

Semi-Annual Report of Functional Analysis department for 2018

“Functional Analysis ” department consists of 20 collaborators.

In 2018 according to the plan, 17 works on the themes "Studing some problems of operator algebras and probability theory" and " Spectral analysis of Differential operators" are carried out.

- 1.Aslanov Hamidulla I.** doct. ph.m.s.,prof.sen.r.a.
- 2.Aliyev Soltan A.** doct. ph.m.s.,prof.sen.r.a.
- 3.Mirzoyev Sabir S.** doct. ph.m.s.,prof.sen.r.a.
- 4.Huseynov Hidayet M.** doct. ph.m.s.,prof.sen.r.a.
- 5.Gurbanov Veli M.** doct. ph.m.s.,prof.sen.r.a.
- 6.Nabiyev Ibrahim M.** doct. ph.m.s.,prof.sen.r.a.
- 7.Aliyev Araz R.** doct. ph.m.s.,prof.sen.r.a.
- 8.Jabrailova Afet N.** c.ph.m.s.,lead.r.a.
- 9.Ibadova Irade A.** c.ph.m.s.,lead.r.a.
- 10.Latifova Aygun R.** phd in math.,chief.r.a.
- 11.Vahabov Nazim G.** chief.r.a.
- 12.Guliyev Namiq I.** c.ph.m.s.,r.a.
- 13.Khalilov Vuqar S.** phd in math.,chief.r.a.
- 14.Jafarov Ilqar J.** r.a.
- 15.Alimardanova Kamilla A.** c.ph.m.s.,chief. r.a.
- 16.Osmanli Jalala A.** phd in math.,chief. r.a.
- 17.Safarova Aynur N.**j.r.a.

Theme: “Studying some problems of operator algebras and probability theory.”

a) Work: “Convergence of many type branching stochastik processes ”

Executor:doct.ph.m.s., prof. sen.r.a. **S.A.Aliyev.**

Dissertation work of one condidate for degree (second year) was supervised, the works on a grant project of the Science Devolpment Foundation under the President of the Republic of Azerbaijan was continued.

Two papers, two abstract were published, one paper and one abstract were submitted for publication.

The papers were published in the journals:

1. İmeset 17, Bitlis Full Paper Proceedings Bitlis, Turkey 2017 p.693-695.

2. Coupled Systems Mechanics, vol.6, №4 (2017) p. 439-464

b) Work: “Completeness of eigen and associated vectors of two parameter system in Hilbert spaces.” Executor : c.ph.m.s., lead.r.a. **A.N.Jabrailova.**

One paper was published.

1. A.N.Jabrailova., T.B.Gasymov., G.V.Maharramova. “Spectral properties of the problem of vibration of a loaded string in Morrey type spaces.” Proceedings of the Institute of Mathematics and Mechanics, NAS of Azerbaijan, vol.44, number1, 2018, pages.116-122.

c) Work: “Growth of Rezolvent and properties of clan of operators in Banach space”. Executor: chief.r.a. **N.G.Vahabov**

ç) Work: “The strong law of large numbers for random walks described by first order autoregression process.” Executor :c.ph.m.s., lead.r.a. **I.A.Ibadova.**

1. On strong law of large numbers for the family of first passage times for the level in random walk described by a non-linear function of autoregression process of order one (AR (1)) (məqalə -Transactions of NAS of Azerbaijan jurnalının redaksiyasına təqdim olunub, Fada G. Rahimov • Irada A. Ibadova • Aynura D. Farhadova)

2. Предельные теоремы для семейства моментов первого достижения парабол суммами квадратов процесса авторегрессии первого порядка. (AR (1))
(тезис-Баки Дövlət Universiteti Mexanika-riyaziyyat fakültəsi Ümummilli lider Heydər Əliyevin anadan olmasının 95-ci il dönümünə həsr olunmuş "Riyaziyyat və Mexanikanın aktual problemləri" adlı elmi konfrans
17.05.2018 səh.188-191
Рагимов Ф.Г., Ибадова И.А., Гашимова Т.Е., Фархадова А.Д.)

d) Work: “Studing linear boundary value problems for random walks described by first order autoregression processes” . Executor: phd in math.,chief.r.a. **V.S.Khalilov**

The obtained results were submitted for publication and one abstract was published.

1.F.H.Ragimov.,A.D.Farhadova.,V.S.Khalilov. “ Limit theorem for the first passage time of the level by the random walk described by nonlinear function of the autoregression process of order one AR(1).”(Узбекский Матемематический Журнал .(çара тәқдим olunub))

2.F.H.Ragimov., A.D.Farhadova.,V.S.Khalilov. “ Limit theorems for the family of the first passage time of the parabola by a random walk described by the first order autoregression process(AR(1))”. “ Riyaziyyatın və Mexanikanın aktual problemləri ” adlı Respublika Elmi Konfransının Materialları.səh.217-218

Theme: “Spectral analyses of differential operators ”

e) Work: “Operator-differential equations and related spectral problems.”
Executor : doct. ph.m.s.,prof.sen.r.a. **S.S. Mirzoyev.**

1."О полноте собственных и присоединенных функцией квадратичного пучка отвечающих некоторым двухточечной задаче." (Turkey Journal Puree and Application. çара тәқдим olunub.)

2."О полноте части корневых векторов некоторых операторных пучков квазиэллиптического типа."(Матем.замеч.çара verilib.)

ә) Work: “ Asymptotics of Green function of normal operator coefficient higher order differential operators on a semi-axis”.
Executor:doct.ph.m.s.,prof.sen.r.a. **H.I.Aslanov.**

The papers were published in the journals:

1.İnternational Journal of Mathematical Analysis and Applications 2018.

2.Journal of Mathematical and Computational Science.

He is the participant of the Grant project of SOCAR.

f) Work: “ Direct problem of scattering for one-dimensional Schrodinger equation with singular potential .” Executor: doct.ph.m.s.,prof.sen.r.a.**H.M.Huseynov**.

The papers were published in:

- 1.Теоретическая и математическая физика- т.195, №1, 2018.
- 2.BDU-nun əsərləri 2018.

g) Work: “Convergence of spectral expansion of second order ordinary differential operator in eigen functions.” Executor: doct.ph.m.s.,prof.sen.r.a. **V.M.Gurbanov**

One paper and three abstracts were published:

- 1.Kurbanov V.M., Abbasova Y.G. “Convergence of spectralexpansion of absolutely continuous vector-function in root vectors of third order differential operator üith matrix coefficients.”(Proceedings of the Institute Mathematics,National Academy of Sciences of Azerbaijan Volume 44, Number 1, 2018.p.155-165)
- 2.Kurbanov V.M., Abdullayeva A.M. “Theorem on Local Equiconvergence for Dirac Operator.”(International Conference on Mathematical Advances and Applications, May 11-13, 2018, İstanbul/Turkey <http://icomma2018.com/> pp.157)
- 3.Курбанов В.М., Буксаева Л.З. “Неравенство Рисса для разрывного оператора Дирака.”(Azerbaijanın Ümummilli Lideri Heydər Əliyevin anadan olmasının 95-ci il dönümünə həsr olunmuş “Riyaziyyat və Mexanikanın Aktual Problemləri” adlı Respublika elmi konfransının materialları, Bakı, 17-18 may, 2018.səh.158-159)
- 4.Курбанов В.М. “Абсолютная и равномерная сходимость биортогонального ряда, отвечающего обыкновенному дифференциальному оператору”. Понрягинские Чтения-XXIX Материалы Международной Конференции посвященной 90-летию Владимира Александровича Ильина, Москва (2-6 май 2018) с. 142-143.

ğ) Work: “ Solving inverse problems with respect to two spectrum for the Dirac system. ” Exacutor: doct. ph.m.s.,prof.sen.r.a. **I.M.Nabiyev**

Has participated in International Conference.

Three papers were published (one of the in ISI impact factor journal)

He was an official apponent of 3 ph.doctors and doctor of sciences dissertations.

Scientific works:

1. Ch.G. Ibadzadeh, İ.M. Nabiev. Reconstruction of the Sturm–Liouville operator with nonseparated boundary conditions and a spectral parameter in

the boundary condition // Ukrainian Mathematical Journal, V. 69, № 9, February, 2018, P. 1416-1423 (Восстановление оператора Штурма-Лиувилля с неразделенными граничными условиями и со спектральным параметром в граничном условии // Укр. мат. журн. 2017, № 9, с. 1217-1223 məqaləsinin ingiliscə versiyası).

2. Н.В. Аббаслы, И.М. Набиев. Единственность восстановления системы Дирака по трем спектрам // Journal of Contemporary Applied Mathematics V. 8, No 1, 2018, P. 3-8.

3. Ч.Г. Ибадзаде, Л.И. Маммадова, И.М. Набиев. О разрешимости обратной задачи для оператора диффузии на отрезке / International conference

"Operators, Functions, and Systems of Mathematical Physics Conference" (OFSMPC), dedicated to Professor Hamlet Isakhanli's 70th anniversary, Baku, 20-24 May, 2018.

h) Work: "Conditions for solvability of boundary value problems for a class of operator coefficient elliptic equations." Executor: doct.ph.m.s.,prof.sen.r.a. **A.R.Aliyev.**

1. Алиев А.Р., Сойлемезо М.А. О задаче без начальных условий для одного класса обратно параболических операторно-дифференциальных уравнений третьего порядка // Доклады РАН, 2018, т. 480, № 1, с. 7-10.

2. Марданов М.Дж., Алиев А.Р., Асланов Р.М. Роль Заида Исмаил оглы Халилова в развитии математической науки / Приложение в книге З.И.Халилова «Основы функционального анализа». Изд. 2-е, испр. и доп. М.: ЛЕНАНД, 2018. – 256 с.; с. 232-246.

A.R.Aliyev is the editor in chief of the International scientific journal Journal of Contemporary applied mathematics (Azerbaijan), a manager editor-in-chief of Journal of Mathematics(Azerbaijan), is the member of editorial board of the journals Proc.IMM ANAS(Azerbaijan

,trans.ANAS(Azerbaijan) trans of Azer.Inst of Technology(Azerbaijan) and
Mathematics and Statistics (ABS)

x) Work: “Conditions for solvability of a clan of elliptic type second order partial operator –differential equations.” Executor:r.a **I.J.Jafarov**

ı) Work: “Inverse scattering problem for a Sturm-Liouville equation with different asymptotics . ” Executor: phd in math.,chief.r.a.**J.A.Osmanli**.

i)Work: “Inverse scattering problem on a semi-axis for a system of fifth order ordinary differential equations in the general case. Executor: c.ph.m.s.,chief.r.a..**K.A.Alimardanova**.

One abstract were published:

1. Н.Ш.Искендеров, К.А.Алимарданова. “Задача рассеяния для системы пяти обыкновенных дифференциальных уравнений первого порядка на полуоси с тремя заданными отраженными волнами.” Azərbaycanın Ümummilli Lideri Heydər Əliyevin anadan olmasının 95-ci il dönümünə həsr olunmuş “Riyaziyyat və Mexanikanın Aktual Problemləri” adlı Respublika elmi konfransının materialları, Bakı, 17-18 may, 2018.səh.154-155)

q) Work: “Determination of the operator in solving inverse problem for Sturm-Liouville operator with discontinuity point at the inner point.” Executor: phd in math.,chief.r.a.**A.R.Latifova**

ı) Work: “Studying inverse problems of spectral analysis for nonlocal Sturm-Liouville operator.” Executor: c.ph.m.s.,r.a. **N.J.Guliyev**

k) Work: “Continuons dependence of inverse boundary value problem for second order nonclassical boundary condition parabolic equation.” Executor: j.r.a.**A.N.Safarova**.

PUBLISHED SCIENTIFIC PAPAERS

The department collaborators have published 12 papers and 10 abstracts, 6 papers and 4 abstracts were submitted for publication.

PARTICIPATION IN SCIENTFIC SEMINARS

All the collaborators have participated in the institute and department seminars.

SCIENTIFIC-SOCIAL ACTIVITY

The department collaborators S.S.Mirzoyev, I.M.Nabiyev are the members of the Defence Council.

V.M.Kurbanov, S.S.Aliyev are the members of the expert commission in mathematics at Supreme Atestation Commission.

Many of the collaborators are the members of editorial boards of different journals and are engaged in pedagogical activity in different higher instituties of the Republic.

Heard of department:

d.ph.m.s.prof.s.r.a.H.İ.Aslanov