

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 2020

12 research works have been done on the topics of “Frame theory and its applications” and “Basis properties of root functions of non-self-adjoint differential operators” by the employees of the Department of Non-Harmonic Analysis (DNHA) in 2020.

There are 19 employees in DNHA, including 3 Doctors of Sciences (2 of them part-timers), 8 PhD’s (2 of them part-timers), 2 researchers, 2 senior laboratory assistants and 4 laboratory assistants.

26 research works have been published by the employees of DNHA in 2020, including 13 scientific articles (9 of them published abroad; TR-10; SCOPUS-12). Short summaries of 13 research works (9 of them published abroad) by the employees of DNHA have been included in proceedings of various scientific conferences. Besides, 8 articles have been accepted and more than 10 articles have been submitted for publication in various scientific journals.

Articles	Printed abroad	Printed in Azerbaijan	Short summaries
13	9	4	13

ARTICLES PUBLISHED IN THE JOURNALS INDEXED IN WEB OF SCIENCE AND SCOPUS

1. B. T. Bilalov & S. R. Sadigova (2020) On solvability in the small of higher order elliptic equations in grand-Sobolev spaces, Complex Variables and Elliptic Equations, DOI: [10.1080/17476933.2020.1807965](https://doi.org/10.1080/17476933.2020.1807965) (**WOS-Science Citation Index Expanded, IF-0.806**)
2. Bilalov B.T., Guliyeva A.E. Hardy Banach Spaces, Cauchy Formula and Riesz Theorem. Azerbaijan Journal of Mathematics, V. 10, No 2, 2020, pp. 157-174 ((**WOS (Emerging Sources Citation Index), Scopus (SJR-0.35, Q3)**)
3. Bilalov, B., Muradov, T. & Seyidova, F. On basicity of perturbed exponential system with piecewise linear phase in Morrey-type spaces. Afr. Mat. (2020). <https://doi.org/10.1007/s13370-020-00817-x> (**WOS (Emerging Sources Citation Index), Scopus (SJR-025, Q3)**)
4. Bilal T. Bilalov, Sabina R. Sadigova, Aysel E. Guliyeva, Double bases from generalized Faber polynomials with complex-valued coefficients in weighted Lebesgue spaces. Hacet. J. Math. Stat. Volume XX (x) (2020), 1 – 17 DOI : 10.15672/HJMS.xx (**WOS-Science Citation Index Expanded, IF-0.605**)
5. Telman B. Gasymov, Azamat M. Akhtyamov and Nigar R. Ahmedzade. On the basicity of eigenfunctions of a second-order differential operator with a discontinuity point in

- weighted Lebesgue spaces. Proceedings of the Institute of Mathematics and Mechanics, National Academy of Sciences of Azerbaijan Volume 46, Number 1, 2020, Pages 32–44 <https://doi.org/10.29228/proc.15> (**WOS (Emerging Sources Citation Index), Scopus (SJR-0.28, Q3)**)
6. Migdad I. Ismailov, On the Solvability of Riemann Problems in Grand Hardy Classes, Mathematical Notes, 2020, Vol. 108, No. 2, pp. 55–69. (**WOS-Science Citation Index Expanded, IF-0.612**)
 7. Yusuf Zeren, Migdad Ismailov, and Cemil Karacam, Korovkin-type theorems and their statistical versions in grand Lebesgue spaces, Turk. J. Math., (2020) 44, pp. 1027 – 1041. (**WOS- Science Citation Index Expanded, IF-0.658**)
 8. Y. Zeren, M. Ismailov and Fatih Sirin, On basicity of the system of eigenfunctions of one discontinuous spectral problem for second order differential equation for grand-Lebesgue space, Turk. J. Math., (2020) 44, № 5, 1995-1612. (**WOS- Science Citation Index Expanded, IF-0.658**)
 9. Migdad I. Ismailov, On Hausdor-Young inequalities in generalized Lebesgue spaces, Turk. J. Math., (2020) 44, № 5, 1995-1612. pp. 1757-1768 (**WOS- Science Citation Index Expanded, IF-0.658**)
 10. V.F. Salmanov, V.S.Mirzoyev, S.A.Nuriyeva, On Basicity of discontinuous phase exponential system in the Sobolev space of piecewise differentiable functions, Proceedings of the Institute of Mathematics and Mechanics, National Academy of Sciences of Azerbaijan Volume 45, Number 2, 2019, Pages 311–318 (**WOS (Emerging Sources Citation Index), Scopus (SJR-0.28, Q3)**)
 11. B. T. Bilalov, F.A. Alizade, M.F. Rasulov, On bases of trigonometric systems in Hardy-Orlicz spaces and Riesz theorem. Trans. Natl. Acad. Sci. Azerb. Ser. Phys.-Tech. Math. Sci. Mathematics. Trans. Natl. Acad. Sci. Azerb. Ser. Phys.-Tech. Math. Sci. Mathematics, 39 (4), 1-11 (2019). (**SCOPUS**)
 12. Ismailov M.I. On Bessel and Riesz-Fisher systems with respect to Banach space of vector-valued sequences, No. 2 - Bulletin of the Transilvania University of Brasov, v. 12 (2019) Series III: Mathematics, Informatics, Physics, 303-318. (**SCOPUS, Zentralblatt MATH**)

IN OTHER JOURNALS

1. Nigar Ahmedzade, Zaur Kasumov. On the solvability of the Dirichlet problem for the Laplace equation with the boundary value in grand-Lebesgue space. Nakhchivan State University. Scientific works. The series of Physical, mathematical and technical sciences.2020 №5 (106), pp 62-69.

INTERNATIONAL COOPERATION

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

PLENARY REPORT

Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan	Hardy-Banach spaces, Cauchy formula, Riss theorem	International Conference on Mathematical Advances and Applications (3-rd ICOMAA2020), 2020, Istanbul, Turkey (online)
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ONLINE REPORT

Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan	Non-standard function spaces, Sobolev spaces generated by them, Dirichlet problem for elliptic equations in them, solvability problems	Mersin University, Faculty of Science, Department of Mathematics (21.10.2020)
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REVIEWERSHIP FOR PEER REVIEWED INTERNATIONAL REFERRED JOURNALS

- Zentralblatt MATH
- Mathematical Reviews
- Communications in Statistics – Theory and Methods (**TR-Science Citation Index Expanded**)
- Turkish Journal of Mathematics (**TR-Science Citation Index Expanded**)
- Kragujevac Journal of Mathematics-**SCOPUS** (Serbia)
- Sarajevo Journal of Mathematics (Bosnia and Herzegovina)
- Sahand Communications in Mathematical Analysis (Emerging Sources Citation Index and Scopus)

Journals prepared for publication by DNHA in 2020:

- **AZERBAIJAN JOURNAL OF MATHEMATICS, VOL. 10, No 2, 2020, JANUARY**
- **AZERBAIJAN JOURNAL OF MATHEMATICS, VOL. 10, No 2, 2020, JULY**
- **CASPIAN JOURNAL OF APPLIED MATHEMATICS, ECOLOGY AND ECONOMICS, VOLUME 8, No 1, 2020, JULY**

SUCCESSFULLY DEFENDED MASTER THESES

Author	Title	Scientific Advisor
Aygul Rzayeva	Wavelet analysis and its application to medical signals	Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan

PROGRAMMES and GRANTS			
№	Project	Title	Supervisor
1	Implemented on the basis of the agreement signed between RMI of ANAS and “Azercosmos” Open Joint-Stock Company on 06.09.2019	“NDVI analysis of spectral images”	Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan
2	1st Azeri-Russian International Grant Competition organized by the Science Development Foundation under the President of the Republic of Azerbaijan	“Methods of the theory of functions in the theory of operators”	Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan
3	A project within the framework of the joint cooperation programme between NAS of Azerbaijan and The Scientific and Technological Research Council of Turkey (TÜBİTAK)	“Frame properties of the system of eigenfunctions of a second order discontinuous differential operator”	Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan

PEDAGOGICAL ACTIVITIES BY DNHA EMPLOYEES	
Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan	Institute of Mathematics and Mechanics of the NAS of Azerbaijan (master degree, 1st and 2nd course)
Associate Prof. Telman Kasumov	Baku State University
Associate Prof. Migdad Ismaylov	Baku State University
Associate Prof. Terlan Garayev	Khazar University
PhD Ali Huseynli	Khazar University

Membership in organizing committees of international conferences	
Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan	3rd International Conference on Mathematical Advances and Applications (3-rd ICOMAA2020), Istanbul, Turkey, 24-27 June 2020
Aydin Shukurov	3rd International Conference on Mathematical Advances and Applications (3-rd ICOMAA2020), Istanbul, Turkey, 24-27 June 2020
Migdad Ismaylov	3rd International Conference on Mathematical Advances and Applications (3-rd ICOMAA2020), Istanbul, Turkey, 24-27 June 2020
Ali Huseynli	3rd International Conference on Mathematical Advances and Applications (3-rd ICOMAA2020), Istanbul, Turkey, 24-27 June 2020

SOCIAL ACTIVITIES BY DNHA EMPLOYEES	
Prof. Bilal Bilalov, Corresponding Member of the NAS of Azerbaijan	<ul style="list-style-type: none"> • Member of the Editorial Board of Azerbaijan National Encyclopedia; • Member of the Terminology Committee of the Cabinet of Ministers of Azerbaijan; • Member of the Presidium of the NAS of Azerbaijan Committee for National Development Programme for 2020-2030; • Chairman of the Academic Council on Applied Mathematics; • Reviewer of the Science Development Foundation under the President of the Republic of Azerbaijan; • President of the Actuarial Society of Azerbaijan • The member of the Board of the Azerbaijan Mathematical Society; • Editor-in-Chief of Caspian Journal of Applied Mathematics, Ecology and Economics; • Editor-in-Chief of Azerbaijan Journal of Mathematics; • Member of the Coordination Council of Sciences under the President of ANAS; • Chairman of the Baku State University Graduation Commission; • Expert on evaluation of textbooks with the

	<p>Ministry of Education of the Republic of Azerbaijan;</p> <ul style="list-style-type: none"> • Member of The Scientific Council of The Institute of Mathematics and Mechanics of Azerbaijan National Academy of Science; • Deputy Chairman of the Academic Seminar of The Institute of Mathematics and Mechanics of Azerbaijan National Academy of Science.
Associate Prof. Terlan Garayev	Executive Editor of Caspian Journal of Applied Mathematics, Ecology and Economics
Aida Guliyeva	Executive Editor of Azerbaijan Journal of Mathematics, Caspian Journal of Applied Mathematics, Ecology and Economics and Journal of Contemporary Applied Mathematics

SCHOLAR.GOOGLE.COM_CITATIONS	
Bilal Bilalov	140
Telman Kasumov	22
Toghrul Muradov	1
Vidadi Mirzoyev	9
Aydin Shukurov	6
Ali Huseynli	10
Aida Guliyeva	29
TOTAL	217

IMPORTANT WORK

Migdad I. Ismailov, On the Solvability of Riemann Problems in Grand Hardy Classes, Mathematical Notes, 2020, Vol. 108, No. 2, pp. 55–69 (WOS-Science Citation Index Expanded).

Prof Bilal T. Bilalov

Head of the Department of Non-Harmonic Analysis

Corresponding Member of the National Academy of Sciences of Azerbaijan