesnokov A. A., Liapidevskii V. Yu.</b> [A03] Equilibrium model of a mixing layer in a stratified fluid: application to deep-sea currents and internal hydraulic jumps
Coffee Break				
15.00 – 15.30	11.00 – 11.30	9.00 – 9.30	2.00 – 2.30	<i>Chair: Rozanova, O. S.</i> <b>Sirisubtawee S.</b> <i>Invited Lecture</i> [A04] Exact solutions of non-linear partial differential equations
15.30 – 15.55	11.30 – 11.55	9.30 – 9.55	2.30 – 2.55	<b>Pukhnachev V. V.</b> [A05] Helical flows and their two-dimensional analogs
15.55 – 16.20	11.55 – 12.20	9.55 – 10.20	2.55 – 3.20	<b>Arora R., Shmarev S.</b> [A06] Existence and regularity for a class of double phase parabolic problems
16.20 – 16.45	12.20 – 12.45	10.20 – 10.45	3.20 – 3.45	<b>Goncharova O. N., Bekezhanova V. B., Lyulin Yu. V.</b> [A07] Theoretical and experimental study of the convective flows with evaporation based on a partially invariant solution
Lunch / Dinner Break				
18.00 – 18.25	14.00 – 14.25	12.00 – 12.25	5.00 – 5.25	<i>Chair: Goncharova O. N.</i> <b>Aksenov A. V.</b> [A08] Symmetries and equivalence of systems of shallow water equations over horizontal and inclined bottom
18.25 – 18.50	14.25 – 14.50	12.25 – 12.50	5.25 – 5.50	<b>Rozanova O. S.</b> [A09] Regularizing factors for the Euler-Poisson equations
18.50 – 19.15	14.50 – 15.15	12.50 – 13.15	5.50 – 6.15	<b>Gavrilyuk S. L.</b> [A10] Helicity in dispersive continuum mechanics
19.15 – 19.40	15.15 – 15.40	13.15 – 13.40	6.15 – 6.40	<b>Ruiz A., Muriel C.</b> [A11] $\lambda$ -symmetries for the Levinson-Smith equation
19.40 – 20.05	15.40 – 16.05	13.40 – 14.05	6.40 – 7.05	<b>Rizzo A.</b> [A12] Solutions to the wave equation with non-constant speed through the method of differential constraints
Coffee Break				
20.20 – 20.45	16.20 – 16.45	14.20 – 14.45	7.20 – 7.45	<i>Chair: Gavrilyuk S. L.</i> <b>Borovskikh A. V.</b> [A13] Lie group geometry in the group analysis of the one-dimensional kinetic equation
20.45 – 21.10	16.45 – 17.10	14.45 – 15.10	7.45 – 8.10	<b>Bilă, N.</b> [A14] Reduction operators for Monge-Ampère equations
21.10 – 21.35	17.10 – 17.35	15.10 – 15.35	8.10 – 8.35	<b>Anco S. C.</b> [A15] Exact solitary wave solutions for a coupled gKdV-NLS system
21.35 – 22.00	17.35 – 18.00	15.35 – 16.00	8.35 – 9.00	<b>Webb G. M., Nayak S., Hu, Q. and G. Li</b> [A16] Three dimensional magnetostatic atmospheres

Tuesday, 23 January 2024

Thai/KRAT	Moscow	Ctr.Europe	US CST	
				<i>Chair: Kaptsov O. V.</i>
12.40 – 13.05	8.40 – 9.05	6.40 – 7.05	23.40 – 0.05	<b>Seshadri R.</b> [A17] Lie group analysis, optimal system and invariant solutions Of Jeffery-Hamel flow equation
13.05 – 13.30	9.05 – 9.30	7.05 – 7.30	0.05 – 0.30	<b>Mironov V. L., Mironov S. V.</b> [A18] Sedeonic equations for fields with non-zero mass of quantum
13.30 – 13.55	9.30 – 9.55	7.30 – 7.55	0.30 – 0.55	<b>Pavlenko V. A.</b> [A19] Construction of solutions of analogs of the Schrodinger time equations
13.55 – 14.20	9.55 – 10.20	7.55 – 8.20	0.55 – 1.20	<b>Gubarev Yu. G., Luo J.</b> [A20] On the instability for one partial class of three-dimensional dynamic equilibrium states of the hydrogen Vlasov-Poisson plasma
14.20 – 14.45	10.20 – 10.45	8.20 – 8.45	1.20 – 1.45	<b>Gubarev Yu. G., Liu Y.</b> [A21] On the instability for one subclass of three-dimensional dynamic equilibrium states of the electron Vlasov-Poisson gas
Coffee Break				
				<i>Chair: Seshadri R.</i>
15.00 – 15.30	11.00 – 11.30	9.00 – 9.30	2.00 – 2.30	<b>Wiwatanapataphee B.</b> <i>Invited Lecture</i> [A22] Pioneering Applications of Fractional Differential Equations in Complex Systems
15.30 – 15.55	11.30 – 11.55	9.30 – 9.55	2.30 – 2.55	<b>Moshkin N. P.</b> [A23] Modeling of “mineral particle-bubble” dynamic in viscous fluid
15.55 – 16.20	11.55 – 12.20	9.55 – 10.20	2.55 – 3.20	<b>Radha R., Sharma V. D., Kumar Akshay</b> [A24] Riemann problem for rate-type materials with non-constant initial conditions
16.20 – 16.45	12.20 – 12.45	10.20 – 10.45	3.20 – 3.45	<b>Agnus S., Seshadri R.</b> [A25] Collision of shock waves in plasma medium: An analytical study
16.45 – 17.10	12.45 – 13.10	10.45 – 11.10	3.45 – 4.10	<b>Kumar R., Pandey K. S., Kumar Avneesh</b> [A26] Dynamical behaviour of coupled Burgers’ equations arising in fluid
Lunch / Dinner Break				
				<i>Chair: Borovskikh A. V.</i>
18.00 – 18.25	14.00 – 14.25	12.00 – 12.25	5.00 – 5.25	<b>Zhang Zh., Hu W., Guo Q., Stepanyants Y.</b> [A27] Solitary waves in the cylindrical Kadomtsev–Petviashvili equation
18.25 – 18.50	14.25 – 14.50	12.25 – 12.50	5.25 – 5.50	<b>Mukhina S. S.</b> [A28] Integration of Hunter-Saxton-Calogero equation by methods of contact geometry
18.50 – 19.15	14.50 – 15.15	12.50 – 13.15	5.50 – 6.15	<b>Zainab M., Aslam A., Safdar M.</b> [A29] Equivalence transformations and solvable forms of nonlinear Schrödinger equations with variable coefficients: an application of Lie’s invariance criterion
19.15 – 19.40	15.15 – 15.40	13.15 – 13.40	6.15 – 6.40	<b>Morozov O. I.</b> [A30] Extensions of Lie algebras and integrability of some equations of fluid dynamics and magnetohydrodynamics
19.40 – 20.05	15.40 – 16.05	13.40 – 14.05	6.40 – 7.05	<b>Paliathanasis A.</b> [A31] A new geometric approach on the linearization of second-order ODEs
Coffee Break				
				<i>Chair: Dorodnitsyn V. A.</i>
20.20 – 20.45	16.20 – 16.45	14.20 – 14.45	7.20 – 7.45	<b>Bernatska J.</b> [A32] Reality conditions for the KdV equation and quasi-periodic solutions in finite phase spaces
20.45 – 21.10	16.45 – 17.10	14.45 – 15.10	7.45 – 8.10	<b>Ibragimov, R.</b> [A33] Invariant solutions of nonlinear mathematical modeling of natural phenomena
21.10 – 21.35	17.10 – 17.35	15.10 – 15.35	8.10 – 8.35	<b>Olver P. J.</b> [A34] Differential Invariant Algebras
21.35 – 22.00	17.35 – 18.00	15.35 – 16.00	8.35 – 9.00	<b>Ahmadpoortorkamani M., Cheviakov A.</b> [A35] Symmetries and exact solutions of a non-standard diffusion SIR models

**Wednesday, 24 January 2024**

Thai/KRAT	Moscow	Ctr.Europe	US CST	
				<i>Chair: Qadir A.</i>
12.40 – 13.05	8.40 – 9.05	6.40 – 7.05	23.40 – 0.05	<b>Grigoriev Yu. N., Meleshko S. V.</b> [A36] Equivalence group and invariant solutions of the inhomogeneous Boltzmann equations for a binary mixture of gases
13.05 – 13.30	9.05 – 9.30	7.05 – 7.30	0.05 – 0.30	<b>Tokareva M. A., Papin A. A.</b> [A37] On the global solvability of one-dimensional boundary value problems for the equations of fluid filtration in a poroelastic medium
13.30 – 13.55	9.30 – 9.55	7.30 – 7.55	0.30 – 0.55	<b>Alekseev G. V., Soboleva O. V.</b> [A38] Nonlinear Boussinesq type equations under mixed boundary conditions for temperature
13.55 – 14.20	9.55 – 10.20	7.55 – 8.20	0.55 – 1.20	<b>Sinuvasan R., Halder A. K., Seshadri R., Paliathanasis A., Leach P. G. L.</b> [A39] Solutions of magnetohydrodynamics equation through symmetries
14.20 – 14.45	10.20 – 10.45	8.20 – 8.45	1.20 – 1.45	<b>Korobkov M. V.</b> [A40] On classical Leray problems for steady-state Navier–Stokes system
Coffee Break				
				<i>Chair: Tantawy M.</i>
15.00 – 15.30	11.00 – 11.30	9.00 – 9.30	2.00 – 2.30	<b>Qadir A., Adnan A., Dutt H. M.</b> [A41] Some consequences of the connection between singularity analysis and symmetry analysis
15.30 – 15.55	11.30 – 11.55	9.30 – 9.55	2.30 – 2.55	<b>Qadir A., Jamshaid A.</b> [A42] A second order ordinary differential equation for the Riemann zeta function
15.55 – 16.20	11.55 – 12.20	9.55 – 10.20	2.55 – 3.20	<b>Raza A.</b> [A43] Optimal system and classification of invariant solutions of a nonlinear class of wave equations and their conservation laws
16.20 – 16.45	12.20 – 12.45	10.20 – 10.45	3.20 – 3.45	<b>Seesanea A.</b> [A44] Homogenization of diffusion processes with singular drifts and potentials via unfolding method
16.45 – 17.10	12.45 – 13.10	10.45 – 11.10	3.45 – 4.10	<b>Shwe T. T., Seesanea A.</b> [A45] Dirichlet problems involving measures and several sublinear terms: fixed point theory approach
Lunch / Dinner Break				
				<i>Chair: Seesanea A.</i>
18.00 – 18.25	14.00 – 14.25	12.00 – 12.25	5.00 – 5.25	<b>Monishwar Reddy V., Halder A. K., Munjam S. R.</b> [A46] Review of solution procedures of certain ecological models
18.25 – 18.50	14.25 – 14.50	12.25 – 12.50	5.25 – 5.50	<b>Pinar Izgi Z.</b> [A47] Analytical Study of Nerve Axons
18.50 – 19.15	14.50 – 15.15	12.50 – 13.15	5.50 – 6.15	<b>Pan-Collantes A. J., Álvarez-García J. A.</b> [A48] Surfaces associated with first-order ODEs
19.15 – 19.40	15.15 – 15.40	13.15 – 13.40	6.15 – 6.40	<b>Tantawy M.</b> [A49] Exact solutions of nonlinear partial differential equations. Traveling wave propagating in Murnaghan’s model for an isotropic elastic medium and in rigid thermal conductors
19.40 – 20.05	15.40 – 16.05	13.40 – 14.05	6.40 – 7.05	<b>Kamchatnov A. M.</b> [A50] Theory of asymptotic solitons for non-integrable equations
20.05 – 20.30	16.05 – 16.30	14.05 – 14.30	7.05 – 7.30	<b>Bogdanov A. N., Kondratyev, I. M</b> [A51] Toward the existence of nonlinear solitary waves (solitons)
Coffee Break				
				<i>Chair: Anco S. C.</i>
21.00 – 22.00	17.00 – 18.00	15.00 – 16.00	8.00 – 9.00	<b>Roundtable</b> - Discussion on open problems etc.

**Thursday, 25 January 2024**

Thai/KRAT	Moscow	Ctr.Europe	US CST	
				<i>Chair: Aksenov A. V.</i>
12.40 – 13.05	8.40 – 9.05	6.40 – 7.05	23.40 – 0.05	<b>Chirkunov Yu. A., Chirkunov M. Yu.</b> [A52] Submodels of 2-d model of porous medium with an external non-stationary source or absorption
13.05 – 13.30	9.05 – 9.30	7.05 – 7.30	0.05 – 0.30	<b>Chirkunov Yu. A., Chirkunov M. Yu.</b> [A53] Submodels of the attenuation of ultrasonic beams in 3-d cubic nonlinear medium in the absence of dissipations
13.30 – 13.55	9.30 – 9.55	7.30 – 7.55	0.30 – 0.55	<b>Kaptsov E. I.</b> [A54] On group foliations, invariant solutions, and conservation laws of the geopotential forecast equation
13.55 – 14.20	9.55 – 10.20	7.55 – 8.20	0.55 – 1.20	<b>Talyshev A. A.</b> [A55] On the hierarchy of differential-invariant solutions
14.20 – 14.45	10.20 – 10.45	8.20 – 8.45	1.20 – 1.45	<b>Shapeev V. P.</b> [A56] Solution of a boundary value problem to ordinary differential equations by the least squares collocation method and multipoint Padé approximation
Coffee Break				
				<i>Chair: Kaptsov E. I.</i>
15.05 – 15.30	11.05 – 11.30	9.05 – 9.30	2.05 – 2.30	<b>Muriel C., Pan-Collantes A. J., Ruiz, A.</b> [A57] Integration methods based on solvable structures and $C^\infty$ -structures
15.30 – 15.55	11.30 – 11.55	9.30 – 9.55	2.30 – 2.55	<b>Evtikhov D. O.</b> [A58] On the numerical and analytical solution of the Cauchy problem for ideal plasticity
15.55 – 16.20	11.55 – 12.20	9.55 – 10.20	2.55 – 3.20	<b>Yu J. C., Feng Y. Q.</b> [A59] Lie symmetries, conservation laws, optimal system and exact solutions of (2+1)-dimensional time fractional parabolic equation
16.20 – 16.45	12.20 – 12.45	10.20 – 10.45	3.20 – 3.45	<b>Senashov S. I., Gomonova O. V., Savostyanova I. L.</b> [A60] Using conservation laws to solving the boundary value problems of deformable solid mechanics
16.45 – 17.10	12.45 – 13.10	10.45 – 11.10	3.45 – 4.10	<b>Tkachev D. L., Biberdorf E. A.</b> [A61] Spectrum of a problem about the flow of a polymeric viscoelastic fluid in a cylindrical channel (Vinogradov-Pokrovski model)
Lunch / Dinner Break				
				<i>Chair: Halder A. K.</i>
18.00 – 18.25	14.00 – 14.25	12.00 – 12.25	5.00 – 5.25	<b>Kudryashov N. A., Lavrova S. F., Nifontov D. R.</b> [A62] Bifurcations of phase portraits, exact solutions and conservation laws of the generalized Gerdjikov - Ivanov model
18.25 – 18.50	14.25 – 14.50	12.25 – 12.50	5.25 – 5.50	<b>Kovtunenkov V. A.</b> [A63] Poroelectric problem of a non-penetrating crack with cohesive contact for fluid-driven fracture
18.50 – 19.15	14.50 – 15.15	12.50 – 13.15	5.50 – 6.15	<b>Dryuma V.</b> [A64] Multidimensional Riemannian metrics and their application for the integration of a system of Navier-Stokes equations
19.15 – 19.40	15.15 – 15.40	13.15 – 13.40	6.15 – 6.40	<b>Öncü H., Gün Polat G., Babaei N.A.</b> [A65] First Integrals and Analytical Solutions of Some Tumor Models
19.40 – 20.05	15.40 – 16.05	13.40 – 14.05	6.40 – 7.05	<b>Tao S.</b> [A66] Finite-dimensional dynamics of evolutionary systems with several spatial variables
20.05 – 20.30	16.05 – 16.30	14.05 – 14.30	7.05 – 7.30	<b>Campoamor-Stursberg R.</b> [A67] Integration by quadratures of Lie-Hamilton systems

**Friday, 26 January 2024**

Thai/KRAT	Moscow	Ctr.Europe	US CST	
				<i>Chair: Chesnokov A. A.</i>
12.40 – 13.05	8.40 – 9.05	6.40 – 7.05	23.40 – 0.05	<b>Meleshko S. V., Stepanova I. V.</b> [A68] Group classification of heat and mass transfer equations
13.05 – 13.30	9.05 – 9.30	7.05 – 7.30	0.05 – 0.30	<b>Golykh R. N.</b> [A69] Application of a fractional derivative to simulate the evolution of the interfacial surface in a bubbling bubble under the influence of ultrasonic vibrations in a liquid
13.30 – 13.55	9.30 – 9.55	7.30 – 7.55	0.30 – 0.55	<b>Melnikov I. E., Pelinovsky E. N.</b> [A70] Non-reflective configurations of bottom profiles
13.55 – 14.20	9.55 – 10.20	7.55 – 8.20	0.55 – 1.20	<b>Munjam S. R.</b> [A71] Analytical solution of system of nonlinear fractional order van der Pol equations
14.20 – 14.45	10.20 – 10.45	8.20 – 8.45	1.20 – 1.45	<b>Halder A. K., Seshadri R., Paliathanasis A., Leach P.G.L.</b> [A72] Symmetries of (1+2)-dimensional Jaulent-Miodek hierarchy
Coffee Break				
				<i>Chair: Golykh R. N.</i>
15.05 – 15.30	11.05 – 11.30	9.05 – 9.30	2.05 – 2.30	<b>Rogalev A. N.</b> [A73] Stability of two-sided estimates of differential equations sets solutions with disturbances
15.30 – 15.55	11.30 – 11.55	9.30 – 9.55	2.30 – 2.55	<b>Glubokikh A. V., Golubyatnikov V. P.</b> [A74] Hidden attractors in symmetric gene networks models
15.55 – 16.20	11.55 – 12.20	9.55 – 10.20	2.55 – 3.20	<b>Agapov S. V., Shubin V. V.</b> [A75] Integrable geodesic flows with rational first integrals
16.20 – 16.45	12.20 – 12.45	10.20 – 10.45	3.20 – 3.45	<b>Narmanov A. Ya., Ergashova Sh. R.</b> [A76] Some properties of completely integrable Hamiltonian systems
Coffee Break				
				<i>Chair: Meleshko S. V., Schulz E.</i>
17.00 – 17.25	13.00 – 13.25	11.00 – 11.25	4.00 – 4.25	<b>Suchkova D. A., Nasyrov F. S.</b> [A77] On the Generalized Korteweg-de Vries equations with time-dependent coefficients
17.25 – 17.50	13.25 – 13.50	11.25 – 11.50	4.25 – 4.50	<b>Grebenev V. N., Medvedev S. B.</b> [A78] Symmetry transformations of the vortex field statistics in optical turbulence
17.50 – 18.15	13.50 – 14.15	11.50 – 12.15	4.50 – 5.15	<b>Moyo S., Aibinu M. O.</b> [A79] A novel approximate analytical approach for the delay differential equations
18.15 – 18.40	14.15 – 14.40	12.15 – 12.40	5.15 – 5.40	<b>Chittam C., Meleshko S. V.</b> [A80] General solution of the Maxwell equations to the stagnation point problem with cylindrical symmetry
18.40 – 18.45	14.40 – 14.45	12.40 – 12.45	5.40 – 5.45	<b>Meleshko, S. V.</b> Closing Remarks