

Institute of Mathematics and Mechanics of ANAS
Annual Report of the “Optimal Control” Department for 2018
scientific and scientific organization

“Optimal Control” department was created in 2016. The department employs 10 researchers (4 full-time employees, 6 people part time). 8 of them are doctors of science, 2 of them are corresponding members of ANAS: Indicating the number of citations.

1. Professor Misir Mardanov - head of department (corr. member of ANAS) -37.
2. Professor Kamil Aidazade - Senior Researcher-part time (Corr. Member of ANAS) -87.
3. Professor Telman Melikov - Senior Researcher - 21.
4. Professor Hamlet Guliyev - Senior Researcher-part time - 4.
5. Professor Yagub Sharifov - Senior Researcher-part time - 15.
6. Professor Ramin Rzayev - Senior Researcher-part time - 2.
7. Professor Yusif Gasimov - Leading Researcher-part time - 25.
8. Professor Ramiz Aslanov - Senior Researcher
9. Doctor of Philosophy in Mathematics Eldar Mamedov - Leading Researcher-0.
10. Dissertant Samin Malik – jun.res.ass-part time-6.
11. Nargiz Abbasova - senior laboratory assistant.
12. Aygun Isaeva - senior laboratory assistant.

Grant and programs

In 2018, the department won the Science Development Fund grant and the project financed by the Presidium of ANAS:

1. Was a winner of the grant project "**Elaboration of analysis methods and information analytic system based on fuzzy logic**" of Science Development foundation under the President of the Republic of Azerbaijan ("**Optimal Control**" department of IMM, Baku State University, Azerbaijan State Technical University, Lenkoran State University) with execution period 12 months, financial volume 55.000 manat.

2. Was a winner of the scientific research program "**Mathematical simulation and optimization of continuous and discrete systems by means of modern computer programs**" financed by decree No. 7/3 of the Presidium of the ANAS. (execution period 24 months, financial volume 100000 manat). ("**Optimal Control**" department of IMM, Baku State University, Institute of Control systems of ANAS, Public Administration Academy, Baku Higher Oil School).

In 2018, the department conducts research in the following areas, which were approved by the plan.

I

The research on "Optimal control problems described by various systems" were conducted in five areas.

- 1) Work: "**Obtaining the first and second mandatory conditions for optimal control problems described by discrete systems**"
Authors: Misir Mardanov, Telman Malikov, Samin Malik.

1. М.Дж.Марданов, Т.К.Меликов. Новый дискретный аналог принципа максимума Понтрягина // *Doklady Mathematics*, 2018, т. 483, 1, стр. 1–3 (A New Discrete Analogue of Pontryagin’s Maximum Principle – Vol 98, 3, p. 1–3). **TR0,534, Q3.**
2. Misir J. Mardanov, Telman K. Melikov, Samin T. Malik. On Strengthening of optimality conditions in discrete control systems, *Proceedings of the Institute of Mathematics and Mechanics*, N1, vol. 44, 2018, pp. 135-154, **TR, Emerging Sources Citation Index**
3. S.T.Malik, On the Optimality of Singular Controls in Dynamical Systems with Delay in Control. *Numerical Functional Analysis and Optimization*, 2018, 1-12p, **TR0,827, Q3.**
4. S.T.Malik, On the theory of necessary optimality conditions in discrete systems with a delay in control. *Transactions of NAS of Azerbaijan, Issue Mathematics*, 2018, v.38, No 1, pp. 105–113, **Scopus.**
5. M.J. Mardanov, S.T.Malik, Necessary First-and Second-Order Optimality Conditions in Discrete Systems with a Delay in Control, *Journal of Dynamical and Control Systems*, Springer, 2018, pp 1-15, **TR0,693, Q3.**
6. М. Дж. Марданов, К. Б. Мансимов, Н. Г. Абдуллаева. Необходимое условие оптимальности второго порядка в задачах управления, описываемых системой интегро-дифференциальных уравнений с запаздыванием, *Вестн. Сам.гос. техн. ун-та. Сер. Физ.-мат. науки*, 2018, том 22, номер 2, стр. 254–268, **TR, Emerging Sources Citation Index.**
7. M.J.Mardanov, T.K.Melikov “Necessary conditions of optimality in discrete control systems”, XXXI International Conference Problems of decision making under uncertainties (PDMU-2018), July 3-8, 2018, Lankaran-Baku, pp. 91-93.
8. Mardanov Misir, Melikov Telman, Malik Samin. “To Sufficient conditions for strong extremum in calculus of variations”, The 6th International Conference on Control and Optimization with Industrial Applications. 11-13 July, 2018 Baku Azerbaijan, pp.264-266.
9. Mardanov M.J., Melikov T.K., Malik S.T. “On one generalization of weierstrass necessary condition” Operators, Functions, and Systems of Mathematical Physics Conference, International conference dedicated to Hamlet Isaxanli’s 70th anniversary, 21-24 May 2018, Khazar University, Baku, Azerbaijan pp.139-141.
10. M.J.Mardanov, T.K.Melikov, E.Sh.Mamedov. On first and second order necessary conditions for strong extremum in calculus of variations, International Conference MADEA-8, Issyk-Kul, Kyrgyz Republic, June 17-23, 2018, pp. 82-83.
11. Марданов М. Дж., Меликов Т. К., Мамедов И. Г., Бандалиев Р. А., Об одной начально-краевой задаче для обыкновенного дифференциального уравнения дробного порядка с разрывными коэффициентами, *Материалы V Международной научной конференции, Нелокальные краевые задачи и родственные проблемы математической биологии, информатики и физики 4-7 декабря 2018года*, с. 138.
12. Марданов М. Дж., Меликов Т. К., Мамедов И. Г., Бандалиев Р. А., Начально-краевая задача для одного дифференциального уравнения дробного порядка с частными производными и ее корректная разрешимость, *Материалы V Международной научной конференции, Нелокальные краевые задачи и родственные проблемы математической биологии, информатики и физики 4-7 декабря 2018года*, с. 139.
13. M.Mardanov, N.Bayramova. “Numerical method for eigenvalue problem for schrodinger nonlinear equation”, The 6th International Conference on Control and Optimization with Industrial Applications // 11-13 July, 2018 Baku Azerbaijan, pp.220-222.

2) Work: "Study of boundary value problems with non-local conditions and optimal control problems described by them"

Authors: Misir Mardanov, Yagub Sharifov

In the reporting year, various issues of non-local boundaries (double, triple, triple and integral) were considered. Initially, the boundary question was reduced to an integral equation, which is equivalent to the question. Then fixed point principles were used to prove the existence and uniqueness of solution of an integral equation. The first order necessary conditions for optimizing the controller were proved. The results obtained are reflected in the following conference materials:

1. Misir Mardanov, Yagub Sharifov and Farah Zeynalli "Existence and uniqueness of solutions of the first order nonlinear integro-differential equations with three-point boundary conditions", pp. 020028-1-6, International Conference on Analysis and Applied Mathematics (ICAAM 2018), **TR**.

2. Mardanov M., Sharifov Y. "Existence and uniqueness results for first-order differential equations with three-point and integral boundary conditions" Operators, Functions, and Systems of Mathematical Physics Conference, International conference dedicated to Hamlet Isaxanli's 70th anniversary, 21-24 May 2018, Khazar University, Baku, Azerbaijan pp.141-142.

3. Misir J. Mardanov, Yaqub Sh.Sharifov, "An optimal control problem for goursat – darboux systems withnonlocal conditions", «Modern problems on innovative technokogies in oil and gas production and applied mathematics» Akademik Azad Xəlil oğlu Mirzəcənzadənin 90 illik yubileyinə həsr olunmuş Beynəlxalq konfransın materialları. Bakı, 13-14 Dekabr 2018, s. 232-234.

4. Misir J. Mardanov, Yaqub Sh.Sharifov, K.E.İsmayılova "Three-point boundary value problems for system of first order differential equations with impulses", «Modern problems on innovative technokogies in oil and gas production and applied mathematics» Akademik Azad Xəlil oğlu Mirzəcənzadənin 90 illik yubileyinə həsr olunmuş Beynəlxalq konfransın materialları. Bakı, 13-14 Dekabr 2018, s. 234-236.

5. Марданов М. Дж., Шарифов Я. А. Существование и единственность решений дифференциальных уравнений первого порядка с многоточечными условиями при импульсных воздействиях, Материалы V Международной научной конференции, Нелокальные краевые задачи и родственные проблемы математической биологии, информатики и физики 4-7 декабря 2018 года, с. 137.

6. M. J. Mardanov, Y. A. Sharifov, Existence and uniqueness of solutions for the first-order nonlinear differential equations with multipoint boundary conditions, Оптимальное управление и дифференциальные игры, Материалы Международной конференции, посвященной 110-летию со дня рождения Льва Семеновича Понтрягина, Москва, 12-14 декабря 2018 г, с.172-174.

3) Work: "Numerical methods for the parametric identification of mathematical models described by loaded differential equations and optimal control problems"

Executive Director: Kamil Aida-zade

Optimal control and inverse problems were studied with respect to the loaded system of differentiation, which is given by asymmetric integral and factor conditions. The main feature of these problems is the location of the loaded points. The optimal conditions for the questions are the necessary conditions. The software was developed, numerical experiments were performed on test questions. The research results can be used for optimal control of technologies and technical objects with distributed parameters. The results obtained are reflected in the following articles.

1. K.R.Aida-Zade, V.M.Abdullayev. Numerical Solution of the Problem of Determining the Number and Locations of State Observation Points in Feedback Control of a Heating Process // Computational Mathematics and Mathematical Physics, 2018, Vol. 58, No. 1, pp. 78–89, **TR 0,677, Q3**.

2. K.R.Aida-zade,E.R.Ashrafova, Numerical Leak Detection in a Pipeline Network of Complex Structure with Unsteady Flow // Computational Mathematics and Mathematical Physics, 2017, Vol. 57, No. 12, pp. 1919–1934, **TR 0,677, Q3**.

4) Work: “Study of the problems of minimization of functions related to eigen numbers dependent on a region”

Authors: Yusif Gasimov

In the reporting year, we studied the issues of minimizing the region for a eigen number of different operators, creating a vector support system for developing natural databases and classifying data, and obtaining optimal conditions for singular controls in optimization problems. The findings are reflected in the following

1. Gasimov Y.S., Farjamnia G. Gashti, M.Z., Barangi, H. The study of support vector machine to classify the medical data. *International journal of computer science and network security*, V

2. ol.17, No.12, pp.145-150; Published: DEC 30 2017. **Thomson Reuters, ESCI**.

3. Gasimov Y.S. Safari A.R., Sharifov Y.A., Necessary optimality condition for the singular controls in an optimal control problem with nonlocal condition. *Filomat*, Vol.32, No3, 2018, pp.749-757. **TRImpact Faktor - 0.635, Q3**.

4. Y.S. Gasimov, A. Pashayev, B. Azizov. Application of the decision-making expert systems in the evaluation of the security risks of loads in transportation. *XXXI International Conference “Problems of decision making under uncertainties”*, July 3-8, 2018, Lankaran-Baku, pp.65-66.

5. Gasimov Y.S. On a formulation and solution of the inverse spectral problem with respect to the domain. *XXXI international conference on “Problems of decision making under uncertainties”*, July 3-8, 2018.

5) Work: "Reducing some inverse problems to optimal control problems for hyperbolic equations and their study"

Authors: Hamlet Guliyev

The inverse problem stated for the processes described in the hyperbolic equations were reduced to the optimal control problem. Different conditions on the existence and optimality of the obtained problem were proved. The findings were reflected in the following articles.

1. Кулиев Г.Ф., Сафарова З.Р. Метод оптимального управления в задаче Дирихле для гиперболического уравнения второго порядка. Вестник Бакинского Университета, серия физ-мат. наук, № 4, 2017, стр. 21-28.

2. Кулиев Г.Ф., Насибзаде В.Н. Приведение обратной задачи акустики к задаче оптимального управления и ее исследование. Вестник Томского Государственного Университета. Математика и механика. № 54, 2018, стр. 5-16. **Scopus**

3. H. F. Guliyev, Kh. I. Seyfullayeva. Optimal control problem for the equation of vibrations of an elastic plate, "Georgian mathematical journal". Vol. 25, №3, 2018 **TR. Impact Faktor - 0.482, Q4.**

4. H. F. Guliyev, V.N. Nasibzadeh. On determination of coefficient at lowest term in the Cauchy problem for string vibrations equation. Journal of Contemporary Applied Mathematics. Baku, V.8, 2018, №1, pp.9-18.

5. Кулиев Г.Ф., Насибзаде В.Н. Вариационный метод решения обратной задачи об определении старшего коэффициента гиперболического уравнения второго порядка. Вестник Бакинского Университета серия физ-мат, наук, № 1, 2018, стр. 5-13.

6. Guliyev H.F., Ismayilova Q.Q. The problem of determining the coefficient at the lowest term in the equation of oscillations. Advanced Mathematical Models and Applications, vol.3, №2, 2018, pp.128-136.

7. Guliyev H.F., Safarova Z.R. About the problem of finding the coefficients of the derivative in the string oscillation equation with the solution which discontinuity. The 6th International Conference on Control and Optimization with Industrial Applications, 11-13 July, 2018, Baku, Azerbaijan, pp. 125-127.

8. Кулиев Г.Ф., Сафарова З.Р. Вариационный подход к решению одной коэффициентной обратной задачи для гиперболического уравнения // Материалы IV международной научной конференции «Актуальные проблемы прикладной математики», 22-26 мая 2018 г. Нальчик-Эльбрус Стр.145.

9. Кулиев Г.Ф., Тагиев Х.Т. Об определении начальной функции в смешанной задаче для гиперболического уравнения второго порядка с нелокальным условием // Материалы IV международной научной конференции «Актуальные проблемы прикладной математики», 22-26 мая 2018 г. Стр.146.

II

Work: "Development of an analytical information system based on a soft commuting technology that supports planning, synthesis and implementation of solutions in conditions of uncertainty"

Performers: Misir Mardanov, Ramin Rzayev

Surveys conducted in the reporting year were associated with the ongoing development of multi-selective alternatives in the face of uncertainty or lack of statistical information. For example, with a lack of statistical information, the development of alternative options for alternatives is carried out in two directions: on the basis of expert opinions based on the statistical method and the use of neuro-fuzzy methods. The obtained approaches and results were tested with specific examples, and this process will continue until the end of the year.

The results obtained are reflected in the following articles.

1. М.Дж.Марданов, Р.Р.Рзаев. Методы многокритериальной оценки альтернатив в логическом базисе нейронных сетей // Автоматизация и измерения в машино - приборостроении: научный журнал, №3(3), 2018, стр. 75-85.

2. Misir J. Mardanov, RaminR.Rzayev. One Approach to Multi-criteria Evaluation of Alternatives in the Logical Basis of Neural Networks // Springer's Series "Advances in Intelligent Systems and Computing", p. 8., **TR.**

III

Work: “History of Mathematics” Ex: Misir Mardanov, Ramis Aslanov

1.1 Мисир Марданов, Рамиз Асланов, Мамед Байрамоглу, «Предисловие ко второму изданию», в книге Заида Халилова «Основы функционального анализа», 2018, Москва, URSS. С. 6-7.

1.2 Мисир Марданов, Рамиз Асланов, Араз Алиев. Роль Заида Исмаил оглы Халилова в развитии математической науки, в книге Заида Халилова «Основы функционального анализа», 2018, Москва, URSS. С.232-246.

1.3 Мисир Дж. Марданов, Рамиз М. Асланов. «Заид Исмаил оглы Халилов – основоположник современной математической школы в Азербайджане», *Azərbaycan Milli Elmlər Akademiyası Xəbərlər Məcmuəsi*, №1, cild 5, səh. 46-52, Mart 2018.

1.4 Misir Mərdanov, Ramiz Aslanov. Görkəmli pedaqoq, böyük təhsil təşkilatçısı, müdrik insan-akademik Mehdi Mehdizadə, *Azərbaycan Elmlər Akademiyasının Xəbərlər məcmuəsi*, cild 5, № 2., səhifə 46-51.

1.5 М.Дж. Марданов, Р.М. Асланов. Великий Учитель, Математик, Реформатор Михаил Григорьевич Фихтенгольц (к 130-летию со дня рождения). Профессионализм Педагога: Сущность, Содержание, Перспективы Развития, Материалы международной научно-практической конференции 15-16 марта 2018, Москва, Часть 2. С. 395-403.

1.6 М.Дж. Марданов, Р.М. Асланов. Задачники по арифметике школ Азербайджана конца XIX начала XX века. Сборник научных трудов IV **Международного форума по педагогическому образованию и региональной конференции ISATT, часть 2**, Казань 2018, стр. 12- 18 (г. Казань, Россия)

1.7 М.Дж. Марданов, Р.М. Асланов., Т.Х. Гасанова. Любовь к математике – Соломон Григорьевич Михлин (к 110 летию со дня рождения) Проблемы теории и практики обучения математике. Сборник научных работ представленных на Международную научную конференцию «71 Герценовские чтения» - СПб: Изд-во РГПУ им. А.И. Герцена, 2018.- 183 с., стр.10-16

1.8 Р.М. Асланов, О.Г.Игнатова. Сочетание традиционного электронного обучения при преподавании математического анализа в педагогическом вузе Материалы II Международной научно-практической конференции Инновационные технологии в медиаобразовании (29, 30 мая 2017 г)., Санкт-Петербург СПбГИКиТ, 2018, стр. 98-103 (г. Санкт-Петербург, Россия)

1.9 Р.М. Асланов. В.Д. Рустамов Великая женщина – Лиза Мейтнер (к 140 летию со дня рождения)/ Современный учитель дисциплин естественно научного цикла: сборник материалов Международной научно-практической конференции (г. Ишим; 16 февраля 2018)- Ишим: Изд-во ИПИ им. П.П. Ершова (филиал Тюм ГУ) 2018, 280 стр. , стр. 28-37 (г.Ишим, Россия)

1.10 Р.М. Асланов. Замечательный математик, физик, педагог, энциклопедист – Жан Батист Фурье (к 250 – летию со дня рождения) Сборник статей XIV Международной научно-практической конференции «Артёмовские чтения», Современное образование: научные подходы, опыт, проблемы, перспективы. (г. Пенза 18-19 апреля 2018) Пенза. Изд-во Пензенский государственный университет, 2018, стр. 131- 139. (г. Пенза, Россия).

1.11 Р.М. Асланов. Эпоха просвещения: Мария Гаэтана Аньези . Вестник Елецкого государственного университета. – вып. 39: Серия «Педагогика».(История и теория математического образования).- Елец: ЕГУ им. И.А. Бунина, 2018 – 171 стр. стр. 14-21 (г. Елец, Россия).

1.12 Р.М. Асланов, В.Д. Рустамов. Математик, механик, инженер –ПонселеЖан Виктор (к 230 летию со дня рождения). Материалы IV Международной научно-практической конференции «Актуальные проблемы математики и информатики: теория, методика, практика» 19-21 апреля 2018 года, Елецкий государственный университет им. И.А. Бунина (г. Елец, Россия)

1.13 Р.М. Асланов, О.Г. Игнатова. Электронное обучение и его роль в преподавании математических дисциплин. Сборник статей участников Международной научно-практической конференции «Развивающий потенциал образовательных WEB - технологий», 17-18 мая 2018, Арзамас, Арзамаский филиал Национального исследовательского Нижегородского государственного университета им. Н.И. Лобачевского 2018. стр.243-246 (г. Арзамас, Россия) – plenary məruzə.

1.14 Р.М. Асланов, О.Г. Игнатова. Электронное обучение вчера, сегодня, завтра. Проблемы и перспективы/ Научно-методический журнал «Continuum. Математика. Информатика. Образование». Елец. 2018. Выпуск № 1, стр. 28 -34.

1.15 Р.М. Асланов, О.Г. Игнатова. Построение модели методики преподавания курса математического анализа с применением электронного обучения./Информатизация непрерывного образования – 2018 (ICE-2018): материалы Международной научной конференции. Москва, 14-17 октября 2018 г.: в 2 т..- Москва: РУДН, 2018 -648 с., стр.534-537.

1.16 Р.М. Асланов. Магистратура и магистерские диссертации. атериалы VIII Международной научно-практической конференция. (Казань, 17-21 октября, 2018г.) издательство Казан.ун-та, стр. 321-327.

About doctoral studies and masters.

During the year there were two masters in the department, Narmin Shirinova graduated from the magistracy, and Konul Rakhimova continues her education.

In the reporting year, two people: Ainur Safarova and Samin Malik defended their thesis in mathematics.

Scientific seminars of the department

I

"Actual problems of the theory of optimal control"

At the seminar at 10:30 a.m on the thursday of the week, the following scientists made the following statements:

1. 11.01.2018- The professor of Baku State University Yagub Sherifov gave a talk on “Nonlocal differential equations with nonlocal conditions and optimal control described by them”.
2. 25.01.2018- The professor of Baku State University Yagub Sherifov gave a talk on “Nonlocal differential equations with nonlocal conditions and their optimal control”.
3. 08.02.2018- Leading scientist of The Institute of Control Systems of ANAS, Dr., Assoc. Prof. Anar Rahimov gave a talk on “Numerical solution to inverse problems for hyperbolic type equation”.
4. 22.02.2018- Leading scientist of The Institute of Control Systems of ANAS, Dr., Assoc. Prof. Anar Rahimov gave a talk on “Numerical solution to inverse problems for hyperbolic type equation”.

5. 05.04.2018-The sen. Res. Ass. of “Optimal Control” department, doct. of ph. math. sci., prof. Telman Melikov gave a talk on “Amplification of Weierstrass necessary condition for prime variation problem and obtaining stranger optimality condition on discrete control problems”.
6. 19.04.2018- professor of Baku State University, doct of phys. Math. Sci. Misreddin Allahverdi oglu Sadigov gave a talk on "The second order necessary condition for the problem of non-smooth mathematical programming and second order necessary condition for discrete inclusion problem".
7. 03.05.2018- professor of Baku State University, doct of phys. Math. Sci. Misreddin Allahverdi oglu Sadigov gave a talk on "The second order necessary condition for the problem of non-smooth mathematical programming and second order necessary condition for discrete inclusion problem".
8. 17.05.2018-" Leading scientist of The Institute of Control Systems of ANAS, Dr., Assoc. Prof. Anar Rahimov gave a talk on “An approach to numerical solution to inverse source problems with nonlocal conditions”.
9. 31.05.2018- Cond. for a degree of the Institute of Control systems Vugar Adam oglu Hashimov gave a talk on “Synthesis of lumped controls and optimization of locations of lumped control influences and measurement points on heating the plate”.
- 10.27.09.2018- professor of Baku State University, doct of phys. Math. Sci. Misreddin Allahverdi oglu Sadigov gave a talk on “Extremal problem for integral inclusion”.
- 11.11.10.2018- professor of Baku State University, doct of phys. Math. Sci. Misreddin Allahverdi oglu Sadigov gave a talk on “Extremal problem for integral inclusion”.
- 12.25.10.2018-doctor of mathematical sciences, associate professor Shakir Yusubov gave a talk on “About necessary conditions in fractional variational problem”
- 13.08.11.2018- doctor of mathematical sciences, associate professor Shakir Yusubov gave a talk on “About necessary conditions in fractional variational problem”.
- 14.22.11.2018-Rovshan Bandaliyev “An analogue of the Pontryagin maximum principle for optimal control problems described by fractional order differential equations”.

II

Optimization conditions for control problems, described by the fractional differential equations.

Doctors Rovshan Bandaliyev, Ilgar Mamedov, Telman Malikov, Mubariz Hajibeyov and Yagub Sharifov spoke at the seminar on the tuesday at 16.00.

III

Once a month on the Tuesday at 11:00 am the Institute of Mathematics and Mechanics, Institute of Geology and Geophysics, held a seminar an Academy of Public Administration and the Center for Seismological Service

"Mathematical modeling of dependence of radon gas on endogenous factors (temperature, pressure, humidity) and exogenous (amplitude-earthquake) factors in Azerbaijan"

During the reporting period, 28 articles and 18 conference materials were published (12 articles included in the journals listed at Thomson Reuters)

SCIENTIFIC AND SOCIAL ACTIVITIES

Head of the department professor Misir Mardanov is Chairman of the Dissertation Council D.01.111 and of the Scientific Council of IMM. He is depute editor-in-chief of “AMEA Xəbərləri” journal, a member of the editorial board of “Azerbaijan Journal of Mathematics” and “Chebyshevskii sbornik”, editor-in-chief of “Proc. of IMM ANAS”, a member of the international editorial board of “TWMS Journal of Applied Mathematics” and chairman of Scientific Publishing of ANAS.

M.Mardanov gave talks in Baku Business University, Azerbaijan University, Architecture and Construction University, in Binagadi district by the “Knowledge foundation” line, in Heydar Aliyev center in the event devoted to 100 years of Azerbaijan Democratic Republic.

He also participated with teachers and pupils of school №162, on November 2018 with parents and pupils of Zangi lyceum.

The first volume of the book “Azerbaijan studied in higher schools to 1920” written together with prof. Adalat Tahirzade was published.

By the decree number 6/7 dated from March 14, 2018, for their effective activity including their scientific and scientific popular works devoted to promotion of mathematical science, corr. member of ANAS prof. M.Mardanov and sen. res. ass. of the department professor Ramiz Aslanov were rewarded the prize of the Presidium of ANAS.

By the decree number 15/3 dated from October 24, 2018, corr. member of ANAS prof. Misir Mardanov was elected the chairman of “Scientific Publishing Council” of ANAS. He has held meetings with responsible secretaries of the journals published in ANAS institute and gave information about these meetings to President of ANAS.

Within two weeks he held meetings with executives of journals published in the institutes of ANAS, determined the quality of the journals and informed the President of ANAS and the Publishing Council about it.

He has prepared the book “Mathematicians of Azerbaijan”.

Doctor of Physical and Mathematical Sciences, Corresponding Member of ANAS, Professor Kamil Aidazade, is the Head of the Laboratory of “Numerical methods of Decision-Making in Determined Systems” of the Institute of Control Systems of ANAS, expert of international scientific programs of the European Union, Journal of Ege University Faculty of Science, member of the editorial board of the international journal of NASA “Research Mathematics and Mechanics”, chief editor of the International Journal of “Applied Mathematics and Fundamental Informatics”, TWNS “Pure and Applied Mathematics”.

Professor Telman Melikov is a member of the AAC Expert Council in Mathematics and Mechanics.

Doctor of Physical and Mathematical Sciences of Department of Mechanics and Mathematics, BSU, Department of Mathematical Control, professor Hamlet Guliyev is a member of the editorial board of the journal "Modern Mathematical Models and Applications".

Professor Yagub Sharifov is a member of the editorial board of the Proceedings of the Institute of Applied Mathematics.

Professor Ramin Rzayev is a senior researcher at the Institute of Control Systems of ANAS, a member of the editorial board of the Scientific Journal of Automation and Metabolism, a member of the program committee of the International Scientific Conference "Information Systems and Technologies: Achievements and Prospects."

Department's Senior Researcher Yusif Gasimov is editor in-chief of international journal “Advanced Mathematical Models and Applications”, journal of “Modern Technology and Engineering” - International journalist member of the editorial board of Applied Mathematics and Information Science - international editorial board, TWMS Journal of Pure and Applied

Mathematics - member of the editorial board of the International Journal, member of the Organizing Committee of the VI Congress of the Turkish World Mathematical Society.

Professor Ramiz Aslanov is a member of the editorial board of the following journals:

1. «Вестник Сыктывкарского университета. Серия 1. Математика.Механика. Информатика». (г. Сыктывкар, РФ)
2. Научно-методический журнал «CONTINUUM. Математика. Информатика. Образование». Елецкий государственный университет им. И.А. Бунина (г. Елец, РФ)
3. «Вестник Елецкого государственного университета» им. И.А. Бунина.–Серия «Педагогика».(История и теория математического образования)(г. Елец, РФ).

Head of department:

**corr. member of ANAS
prof.Misir Mardanov**