VLADIKAVKAZ SCIENTIFIC CENTRE OF THE RUSSIAN ACADEMY OF SCIENCES
(North-Caucasus Center for Mathematical Research*, Southern Mathematical Institute)

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PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA NAMED AFTER PATRICE LUMUMBA
(S.M. Nikol'skii Mathematical Institute)

WORKSHOP ON OPERATOR THEORY IN FUNCTION SPACES AND THEIR APPLICATIONS, DEDICATED TO THE ANNIVERSARY OF PROFESSOR VIKTOR I. BURENKOV

(28-30 SEPTEMBER 2026, ONLINE)

PROGRAM

The schedule is in Moscow Time (M). Please adjust for your local time zone by the formula: M ± n:
Azerbaijan (M + 1); Armenia (M + 1); Georgia (M + 1); Italy (M − 1); Kazakhstan (M + 2); Japan (M + 6).

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28 September 2026 / Monday Moderator: Vladimir D. Stepanov			
Time (M)	**Speaker**	**Title**	**Abstract**
14:00-14:15	**Opening**		
14:20-15:00	**Yoshihiro Sawano** (Chuo University; Japan)	**Sobolev–Morrey Spaces and Divergence-Form Degenerate Second-Order Elliptic Equations on Domains with Higher Co-Dimensional Boundaries**	We study weighted homogeneous Sobolev–Morrey spaces on domains in R^n with higher-co-dimensional boundaries. Precisely, we systematically establish a real-variable theory for these spaces, including completeness, embedding theorems, Riesz potential characterizations, continuity, trace and extension theorems, and complex interpolation. Applying the boundedness of the trace and extension operators, we obtain sharp weighted a priori estimates for solutions to the Dirichlet problem for divergence-form degenerate second-order elliptic equations on such domains in weighted Lebesgue spaces.
15:05-15:45	**Oleg V. Besov** (Steklov Mathematical Institute of the RAS; Russia)	**Estimates for the Entropy Numbers of the Embedding of Anisotropic Sobolev Spaces on a Domain**	For anisotropic Sobolev spaces defined on domains (of some class) in Euclidean n-space, we establish upper bounds for the entropy numbers of the Sobolev embedding operator.
15:50-16:30	**Pier Domenico Lamberti** (University of Padova; Italy)	**Spectral Stability of Maxwell's Equations under Shape Perturbations**	We study the spectral problem for stationary Maxwell's equations in a cavity with homogeneous boundary conditions, focusing on the dependence of the eigenvalues on perturbations of the cavity's shape. First, for families of diffeomorphic domains, we establish the analytic dependence of the eigenvalues on the domain perturbation, recover Hirakawa's formula for the shape derivatives, and derive a Rellich-Pohozaev-type identity. Second, we consider families of domains with oscillatory boundaries within the framework of Burenkov's atlas classes, providing a setting for studying spectral stability beyond smooth diffeomorphic perturbations. A key ingredient in this analysis is the validity of suitable uniform Gaffney inequalities for the corresponding family of domains.
16:35-17:15	**Vagif S. Guliyev** **(**Institute of Applied Mathematics; Azerbaijan)	**Generalized Weighted Sobolev–Morrey Estimates for Hypoelliptic Operators on Homogeneous Groups**	We derive generalized weighted Sobolev–Morrey type estimates for hypoelliptic operators. This is achieved by establishing the boundedness of a wide class of sublinear operators (generated by Calderón–Zygmund operators and fractional integration operators) in generalized weighted Morrey spaces, as well as by proving interpolation results for generalized weighted Sobolev–Morrey spaces on a homogeneous group.
17:20	**Discussion**		

29 September 2026 / Tuesday Moderator: Anatoly G. Kusraev			
Time (M)	**Speaker**	**Title**	**Abstract**
15:00-15:40	**Vladimir D. Stepanov** (Computing Center of the Far Eastern Branch of the RAS; Russia)	**Associative Function Spaces: Sharp Description and Applications**	The talk provides a brief overview of the results on the problem of characterization of spaces associated with given functional classes. It is shown that the situation is generally different for ideal and non-ideal structures. In the latter case, the concept of an associated space is bifurcated. The paper provides a complete description of the functional spaces associated with first-order Sobolev weight spaces on the real axis, Cesaro spaces, Copson spaces and others.
15:45-16:25	**Erlan D. Nursultanov** (Kazakhstan Branch of Lomonosov Moscow State University; Kazakhstan)	**Interpolation of Linear and Nonlinear Operators**	The problem of interpolation and extrapolation of integral operators will be considered, along with the study of reiteration issues for multiparameter interpolation. Interpolation theorems for spaces with mixed metrics, as well as some corollaries, will be presented.
16:30-17:10	**Hayk G. Ghazaryan** (Russian-Armenian University, Armenia)	**On the comparison of generalized homogeneous differential operators (polynomials)**	Results concerning the comparison of generalized homogeneous polynomials will be presented. In particular, for two generalized homogeneous polynomials P and Q, necessary and sufficient conditions will be given for the polynomial Q to be subordinate to the polynomial P in the case, in which all but one of the principal faces of the Newton polyhedron of P are non-degenerate.
17:15-17:55	**Massimo Lanza de Cristoforis** (University of Padova; Italy)	**Integral Identities and Inequalities for the Equations of the Electromagnetism in a Nonvariational Setting**	We consider Hölder continuous solutions that may have an infinite Dirichlet integral and thus do not belong to the classical variational setting. In this context, we present a version of the Helmholtz-Weyl Decomposition Theorem for spaces of Hölder continuous functions, along with explicit formulas for the projection operators.
18:00	**Discussion**		

30 September 2026 / Wednesday Moderator: Georgy G. Magaril-Ilyaev			
Time (M)	**Speaker**	**Title**	**Abstract**
13:15-13:55	**Viktor I. Burenkov** (Peoples' Friendship University of Russia Named After Patrice Lumumba; Russia)	**An analogue of Young's inequality for convolutions of functions in general Morrey-type spaces**	An analogue of the classical Young inequality for convolutions of functions in the Lebesgue spaces is proved for the case of the general Morrey-type spaces. Its form for the case of the general Morrey-type spaces significantly differs from its form for the case of the Lebesgue spaces. Some applications will be given.
14:00-14:40	**Ryskul O. Oinarov** (L.N. Gumilyov Eurasian National University; Kazakhstan)	**Oscillatory and Spectral Properties of One Class of 2n-order Sturm–Liouville Difference Equations**	A well-known variational criterion for the non-oscillatory nature of the equation under study reduces to estimating the operator norm of a class of matrix operators in a Hilbert space. It is proven that the equation is non-oscillatory if and only if the operator norm is less than or equal to one. Next, the boundedness of the matrix operator in a Hilbert space and estimates of its norm are investigated, allowing us to establish sufficient conditions for the oscillatory or non-oscillatory nature of the equation. Criteria for the strong non-oscillatory nature of the equation are found, from which criteria for the discreteness of the spectrum and its lower boundedness for the Sturm–Liouville operator follow.
14:45-15:25	**Alexander Meskhi** (Kutaisi International University; Georgia)	**Trace and Olsen’s Inequalities**	Necessary and sufficient conditions for trace inequalities in Morrey spaces will be discussed. We will consider both the diagonal and off-diagonal cases. We will also discuss a sharp form of Olsen’s inequality. The results were obtained in collaboration with V. Kokilashvili, L. Grafakos, and Y. Sawano.
15:30	**Closing**		