

5<sup>th</sup> International Conference on Integrable Systems and  
Nonlinear Dynamics &  
Scientific School “Integrable and Nonlinear days”  
7–11.10.2024

**Conference Programme**

**All conference talks are scheduled in Moscow Time (GMT+3)**

Duration of plenary talks: 30', duration of section talks: 20'.

**Monday, 07.10.2024**

	<b>Morning session: Plenary talks (combined with lectures for the Scientific School)</b>
<b>09:00–09:45</b>	Conference Registration
<b>09:45–10:00</b>	IT company “Tensor”, Rector of the YarSU.
<b>10:00–10:30</b>	Victor Buchstaber “Hyperelliptic sigma functions and the sequence of the Novikov’s $g$ -equations”
<b>10:30–11:00</b>	Sergei Kashchenko “Dynamics of full-coupled chains of a great number of oscillators”
<b>11:00–11:30</b>	<b>Coffee break</b>
<b>11:30–12:00</b>	Sergey Bolotin “A nonstandard billiard problem”
<b>12:00–12:30</b>	Vladimir Sokolov “Decomposition of Lie algebra into sum of two subalgebras and Integrability”
<b>12:30–13:00</b>	Dmitry Treschev, “TBA”
<b>13:00–14:30</b>	<b>Lunch break</b>

	<b>Afternoon session: Plenary talks</b>
<b>14:30–15:00</b>	Dmitry Millionshchikov “On infinite towers of symplectic and contact nilmanifolds”
<b>15:00–15:30</b>	Sergei Sokolov “TBA”
<b>15:30–16:00</b>	Andrei Pogrebkov “Is classical integrable system a bit quantum?”
<b>16:00–16:30</b>	<b>Coffee break</b>

	<b>Section talks “Integrable systems and nonlinear dynamics”</b>
<b>16:30–16:50</b>	Elena Bunkova “Polynomial dynamical systems corresponding to differentiations of hyperelliptic functions and Korteweg–de Vries hierarchy”
<b>16:50–17:10</b>	Vladimir Klinshov “Dynamics of neural networks with adaptive delays”
<b>17:10–17:30</b>	Anton Kazakov “Electrical networks and the totally positive symplectic matrices”
<b>17:30–17:50</b>	Boris Bardin “On transcendental cases in the problem of orbital stability of periodic motions of a heavy rigid body”

Tuesday, 08.10.2024

	<b>Morning session: Plenary talks (combined with lectures for the Scientific School)</b>
<b>09:00–09:30</b>	Valery Kozlov “Generalised Dirac Hamiltonian Dynamics”
<b>09:30–10:00</b>	Sergei Dobrokhotov “Degenerate Billiards with Semi-rigid Walls and Nonlinear Shore Waves”
<b>10:00–10:30</b>	Oleg Sheinman “On reversion of the Abel–Prym map and its applications to integrable systems”
<b>10:30–11:00</b>	Olga Pochinka “TBA”
<b>11:00–11:30</b>	<b>Coffee break</b>
<b>11:30–12:00</b>	Valerii Dryuma “Multidimensional Riemannian metrics for integrating the Navier–Stokes equations” ( <b>online</b> )
<b>12:00–12:30</b>	Sergey Glyzin “Periodic regimes of multicluster synchronization in coupled networks of nonlinear oscillators with integral”
<b>12:30–13:00</b>	Igor Korepanov “Self-similarity and combinatorial correlations in three-dimensional statistical physics models” ( <b>online</b> )
<b>13:00–14:30</b>	<b>Lunch break</b>

	<b>Poster session</b>
<b>14:30–15:30</b>	<p>Vladislav Alexeev “Two-cluster Synchronisation in a Fully Coupled Network of Mackey–Glass Generators” <b>(e-poster)</b></p> <p>Raul Argun, “Mathematical Modeling of a Moving Fire Front in Spreading Forest Fires” <b>(e-poster)</b></p> <p>Vladimir Goryunov “On Lyapunov dimension of diffusion chaos in one ecological model”</p> <p>X. Fisenko “Bäcklund transformations for a noncommutative Adler–Yamilov system” <b>(e-poster)</b></p> <p>Leonid Ivanovsky “Dynamics of one Cauchy problem with impulses”</p> <p>Vadim Kolesov “Local 4-gon equation and pentagon maps” <b>(e-poster)</b></p> <p>Dmitry Kosterin “Families of step solutions of quasinormal forms for a system of integro-differential equations”</p> <p>Ilya Luzin “Stable solutions of a nonlinear system of two equations with delay”</p> <p>Igor Maslenikov “Investigation of local dynamics in the vicinity of the equilibrium state of a logistic equation with non-classical boundary conditions”</p> <p>Ivan Maslenikov “The behavior of solutions to a second-order differential equation with a delayed impulse feedback”</p> <p>Evgenia Morozova, “Dynamics of delay differential equation with simple behavior at infinity”</p> <p>Anastasia Nikitina “Noncommutative Yang–Baxter maps of KdV and NLS type”</p> <p>Maksim Pogrebnyak “Parameters estimation in the traffic flow model”</p> <p>Margarita Preobrazhenskaia “An unstable cycle with a ‘short’ period in one relay differential equation with delay” <b>(e-poster)</b></p> <p>Liudmila Romakina “On the Cardan motion in an extended hyperbolic plane”</p> <p>Ivan Teplyashin, “Periodic solutions of a single differential equation with three delays from neurodynamics” <b>(e-poster)</b></p> <p>A. Tovsultanov, “Elliptic functional differential equations with affine transformations” <b>(e-poster)</b></p> <p>Vladimir Volkov “Periodic internal transition layers in the reaction-diffusion problem in the case of a weak reaction discontinuity” <b>(e-poster)</b></p> <p>Vera Vorontsova, “Resurgent neuron mode”</p> <p>Julia Yakubiv “Synchronization of slowly oscillating solutions in a system of coupled equations with neutral delay”</p>

	<b>Afternoon session: Section talks</b>
<b>15:40–16:00</b>	Mikhail Kolesnikov “Negative flows”
<b>16:00–16:30</b>	<b>Coffee break</b>
<b>16:30–16:50</b>	Vladislav Kibkalo “Topological modeling of singularities with saddle and focal components via billiards”
<b>16:50–17:10</b>	Sergei Agapov “Polynomial integrals of geodesic flows and the generalized hodograph method” ( <b>online</b> )
<b>17:10–17:30</b>	Andrei Bondarev “Solvability Theorems for the Linear Non-Local Problem for Abstract Parabolic Equations”
<b>17:30–17:50</b>	Svetlana Mukhina “Hyperbolic systems: special transformations and exact solutions”
<b>17:50–18:10</b>	Maria Onufrienko “Corank-1 singularities of typical integrable systems with 3 degrees of freedom” ( <b>online</b> )
<b>18:10–18:30</b>	Dmitry Serow “Geometric Anatomy of the Nonwandering Continuum Possessing Wada Property” ( <b>online</b> )
<b>18:30–18:50</b>	Sergey Titarenko “Billiard dynamics as a source of Stone’s logic generalization”

### Wednesday, 09.10.2024

	<b>Morning session: Plenary talks (combined with lectures for the Scientific School)</b>
<b>09:00–09:30</b>	Wen-Xiu Ma “Nonlocality, Integrability, and Solitons” ( <b>online</b> )
<b>09:30–10:00</b>	Tassos Bountis “Damping effect of Caputo fractional time derivatives in nonlinear wave equations” ( <b>online</b> )
<b>10:00–10:30</b>	Ch. Skokos, “Energy transport and chaos in a one-dimensional disordered nonlinear stub lattice” ( <b>online</b> )
<b>10:30–11:00</b>	V. Caudrelier “Lagrangian multiforms: a variational framework for integrable hierarchies” ( <b>online</b> )
<b>11:00–11:30</b>	<b>Coffee break</b>
<b>11:30–12:00</b>	Frank Nijhoff “The elliptic lattice KdV system revisited, and associated elliptic discrete integrable systems” ( <b>online</b> )
<b>12:00–12:30</b>	Dmitry Talalaev “RE-algebras, quasi-determinants and the full Toda system”
<b>12:30–13:00</b>	Andy Hone “New cluster algebras from old: deformations of finite type” ( <b>online</b> )
<b>13:00–14:30</b>	<b>Lunch break</b>

	<b>Afternoon session: Section talks</b>
14:40–15:00	Maria Matushko “Supersymmetric solutions of the associative Yang–Baxter equation”
15:00–15:20	Sergey Gonchenko “Homoclinic resonance and elliptic points”
15:20–15:40	Nataliya Levashova “Using parabolic equations with modular type nonlinearity in applications”
15:40–16:00	Egor Nikulin, “Weak inner layer in the reaction-diffusion-advection problem in the case of reaction discontinuity”
16:00–16:30	<b>Coffee break</b>
16:30–16:50	Andrei Orlov “Existence and stability of stationary solutions with boundary layer in a two-dimensional system of fast and slow reaction-diffusion-advection equations with KPZ nonlinearities”

	<b>Student section</b>
16:50–17:10	Danila Bain “Linearization of delay differential equations with delayed discontinuities”
17:10–17:30	Denis Golitsyn “Hyperbolic stable polynomials and total positivity”
17:30–17:50	Alina Kutuzova “Periodic solutions of the Toda relay chain”
17:50–18:10	Evgeny Chistov “Constructions of new nonlinear integrable differential-difference equations and Miura-type transformations”
18:10–18:30	Anastasia Shubert “Inertia tensor of a rigid body in pseudo-Euclidean space”

19:00	<b>Buffet reception</b>
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Thursday, 10.10.2024

	<b>Morning session: Plenary talks (combined with lectures for the Scientific School)</b>
09:30–10:00	Petr Grinevich “Multisoliton KP-2 solutions and degenerate M-curves”
10:00–10:30	Maxim Pavlov “Bi-Hamiltonian Structures of Dubrovin–Novikov type”
10:30–11:00	Aigul Khakimova “Reduction of the Laplace sequence and sine-Gordon type equations”
11:00–11:30	<b>Coffee break</b>

	<b>Morning session: Section talks</b>
11:30–11:50	Pavlos Kassotakis “Quadrirational pentagon maps” ( <b>online</b> )
11:50–12:10	Sergei Igonin “Discrete Miura-type transformations, gauge simplifications, and group actions associated with Lax representations for differential-difference equations”
12:10–12:30	Alexandra Kashchenko “Traveling waves in the ring of coupled oscillators with delayed feedback”
13:00–14:30	<b>Lunch break</b>

	<b>Afternoon session: Section talks</b>
<b>14:30–14:50</b>	Nadezhda Timofeeva “On locally-free-compactified moduli of vector bundles on a higher-dimensional variety”
<b>14:50–15:10</b>	Evgeny Kubyshkin “Investigation of self-oscillating solutions of a mathematical model of dynamics of a rigid disk on a flexible shaft”
<b>15:10–15:30</b>	Anatoly Kullikov “Existence, stability and number of invariant manifolds of a periodic boundary value problem for nonlinear functional partial differential equation”
<b>15:30–15:50</b>	Ilya Sysoev “Network model of limbic seizure propagation”
<b>16:00–16:30</b>	<b>Coffee break</b>
<b>16:30–16:50</b>	Vyacheslav Sedykh “On singularities of caustics in spaces of dimension $n \leq 5$ ” <b>(online)</b>
<b>16:50–17:10</b>	Aleksandr Smirnov “New types of solutions to the vector derivative NLS equation”
<b>17:10–17:30</b>	Victoria Vedyushkina “Liouville foliation of integrable billiard books at the focal level” <b>(online)</b>

Friday, 11.10.2024

	<b>Morning session: Section talks (combined with lectures for the Scientific School)</b>
<b>09:00–09:20</b>	Anatoly Kamchatnov “Asymptotic integrability” <b>(online)</b>
<b>09:20–09:40</b>	Marcelo Flamarion “Nonlinear interactions of solitons and external forces” <b>(online)</b>
<b>09:40–10:00</b>	Henok Moges “Quantification and Comparison of Magnetic and Kinetic Chaos in Toroidal Plasmas”
<b>10:00–10:20</b>	Irina Andreeva “Notes on the Approach, Methods and Results of a Qualitative Research for Some Families of Polynomial Dynamic Systems”
<b>10:20–10:50</b>	Alexandr Orlov “Matrix models and universal characters”
<b>11:00–11:30</b>	<b>Coffee break</b>
<b>11:30–11:50</b>	Norbert Hounkonnou “Noncommutative $n$ -torus in a magnetic field: volume invariance, scalar curvature and quantum stochastic equation” <b>(online)</b>
<b>11:50–12:10</b>	Michail Chirkov “Noncommutative solutions of local tetrahedron equation”
<b>12:10–12:30</b>	Georgy Sharygin “On the symmetries of the full symmetric Toda system”
<b>13:00–14:00</b>	<b>Lunch break</b>
<b>14:00</b>	<b>Excursion</b>