

**Report on scientific and scientific-organization activity of  
“Computational Mathematics and Informatics ” department for 2016.**

There are 13 employees in the department. Here 2 senior researchers, 2 researchers, 7 software engineers, 1 - senior laboratory assistant and 1 technician. One - Candidate of Physical and Mathematical Sciences, and two of the candidate of technical sciences. Two staff members conduct research within the dissertation

The work on the topic "Development of numerical methods for liquid flow models with a free surface, and other dynamic processes " were conducted and have been completed in the department during reporting periods.

8 articles have been published. Also, 3 of the 7 theses were published in final form.

Articles:

1. А.Г.Нагиев, С.А.Халилов, А.С.Гусейнова, Г.А.Нагиев  
“Визуализация фактора распределения плотности транспортирующихся катализаторов по длине вертикальных трубопроводов в установках крекинга нефтяных газойлей” / Журнал «Химическое и нефтегазовое машиностроение», Москва, 1/2016, стр.11-15.

2. А.Г. Нагиев, В.В. Садыхов, У.М. Гашимова “Идентификация функций молекулярно-массового распределения полимерных материалов по их механическим параметрам вязкого сопротивления” / Москва. «Пластические массы» 2016, № 7. с. 52-55.

3. Jafarov E.I. , Jafarova A.M., Oste R. “Exactly solvable model of the one-dimensional confined harmonic oscillator” / Transactions of National Academy of

Sciences of Azerbaijan Series of Physical-Technical and Mathematical Sciences, vol. XXXVI, No 4, (2016) 122-130.

4. Г.А.Нагиев, В.В.Садыхов “Жесткие системы дифференциальных уравнений и пути совершенствования алгоритмов численного решения” / “Sumqayıt Dövlət Universitetinin Elmi Xəbərləri” cild 15, 2016, №1, səh. 61-65.

5. A. G. Nagiev, F. A. Alieva, G. A. Nagiev “Problem of Optimal Management of Resources of Industrial Production with Given Statistical Data of Disturbance Parameters” / «Advances in Intelligent Systems and Computing», Springer (the USA) 2016, Volume 502. pp. 997-1009.

6. A. G. Nagiev, F. A. Alieva, G. A. Nagiev “Vibrational Control of Objects with Distributed Parameters Using Hydrotreating of Motor Fuels as an Example” / «Advances in Intelligent Systems and Computing», Springer (the USA) 2016, Volume 502. pp. 213-222.

7. A. G. Nagiev, S. A. Khalilov, A. S. Guseinova, G. A. Nagiev “Visualization of the Factor of Transported-Catalyst Density Distribution Along the Length of Vertical Pipelines in Petroleum Gas Oil Cracking Units” / “Chemical and Petroleum Engineering” Springer (the USA) May 2016, Volume 52, Issue 1, pp. 15-20.

8. Nagiev H. Alieva F. “Mathematical modeling of dynamics of the reactor hydrotreating hydrocarbon oils to control.” / Problems of modern Science and education. / Moscow 2016, № 18 (60), pp.23-27

#### Abstracts:

1. A.G.Nagiev, F.B.Imranov, V.V.Sadychov, H.A.Nagiev “Decentralization to the level nodes switching the global challenges queue management to the packet transmission of information.” / “International Workshop on

Non-Harmonic Analysis and Differential Operators” Baku, Azerbaijan, 2016, pp.86-87.

2. F. İmranov, İ. Mirzəzadə, T. Maqşudova “Elektrokardioqrafik siqnalların veyvlet çevirmə əsasında diaqnostik təhlili” / AMEA İnformasiya Texnologiyaları İnstitutu “Elektron tibbin multidissiplinar problemləri” I Respublika elmi-praktiki konfransı. səh.63-64

3. B.Bilalov, F.İmranov, Z.Zabidov, H.Nagiev “Elektrokardioqrafik siqnalların veyvlet çevirmə əsasında diaqnostik təhlili” / AMEA İnformasiya Texnologiyaları İnstitutu “Elektron tibbin multidissiplinar problemləri” I Respublika elmi-praktiki konfransı. səh.30-31

4. А.Г.Нагиев, Ф.Б.Имранов, В.В.Садыхов, Г.А.Нагиев “Децентрализация до уровня узлов коммутации глобальной стратегии использования ресурсов каналов в сетях пакетной передачи информации.” / Azərbaycan Texniki Universitetini “Maşınqayırmada intellektual texnologiyalar” mövzusunda Beynəlxalq elmi-texniki konfrans (thesis accepted for publication)

5. Sadykov V.V, Hashimova U.M, Rahimova M.R. “Friction electromechanical research polymeric materials associated with their viscosity and yield summary” / Azərbaycan Texniki Universitetini “İnformasiya və kommunikasiya texnologiyalarının müasir vəziyyəti və inkişafı perspektivləri” mövzusunda Beynəlxalq elmi-texniki konfrans (thesis accepted for publication)

In the reporting period held an initial discussion of the dissertation researcher Aynura Jafarova on " SOLUTION OF THE DIFFERENCE EQUATIONS FOR DEFORMED QUANTUM SYSTEMS", presented by specialty 2212.01 - "Theoretical Physics". She has successfully carried out all maintenance work on the Web-page of the Institute, including the design of the site, its software, as well as information and administrative functions. In the reporting period attendance

www.imm.az site has reached the number of 41,000 Aynura Jafarova conducted scientific research grant from the National Fund for the development of science on the subject of " Effects of spin-orbit interactions and disorder in low-dimensional semiconductors and superconductors: application of the topological structures in quantum informatics". In the reporting period, H.A. Nagiyev continued to work on the project "Application of signal processing and wavelet analysis theory frame in seismology and in other areas" in the contest of research programs of ANAS. Under this program another employee of the institute Z. Zabidov was at scientific trip (with the year 16.02.2016-24.02.2016) in Aerospace University of Samara, where he exchanged experiences with Sergeev Vladislav Viktorovich and other staff of the institution. The main topic was the exchange of experience and processing of digital medical imaging space, recognition of images and wavelet processing information. The report on the need and use of the results of wavelet transformation in digital signal processing has been prepared. A report on "Diagnostic analysis based on wavelet transform of ECG signals," spoke at the first Republican scientific-practical conference entitled "Multi-disciplinary problems e-medicine."

The final third stage of the project (the State Fund for Development of Information Technology grant) was completed under the title "Development of a set of optimal traffic control at flow rates in the switching node level programs in packet data communication networks" and has been prepared the final report.

The employees of department have participated at the international scientific conference International Workshop on Non-Harmonic Analysis and Differential Operators with the presentation entitled "Decentralization to the level nodes switching the global challenges queue management to the packet transmission of information")

A staff member of department Maksudova Tamella was adopted as a candidate for a degree ,speciality1203.01- "Computer Science" " to the Institute of Information

Technologies of ANAS on february 2016The topic of her thesis is "Development of mechanisms for the identification of diabetic autonomic neuropathy on the basis of medical evidence", candidate of sciences T.Imranov is academic adviser. She participated in the first Republican scientific-practical conference entitled "multidisciplinary medical problems" with the report "Diagnostic analysis based on wavelet transform of ECG signals"

Head of the department:

PhD in engineering

Hasan Nagiyev