

DEPARTMENT OF NON-HARMONIC ANALYSIS
Institute of Mathematics and Mechanics
National Academy of Sciences of Azerbaijan

BRIEF REPORT ON SCIENTIFIC & ORGANIZATIONAL ACTIVITIES
FOR THE YEAR 2018

On the report period, in the “Nonharmonic Analysis” department, scientific research works on the themes “Frame theory and its applications” and “Spectral properties of not self-adjoint differential operators” were carried out and 11 works were excited. The department’s staff consists of 18 employees, including 1 doctor of scenes, 11 philosophy doctors (3 of them work part time), 2 research assistants, 4 laboratory assistants.

During report period, 55 scientific works were published. 11 of them were published abroad (TR-5: SCOPUS-4), 44 of them are Conference ales tracts. 9 papers were accepted for publication, 10 papers were submitted for publication.

Papers	In foreig journals	In local journals	Thesises	Methodical instructions
11	6	5	44	2

PAPERS PUBLISHED IN JOURNALS INDEXING IN WEB OF SCIENCE

- 1) B.T. Bilalov., M.I. Ismailov and Z.V. Mamedova, Uncountable Frames in Non-Separable Hilbert Spaces and their Characterization, Azerbaijan Journal of Mathematics, V. 8, No 1, 2018, 151-178
- 2) Bilalov B.T., Huseynli A.A., SeyidovaF.Sh. Riemann boundary value problems in generalized weighted Hardy spaces. Proceedings of the Institute of Mathematics and Mechanics, National Academy of Sciences of Azerbaijan. Volume 43, Number 2, 2017, Pages 240–251
- 3) T.B. Gasymov, Ch.M. Hashimov. On an atomic decomposition in Banach spaces // Sahand Communications in Mathematical Analysis (SCMA) Vol. 9 No. 1 (2018), pp.15-32 .
- 4) T. B. Gasymov, G.V. Maharramova, A. N. Jabrailova.Spectral properties of the problem of vibration of a loaded string in Morrey type spaces // Proc. of the IMM of NASA, Volume 44, No. 1, 2018, pp. 116–122.
- 5) Shukurov, A. Sh. On basicity of the degenerate trigonometric system with excess. *Acta Comment. Univ. Tartu. Math.* **21** (2017), no. 2, 249-257.

INTERNATIONAL PARTNERSHIP

- Aligarh Muslim University
- Yildiz Technical University
- Bashkir State Pedagogical University
- Sterlitamak branch of the Bashkir State University

Plenary reports by DNHA employees

Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan	“The method of boundary value problems for studying the basis properties of perturbed trigonometric systems and its generalization”	International Conference dedicated to the 90th anniversary of Academician V.A. Ilyina “Modern methods of the theory of boundary value problems. Pontryagin Readings - XXIX ”, 2018, Moscow, Russia
	“On basicity of trigonometric systems in weighted Morrey spaces”	“International Conference on Mathematical Advances and Applications (ICOMAA2018)”, 2018, Istanbul, Turkey
	“On basicity of perturbed system of exponents in Morrey type spaces”	International Scientific Conference "Spectral Theory of Operators and Related Issues" dedicated to the 70th anniversary of prof. I.T. Sultanaeva, Ufa, Russia
Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan and Associate Prof. Telman Gasymov	On basicity of eigenfunctions of a spectral problem	"VIII International Youth Scientific and Practical Conference" Mathematical modeling of processes and systems ", 2018, Sterlitamak, Russia

SCIENTIFIC VISITS

Time Period	Employee	Destination (city, country)	Purpose of the visit
02.05.2018- 06.05.2018	Bilalov Bilal	Moscow, Russia	International Conference dedicated to the 90th anniversary of Academician V.A. Ilyina “Modern methods of the theory of boundary value

			problems. Pontryagin Readings - XXIX ”, plenary talk
10.05.2018-16.05.2018	Bilalov Bilal	Istanbul, Turkey	“International Conference on Mathematical Advances and Applications (ICOMAA2018)”, plenary talk
01.10.2018-03.10.2018	Bilalov Bilal	Ufa, Russia	International Scientific Conference "Spectral Theory of Operators and Related Issues" dedicated to the 70th anniversary of prof. I.T. Sultanaeva, plenary talk
03.10.2018-05.10.2018	Bilalov Bilal	Sterlitamak, Russia	"VIII International Youth Scientific and Practical Conference" Mathematical modeling of processes and systems ", plenary talk
01.10.2018-03.10.2018	Gasymov Telman	Ufa, Russia	International Scientific Conference "Spectral Theory of Operators and Related Issues" dedicated to the 70th anniversary of prof. I.T. Sultanaeva, plenary talk
03.10.2018-05.10.2018	Gasymov Telman	Sterlitamak, Russia ,	"VIII International Youth Scientific and Practical Conference" Mathematical modeling of processes and systems ", plenary talk

Journals prepared for publication by DNHA in 2018:

- **AZERBAIJAN JOURNAL OF MATHEMATICS, VOL. 8, No 1, 2018, JANUARY**
- **AZERBAIJAN JOURNAL OF MATHEMATICS, VOL. 8, No 2, 2018, JULY**
- **CASPIAN JOURNAL OF APPLIED MATHEMATICS, ECOLOGY AND ECONOMICS, VOLUME 6, No 1, 2018, JULY**

DISSERTATIONS

Telman Kasumov	Investigation of spectral properties of discontinuous differential operators	Doctor of Mathematics	Defended	Scientific consultant: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan
Toghrul Muradov	Some problems of approximation theory and bases in generalized Lebesgue spaces	Doctor of Mathematics	Defended	Scientific consultant: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan
Fatima Guliyeva	Frames and approximation properties of systems in different linear structures	Doctor of Mathematics	Preliminarily discussed	Scientific consultant: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan
Arzu Safarova	Basicity of a double exponential system with degeneration	PhD in Mathematics	Defended	Scientific Supervisor: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan
Tubu Nazarova	Statistical types of convergence in topological spaces	PhD in Mathematics	Defended	Scientific Supervisor: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan
Zakir Zabidov	Mathematical foundations of monitoring of the urban air	PhD in Mathematics	Preliminarily discussed	Scientific Supervisor: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan
Miran Aleskerov	Riemann problems in Hardy classes with variable summability index and their application to basicity problems	PhD in Mathematics	Preliminarily discussed	Scientific Supervisor: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan
Sabina Jafarova	The basicity of perturbed sines and cosines systems in weighted Lebesgue spaces	Master's dissertation	Defended	Scientific Supervisor: prof. Bilal Bilalov, corresponding member of the NAS of Azerbaijan

OFFICIAL OPPONENT FOR A DISSERTATION (Corresponding member of the NAS of Azerbaijan, prof. Bilal Bilalov)	
1	2
Doctor of Mathematics- Almammadov M.S. , Institute of Mathematics and Mechanics, 16 March , 2018, Baku.	PhD in Mathematics- Namazova N.M. Institute of Mathematics and Mechanics, 11 May , 2018, Baku.

GRANTS		
Program of National Academy of Sciences of Azerbaijan	Approximation by neural networks and some problems of frames	Manager: corresponding member of the NAS of Azerbaijan, prof. Bilal Bilalov
Science Development Foundation under the President of Azerbaijan Republic	Methods of the theory of functions in the theory of operators	Manager: corresponding member of the NAS of Azerbaijan, prof. Bilal Bilalov
Science Development Foundation under the President of Azerbaijan Republic	Completeness of the double exponent system in variable Lebesgue spaces	Manager: Guliyeva Aida
Science Development Foundation under the President of Azerbaijan Republic	Spectral problems and their applications for tensile deformations of anisotropic coatings	Participant: Togrul Muradov

PEDAGOGICAL ACTIVITY	
Corresponding member of the NAS of Azerbaijan, prof. Bilal Bilalov	“Harmonic analysis” (Master’s degree students at IMM, NAS of Azerbaijan)
Associate Prof. Telman Gasymov	Baku State University
Associate Prof. Migdad Ismailov	Baku State University
Associate Prof. Tarlan Garayev	Khazar University
PhD Ali Huseynli	Khazar University

Membership of organizing, program and local committees of international conferences	
Corresponding member of the NAS of Azerbaijan, prof. Bilal Bilalov	<ul style="list-style-type: none"> - International Conference dedicated to the 90th anniversary of Academician V.A. Ilyina “Modern methods of the theory of boundary value problems. Pontryagin Readings - XXIX ”, 2018, Moscow, Russia - International Conference on Mathematical Advances and Applications (ICOMAA2018), Istanbul, Turkey, 11-13 May, 2018 - Operators, Functions, and Systems of Mathematical Physics Conference, 21-24 May, 2018, Khazar University, Baku, Azerbaijan. - « Differential Equations and Related Problems ”, International Scientific Conference, June 25-29, 2018, Sterlitamak, Russia. - International Scientific Conference "Spectral Theory of Operators and Related Issues" dedicated to the 70th anniversary of prof. I.T. Sultanaeva, Ufa, Russia - "VIII International Youth Scientific and Practical Conference" Mathematical modeling of processes and systems ", 2018, Sterlitamak, Russia - International conference dedicated to the 90th anniversary of Academician Azad Mirzajanzade, December 13-14, 2018, Baku, Azerbaijan.
Ali Huseynli Tarlan Garayev	Operators, Functions, and Systems of Mathematical Physics Conference, 21-24 May, 2018, Khazar University, Baku, Azerbaijan.
Aida Guliyeva	International conference dedicated to the 90th anniversary of Academician Azad Mirzajanzade, December 13-14, 2018, Baku, Azerbaijan.
Aida Guliyeva	International Conference On Mathematics“An Istanbul Meeting for World Mathematicians”Minisymposium on Approximation Theory & Minisymposium on Math Education

WEEKLY SEMINARS	
Wednesday at 12 ⁰⁰	“Some problems of Non-harmonic analysis”
Tuesday and Thursday at 11 ⁰⁰	“Theory of frames and applications”

SOCIAL ACTIVITIES	
Corresponding member of the NAS of Azerbaijan, prof. Bilal Bilalov	<ul style="list-style-type: none"> • Editor in Chief of Azerbaijan Journal of Mathematics;

	<ul style="list-style-type: none"> • Member of the Terminology Commission under the Cabinet of Ministers of the Republic of Azerbaijan; • Deputy Chairman of the Council on Problems of Mathematics; • A member of the Board of the Azerbaijan Mathematical Society; • Editor in Chief of Caspian Journal of Applied Mathematics, Ecology and Economics; • Chairman of the Graduation State Attestation Commission (050501 - mathematics and 050106 - mathematics teacher) at bachelor's level for the 2017/2018 academic year (Baku State University); • Member of the jury of the republican contest "Scientists of Tomorrow"; • Ministry of Education of the Republic of Azerbaijan, an expert in the assessment of textbooks; • Member of the Doctoral Dissertation Council at the Institute of Mathematics and Mechanics, National Academy of Sciences of Azerbaijan.
As.Prof. Telman Gasymov	Member of the scientific seminar at the Institute of Mathematics and Mechanics of ANAS
PhD, As.Prof. Tarlan Garayev	"executive" editor of the journal of "Caspian Journal of Applied Mathematics, Ecology and Economics"
Aida Guliyeva	"executive" editor of the journals of "Azerbaijan Journal of Mathematics" "Caspian Journal of Applied Mathematics, Ecology and Economics" "Journal of Contemporary Applied Mathematics " Member of International Editorial Board, MATH: Modeling & Application & Theory.

SCHOLAR.GOOGLE.COM_CITATIONS	
BilalovBilal	66
KasimovTelman	8
MuradovTogrul	13

MirzoyevVidadi	2
ShukurovAydın	7
Huseynli Ali	3
Kasumov Zaur	2
Guliyeva Aida	9
Total	110

IMPORTANT WORK

Bilalov B.T. On basicity of a perturbed exponential system in Morrey-type spaces. Sib. Mat. J. (accepted for publication)

**Head of the Department of
Non-Harmonic Analysis**

**Corresponding Member of the
National Academy of Sciences of
Azerbaijan, Prof. Bilal Bilalov**