

**Report of the department of “Function Theory”
on scientific and scientific-organizational activities for the year 2019**

In the reporting year, on the topic “Approximation of functions of several variables by ridge functions, neural networks, linear and nonlinear superpositions, embedding theorems for functional spaces” 5 works connecting 7 researchers were conducted. 9 scientific articles and 7 abstracts were published. 7 articles were published abroad. All of these articles were published in journals indexed in the Web of Science platform of the Clarivate Analytics (namely, 4 in the "Science Citation Index Expanded", 3 in the "Emerging Sources Citation Index" databases). One article not included in this platform was published in a journal indexed by SCOPUS. In addition, 1 article was accepted for publication and 4 papers were submitted for publication.

The staff of “Function Theory” department consists of 7 researchers:

1. Vugar Ismailov prof. of ANAS, dr. math. sci., chief of the department
2. AlikNajafov dr. ph.-m. s., prof., chief r.a.
3. Rashid Aliev prof. of ANAS, dr. math. sci. chief r.a.
4. Ibrahim Maharov cand. ph.-m. s., senior r.a.
5. Arzu Babayev cand. ph.-m. s., senior r.a.
6. Aygun Orujova phd in math., r.a.
7. Aida Asgarova, junior r.a.

Seminars and conferences:

In the reporting period, the chief researcher of the department, prof. of ANAS, dr. math. sci., Rashid Aliev gave a talk on “A-integral and Alfors-Berling transformation” at the institute seminar. Collaborators of the department actively participated at department seminars.

Head of the Department dr. of sci. in math. Vugar Ismailov was a member of the program Committee of the International Scientific Conference “Modern

Problems of Mathematics and Mechanics” devoted to 60 years of the Institute of Mathematics and Mechanics, held on 23-25 October, 2019 in Baku, Azerbaijan.

In the reporting period, the chief researcher of the department, doct. ph.m.s., prof. Alik Najafov was a member of the program Committee of the International Scientific Conference “Operators in General Morrey-Type Spaces and Applications (OMTSA 2019)” and made a report at the conference.

Research associate of the department, phd in math., A.T. Orujova was a member of the Working group of the International Scientific Conference “Modern Problems of Mathematics and Mechanics” devoted to 60 years of the Institute of Mathematics and Mechanics, held on 23-25 October, 2019 in Baku, Azerbaijan.

Chief researcher of the department Rashid Avazaga oglu Aliev had received affirmation of the Higher Attestation Commission for the dissertation defended by him, “Boundary properties of Cauchy type complex dimensional integrals and some problems of theory of the approximation of analytical functions” to get a scientific title “doctor of mathematical sciences”.

Chief researcher of the department Rashid Avazaga oglu Aliev was awarded with the title of "Professor of ANAS" by Presidium of ANAS.

In the reporting period, the senior researcher of the department, c.ph.m.s, Ibrahim Maharov was awarded with "Taraggi" medal for achievements in the development of education in Azerbaijan by the decree of the President of the Republic of Azerbaijan.

In the reporting period, the junior researcher of the department, Aida Asgarova took a minimum exam from foreign language (French language) and completed work on a dissertation on the subject “Approximation by a sum of subalgebras of the space of continuous functions”. At the seminars of the department she made numerous reports on the results obtained in the dissertation.

Head of the department Vugar Ismailov was a reviewer of the journals "Results in Mathematics", "Neurocomputing", "Australian & New Zealand Journal

of Statistics", "IEEE Transactions on Emerging Topics in Computational Intelligence" and "Filomat".

The review work is reflected in the Publons platform of Clarivate Analytics (see: <https://publons.com/researcher/1715055/vugar-ismailov/>).

In the reporting period, the chief researcher of the department, Alik Najafov was a reviewer of the journals "Afrika Mathematica", "Transactions of Institute of Mathematics and Mechanics" and "Azerbaijan Journal of Mathematics".

Publications:

Papers published in journals indexed by Clarivate Analytics:

1. R.A. Aliev, A.A. Asgarova, V.E. Ismailov, A note on continuous sums of ridge functions, *J. Approx. Theory* 237 (2019), 210-221 (SCIE)
2. N.J. Guliyev, V.E. Ismailov, Approximation capability of two hidden layer feedforward neural networks with fixed weights, *Neurocomputing* 316 (2018), 262-269 (SCIE)
3. Alik M. Najafov, Rena E. Kerbalayeva, Embedding theorems for Besov–Morrey spaces of many groups of variables, *Georgian Math. J.* 2019: 26(1): 125–131. <https://doi.org/10.1515/gmj-2017-0032> (SCIE)
4. Rashid A. Aliev, Aynur F. Amrahova, Properties of the discrete Hilbert transform, *Complex Analysis and Operator Theory* (2019). <https://doi.org/10.1007/s11785-019-00936-9> (SCIE)
5. R.A. Aliev, A.A. Asgarova, V.E. Ismailov, On the Holder continuity in ridge function representation, *Proceedings of IMM, NAS of Azerbaijan* 45 (2019), 31-40 (ESCI)
6. Alik M. Najafov, Nilufer R. Rustamova, Sain T. Alekberli, On solvability of a quasi elliptic partial differential equations, *Journal of Elliptic and Parabolic Equations*, 2019, Vol. 5, Issue 1, pp. 175–187. doi:10.1007/s41808-019-00037-w (ESCI)
7. P.A. Алиев, Ч.А. Гаджиева, Об аппроксимации преобразование Гильберта, *Труды Института Математики и Механики УрО РАН*, **25:2 (2019)**, 30-41. <http://journal.imm.uran.ru/2019-v.25-2-pp.30-41> (ESCI)

Papers published in journals indexed by Scopus:

8. Alik M. Najafov, Azizgul M. Gasimova, On properties of functions from Lizorkin–Triebel–Morrey type spaces, Journal of Mathematical Sciences, 2019, Vol. 239, Issue 1, pp. 51–61. <https://doi.org/10.1007/s10958-019-04287-w>

Papers published in other journals:

9. Alik M. Najafov, Sain T. Alekberli, On properties functions from grand Sobolev-Morrey spaces, Journals of Baku Engineering University, Number 1, Volume2(2018).
http://journal.beu.edu.az/content.php?page=article&j_id=16&s_id=102&a_id=180

Head of the department Dr.Math.Sci., Professor of ANAS Vugar Ismailov