# Annual Report of Functional Analysis department for 2024

The staff of "Functional Analysis" department consists of 21  employees including 23 research associates. 11 of them doctor of sciences, professor.

1. Aslanov Hamidulla I.  doct. ph.m.s.,prof.
2. Mammed Bayramoglu. doct. ph.m.s.,prof.sen.r.a.
3. Aliyev Soltan A. doct. ph.m.s.,prof.sen.r.a.
4. Mirzoyev Sabir S. doct. ph.m.s.,prof.sen.r.a.
5. Huseynov Hidayet M. doct. ph.m.s.,prof.sen.r.a.
6. Kurbanov Veli M. doct. ph.m.s.,prof.sen.r.a.
7. Nabiyev Ibrahim M. doct. ph.m.s.,prof.sen.r.a.
8. Aliyev Araz R. doct. ph.m.s.,prof.sen.r.a.
9. Eyvazov Elsad H. doct. ph.m.s.,ass.prof. sen.r.a.
10. Mustafayev Heybətkulu S. doct. ph.m.s.,prof.sen.r.a.
11. Aslanova Nigar M. doct. ph.m.s.,prof. sen.r.a.
12. Mukhtarov Fekhreddin Sh.  c.ph.m.s.,lead.r.a.
13. Jabrailova Afet N.  c.ph.m.s.,lead.r.a.
14. Latifova Aygun R. phd in math.,chief.r.a.
15. Khalilov Vuqar S. c.ph.m.s.,lead.r.a.
16. İbadova İrada A. c.ph.m.s.,lead.r.a.
17. Guliyev Namiq I. c.ph.m.s.,r.a.
18. Vahabov Nazim G. chief.r.a.
19. Alimardanova Kamilla A. c.ph.m.s.,chief. r.a.
20. Osmanli Jalala A. phd in math.,chief. r.a.
21. Safarova Aynur N. phd in math.,chief. r.a.
22. Iskenderli Guller Z.sen.lab.ass.
23. Bayramova Aygun F.sen.lab.ass.

## I. Scientific part.

In  2024,  in the department,  according to the afformed  plan 19 scientific works  are carried out on "Spectral analysis of differential operators".

**Theme "Spectral analysis of differential operators".**

1)work: "On the spectral properties of the boundary value problem for differential operators with two discontinuities where the spectral parameter enters the boundary condition." Ex. doct.ph.m.s., prof. H.I.Aslanov.

2)work: "Inverse spectral for the Sturum-Liouville equation with shear coefficient." Ex: doct.ph.m.s.,prof. sen.re.a. H.M.Huseynov.

3)work: "A bound for branching stochastic processes with truncated parameters issues." Ex:doct.ph.m.s., prof. sen.re.a. S.A. Aliyev.

4)work: "The cardinality criterion of the system of eigen and connected functions of the second order differential operator with summable matrix coefficients." Ex:doct.ph.m.s., prof. sen.re.a. V.M.Kurbanov.

5)work: "On the completeness of eigen and adjoint elements of a class of three-order quasielliptic operator sets." Ex: doct.ph.m.s.,prof. sen.re.a. S.S.Mirzoyev.

6)work: "Recovery of the differential operator whose boundary condition linearly includes the spectral parameter." Ex: doct.ph.m.s., prof. sen.re.a. I.M.Nabiyev.

7)work: "On the sum of negative eigenvalues of the three-dimensional Schrödinger operator." Ex: doct.ph.m.s., prof. sen.re.a. A.R.Aliyev, doct.ph.m.s., prof. sen.re.a. E. H. Eyvazov

8) work: "Some ergodic theorems for probability measures in locally compact groups." Ex. : doct. ph.m.s., prof.sen.r.a. H.S. Mustafayev

9) work: "tudy of the expansions of the differential operator with the coefficient of the second order operator by subtraction from the space." Ex: doct.ph.m.s., ass.prof. sen.re.a. M. Bayramoglu. doct.ph.m.s., ass.prof. sen.re.a. N.M. Aslanova.

10)work: "Spectral properties of OK continuous operators." Ex: cand.ph.m.s., ass.prof. lead r.a. A.R.Jabrailova

**11)work: "For unperturbed and excited Markov random walks integral limit theorems." Ex: cand.ph.m.s., ass prof. lead r.a. V. S. Khalilov**

**12)work: "Limit problems for Markov random walks described by an autoregressive process with one-order random coefficients." Ex: cand.ph.m.s., lead.r.a. İ.A.İbadova**

**13)work: "Some properties of the Sturm-Liouville problem with an interior singular point." Ex:c.ph.m.s.,chief. r.a. F. Sh. Mukhtarov.**

**14)work: "Trace formulas for the Bessel operator whose boundary condition includes a spectral parameter." Ex:phd in math.,chief.r.a. N.C. Guliyev.**

**15)work: "The problem of inverse scattering on the semiaxis for a system of hyperbolic equations." Ex:sen.res.ass. K.I. Alimardanova.**

**16) work: "Spectral analysis of the Schrödinger operator with additive potential." Ex: phd in math.,chief. r.a. A.R. Latifova.**

**17)work: "Study of numerical domain and spectrum of some class of operators." Ex: phd in math., chief. r.a. N.G. Vahabov.**

**18)work: "A spectral problem for a system of Dirac equations with a class of truncated coefficients in a finite piece." Ex: phd in math., chief. r.a. J. A. Osmanli.**

**19)work: "Semiaxial straight and inverse scattering problems for two incident waves for a system of hyperbolic equations." Ex: phd in math., chief. r.a. A.N. Safarova.**

## II. Scientific-social activity.

**F-r.e.d., prof., H.I. Aslanov** continued his teaching activities at BSU.
He was appointed the chairman of the State Examination Commission at BSU. He was a member of the organizing committee of the Republican competition "Scientist of Tomorrow" organized by the Ministry of Education. He participated in scientific councils as a member of the defense council. He is a member of the editorial board of Transactions of NAS of Azerbaijan and Proceedings of the Institute Mathematics and Mechanics. He supervised three dissertation students. He was a member of the minimum qualification examination commission for doctoral students at BMU.

**Doct. ph.m.s.,prof.sen.r.a. S.A. Aliyev** One article and two theses were submitted (to international conferences). In addition, work was carried out on a grant project of the Science Foundation of the SOCAR.

**Doct. ph.m.s.,prof.sen.r.a. A.R. Aliyev** Invited speaker at the International Scientific Conference "Mathematics in the Constellation of Sciences", dedicated to the 85th anniversary of the action. member of the RAS, prof. V.A. Sadovnichy, held on April 1-2, 2024 in Moscow, Russian Federation. Member of the editorial board of the journal and Proceedings of the Institute of Mathematics and Mechanics, editor-in-chief of the journals Baku Math. Journal" and "Azerbaijan Journal of High Performance Computing"

**Doct. ph.m.s.,prof.sen.r.a. I.M. Nabiyev** In the first half of 2024, 1 paper and 1 abstract were published. He was the chairman of the State Attestation Commission at Azerbaijan State Oil and Industry University.

**Doct. ph.m.s.,prof.sen.r.a. H.M. Huseynov** is a member of editorial board of a lot of international and republican scientific journals. He is an adviser of magisters and doctoral students.

**Doct. ph.m.s.,prof.sen.r.a. S.S. Mirzoyev's** two cand. for degrees have submitted their dissertation works to the Scientific Council of IMM.

Many of the department collaborators are engaged in pedagogical activity in different higher education institutions of the Republic.

**Doct. ph.m.s.,prof.sen.r.a. V.M. Gurbanov** He is a member of the editorial board of many international and republican scientific journals. Supervises graduate and doctoral students.

Many of the employees of the department are engaged in teaching activities in various higher educational institutions of the Republic.

## PARTICIPATION IN SCIENTFIC SEMINARS

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

## THE PUBLISHED SCIENTIFIC PAPERS

During the reporting half year, 5 papers and 1 abstract of the department employees were published. 2 papers and 5 abstracts are in print. Several articles

and theses have been published. 3 of the published papers are included in Science of Scopus database.

**Heard of department**:                                   **d.ph.m.s.prof. H.İ.Aslanov**