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ORGANIZATIONAL ACTIVITY OF THE DEPARTMENT OF PHYSICS, MATHEMATICS AND TECHNICAL SCIENCES OF THE UZBEKISTAN ACADEMY OF SCIENCES

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ANNOTATION

This article describes the organizational activities of the Department of Physical, Mathematical and Technical Sciences of the Academy of Sciences of the Republic of Uzbekistan. The organization of department-based scientific institutions, their inclusion in the Academy of Sciences, their transfer to another system, their termination, and their reorganization have been analyzed. As a result of the analysis, the institutions of the Department that were part of the academy, transferred to another system, terminated and reorganized were identified.

Keywords: Academy of Sciences, Third Renaissance, Presidium, Departments, basic and applied research, management apparatus structure, reorganized.

1. IMPORTANCE

Not only we, but also the people of the world are satisfied with the scientific heritage left by our great ancestors, our great grandfathers, who founded the First and Second Renaissance periods in the history of our country. That is why President Shavkat Mirziyoyev, in his speech at the solemn ceremony dedicated to the twenty-ninth anniversary of the Independence of Uzbekistan, emphasized that a new renaissance is being created in Uzbekistan - the foundation for the Third Renaissance.

The Academy of Sciences of the Republic of Uzbekistan has its place and role in creating this foundation. Studying the history of the Academy of Sciences of the Republic of Uzbekistan helps to understand that it is a leading organization in the field of science and shows the importance of academic traditions preserved to this day. Today, this topic is gaining special importance with the reforms being carried out in the system of organizing scientific activity in our country. Reference to the history of the Academy of Sciences complements the history of the Academy of Sciences and promotes the role of the highest scientific institution of Uzbekistan in the fields of natural, technical and social and humanitarian sciences, and expands the knowledge and thoughts of the creation of conditions for the establishment of the Academy of Sciences in the minds of today's young generation. Since its establishment, the Academy of Sciences of the Republic of Uzbekistan has been the largest, most prestigious and important scientific organization of the country during its scientific activity. Academy of Sciences of the Republic of Uzbekistan: large-scale fundamental and applied research; priority scientific and technical programs and innovative projects for the republic; training of highly qualified scientific personnel; implements research results and implementation of innovative technologies. This gives an opportunity to increase the socio-economic, scientific-technical and cultural potential of the country.

2. METHODS AND LEVEL OF STUDY

The article is covered on the basis of generally accepted historical methods - historicity, comparative-logical analysis, sequence, principles of objectivity. In the initial stages of the establishment of the Academy of Sciences, the scientific potential was mainly formed - advanced scientific schools, numerous research institutes and a number of unique scientific complexes and facilities were established. But academic science in many cases was aimed at solving problems that are not relevant for Uzbekistan. Since its establishment, the Academy of Sciences of the Republic of Uzbekistan has been the largest, most prestigious and important scientific organization of the country during its scientific activity.

The history of the formation and development of the Academy of Sciences of the Republic of Uzbekistan was not fully studied in the research. In particular, because the approach to the problem in the works created during the Soviet period was under the ideological influence of the communist ideology, these issues did not find their impartial interpretation. The history of the Academy of Sciences of the Republic of Uzbekistan was not sufficiently covered even in the studies created in the period of independence in Uzbekistan.

The Science Departments of the Academy support the development and coordination of fundamental research in the relevant field of science in the republic, the expansion of international relations, summarize proposals for the acceleration of scientific and technical progress and socio-economic development of the republic, and present them to the Presidium of the Academy of Sciences for consideration.

In 2017, in order to ensure the development of the priority areas of science, as well as to effectively coordinate the activities of scientific research institutions, the departments of physical-mathematical and technical sciences, chemical-biological sciences, and social-humanitarian sciences were established in the structure of the management apparatus of the Academy of Sciences [1].

It is known that after the establishment of the Academy of Sciences, the number of scientific and research institutions within it increased over time. This was certainly related to the growing demands and needs of the industry. In the Academy of Sciences, this situation was reflected in the number of science departments and research institutes.

The Academy of Sciences of the Republic of Uzbekistan has been effectively continuing its academic activities in its almost 80-year history. During this period, the academy was able to show how much Uzbek science can occupy a place in the development of world science. The analysis of the establishment of the Academy of Sciences and the formation of scientific institutions showed that, first of all, the establishment of the Academy of Sciences in Uzbekistan was based on the creation of conditions, and it was formed due to the further improvement of academic research work and the expansion of research directions of scientific research institutes.

The Department of Physics, Mathematics and Technical Sciences of the Academy of Sciences of the Republic of Uzbekistan made a special contribution to the formation of fields such as geology, geophysics, water problems, mineral raw materials, geography, oil and gas fields, hydrogeology, cybernetics, algorithm-engineering, solar energy. Scientific-research institutions in these areas operated for a certain time within the Academy of Sciences.

The following were determined according to the historical development of scientific research institutes and the directions of their activities.

In 1943, as part of the Academy of Sciences, Kh. M. Institute of Geology and Geophysics named after Abdullaev (transferred to another structure in 2016), V. P. The Romanovsky Institute of Mathematics and the Institute of Physics and Technology are still operating in this system.

In 1943, the current Institute of Mathematics under the name V. I. The Romanovsky [2] was established as a mathematical research center of Uzbekistan. UzFAN was established on the basis of the Department of Physical and Mathematical Sciences of the USSR. It was named the Institute of Mathematics and Mechanics in 1944[3]. Since 1954, the institute has been named after V. I. Romanovsky, the organizer and founder of scientific research in the republic. In 1963, the system of the Academy of Sciences was reorganized[4].

In 1964, the new structure of the institute was approved in accordance with its main scientific directions, and in 1989, a doctoral course was opened at the institute. The research started by V. I. Romanovsky in the fields of probability theory and mathematical statistics was continued by T. A. Sarimsakov, S. H. Sirojiddinov and their students. In 1990, Academician of the Russian Academy of Sciences T.A. Sarimsakov was awarded the title of Hero of Socialist Labor. The scientific team has published 27 volumes of research, 84 collections on topics, more than 60 monographs and textbooks[5].

It is important for the organization and development of schools. V. I. Romanovsky, T. A. Sarimsakov, S. H. Sirojiddinov, I. S. Arjanikh contributed, academician T. J. Joraev, M. S. Salahiddinov, Sh. A. Ayupov, T. A. Azlarov, Sh. Q. Farmanovs are their successors[6].

V.I.The Institute of Mathematics under the National University of Uzbekistan was established in 2007 on the basis of the Romanovsky Institute of Mathematics and the Institute of Informatics [7]. Reorganized in 2012[8]. In 2017, the Institute of Mathematics named after V. I. Romanovsky of the Academy of Sciences of the Republic of Uzbekistan was newly established on the basis of the Institute of Mathematics under the National University of Uzbekistan [9].

Currently, the main directions of scientific research of the institute[10] are: Algebra and functional analysis; Differential equations and mathematical physics; Probability theory and mathematical statistics; Theory of dynamic systems; It consists of applied and computational mathematics.

The first physical profile scientific research institute in Central Asia was established in 1943 on the basis of the Physics-Technical Laboratory of the Uzbekistan branch of the USSR Academy of Sciences of the Institute of Physics and Technology[11]. The general scientific direction of the institute was theoretical and experimental research in the field of cathode and semiconductor electronics, cosmic rays, physics of the effect of radiation on solids and liquids, as well as the physics of fiber materials and their application in the national economy. The Institute of Nuclear Physics was separated from the Institute of Physics and Technology in 1956, and the Institute of Electronics in 1967[12]. In 1967, S. V. Named Starodubtsev.

In 1970, work on coherent reactions was awarded the State Prize of the Uzbek SSR named after Beruni (S. A. Azimov, U. G'. G'ulomov, V. M. Chudakov, Sh. Abdujamilov, E. V. Veter) [13]. In 1983, the research group on interaction with nuclei received the State Prize of the Uzbek SSR named after Beruni (Q. G'. Gulomov, G. M. Chernov, A. A. Yoldoshev, B. S. Yoldoshev). In 1992,

the research group on silicon materials science was awarded the State Prize of the Uzbek SSR named after Beruni (M.S. Saidov, R.A. Mominov) [14].

In 1987, "Physics – Sun" Scientific works organisation was established[15]. Institute activities in the name of G.M.Avakyants, E.Adirovin, S.K.Azimov, U.O.Oripov, M.S.Saidov, S.V.Starodubtsev, SU.Umarov, G'.Yo.Umarov and other scientists depends[16].

In the 1950s, despite authoritarian tendencies, scientific progress continued. The totalitarian system and ideological pressures of the authorities could not prevent science from producing results, although they were less than possible. Even in the worst times of Stalinism, many scientists of the republic continued to seriously engage in science. The achievements of Uzbek science in the field of probability theory, nuclear physics, and geology cannot be overestimated[17].

After the establishment of the Academy of Sciences until the 1990s, the Institute of Energy Problems, Institute of Nuclear Physics, Design Bureau and Scientific and Technical Center of Experimental Production, Institute of Astronomy, Institute of Seismic Stability of Mechanics and Structures named after M.T. Orozboev, and Institutes of Seismology were established within the Academy.

Below we will consider the basis, organization and main scientific directions of these institutes.

The present Institute of Energy Problems was founded in 1955 and was called the Institute of Energy and Automation[18]. The institute was established in 1941 on the basis of the reorganized energy department of the Uzbekistan branch of the FA of the USSR. The establishment of the Institute of Electronics was helped by the widespread recognition of the achievements of the Uzbek School of Physic-Electronics, created under the leadership of U.O. Orifov[19]. In 1941-1945, great work was done to increase the nominal capacity of the hydroelectric power plant and establish optimal energy regimes for the Tashkent-Chirchik energy system.

J.A.Abdullaev, G.A.Grinevich, R.A.Zohidov, A.S.Saidkhujaev, S.Z.Usmonov, N.M.Usmonkho'jaev, H.F. Fazilov, M. 3. Related to the name of Hamidkhanov and other scientists [20].

In the 1980s, the Institute of Energy and Automation of the Academy of Sciences of the Republic of Uzbekistan was included in the system of the Ministry of Energy of the former Union, and after five years of operation, it was again included in the Academy of Sciences of the Republic of Uzbekistan[21].

In 2016, a scientific and technical center in the form of a limited liability company was established on the basis of the Institute of Energy and Automation of the Academy of Sciences of the Republic of Uzbekistan in the system of JSC "Uzbekenergo"[22]. On May 4, 2021, by the Decision of the Cabinet of Ministers of the Republic of Uzbekistan, the Institute of Energy Problems of the Academy of Sciences of the Republic of Uzbekistan was reorganized on the basis of "Uzbekenergo" JSC Scientific and Technical Center LLC[23].

Institute of Nuclear Physics, a scientific institution conducting fundamental and applied research in Uzbekistan in the fields of nuclear physics, radiation physics of solid bodies, materials science, activation analysis, radiochemistry, scientific instrument making, information technologies 1956 was established in [24]. The Institute conducted fundamental research in the field of nuclear physics and the use of atomic energy in the national economy

[25]. In 1957, a nuclear reactor building, experimental workshops and a residential complex named after the great scientist Ulugbek began to rise near the village of Kibray near Tashkent[26].

The scientific activity of the institute is R.A.Alimov, J.A.Abdullaev, in 1991 a group of scientists M.S. Saidov (FTI, UzR FA), A.T. Mamadalimov (Institute of Physics and Chemistry of Polymers), R.A. Muminov (FTI, UzR FA), M.S. Yunusov (Institute of Nuclear Physics) received the State Prize named after Abu Rayhan Al-Beruni for the scientific research of deep-level impurities and defects in silicon[27]. Activities of the institute U.O. Orifov, S.A. Azimov, SV. Starodubtsev, U.G. Related to the name of Ghulomov, P.K. Habibullaev, R.B. Bekjonov, M.S. Yunusov, B.S. Yoldoshev and other scientists [28].

In 1998, the institute's VVR-SM nuclear reactor was switched to operation with low-enriched 36% nuclear fuel. In 2006, the local network of the institute was replaced by optical fibers. In 2012, a modern control and protection system was put into operation at the VVR-SM reactor. In 2014, the implementation of a new IAEA project to improve and modernize the main devices and systems of the VVR-SM nuclear research reactor began[29].

In 2016, the Institute of Nuclear Physics was reorganized at the National University of the Republic of Uzbekistan[30]. In 2017, the Institute of Nuclear Physics under the National University of Uzbekistan was decided to be transferred to the Academy of Sciences, and the Institute of Nuclear Physics[31] was transferred to the Academy of Sciences of the Republic of Uzbekistan.

The State Design Bureau (DKB) under the Academy of Sciences was established in 1962 (now called the Design Bureau and Experimental Production Scientific and Technical Center) [32]. In 1975, DKB was transformed into the Central Design-Construction and Technological Bureau (MLKTB) of the Academy of Sciences of the Republic of Uzbekistan, and its activities were focused on the production of scientific equipment[33].

In 1992, IAMLKTB was transformed into “Akadempribor” scientific researche institute, after the establishment of scientific research departments and the creation of new scientific teams, the development and creation of lasers became one of the promising directions[34]. In 2012, the Academy of Sciences of the Republic of Uzbekistan "Akadempribor" was transformed into a specialized design and technology bureau at the newly established Institute of Ion-Plasma and Laser Technologies of the scientific researche institute Academy of Sciences[35]. In 2016, the Institute of Ion-Plasma and Laser Technologies named after U.A. Arifov was terminated [36]. In 2017, the Institute of Ion-Plasma and Laser Technologies (IPLT) was reorganized and the IKTB laboratory was established within it[37]. According to the decision of the President of the Republic of Uzbekistan No. PQ-3899 of August 6, 2018 [38] U.A. A design bureau of the Academy of Sciences of the Republic of Uzbekistan and a Scientific and Technical Center with experimental production were established on the basis of the Specialized Design and Technology Bureau of the Institute of Ion-Plasma and Laser Technologies named after Arifov.

The Institute of Astronomy was founded in 1966 on the basis of the Tashkent Astronomical Observatory of the Academy of Sciences of the Uzbek SSR[39]. This observatory was established in 1873 in the military topographic department of the Turkestan military district. In 1922, the observatory was divided into two independent institutions, and its astronomical part (Tashkent Astronomical Observatory) became part of the Turkestan People's Commissariat of

Education[40]. In 1933, the transfer of the observatory to the Scientific Committee under the Central Administration of the Uzbek SSR served to strengthen new directions in its activity[41]. On June 5-7, 1974, an All-Union conference dedicated to the 100th anniversary of the Institute of Astronomy of the Academy of Sciences of the Uzbekistan SSR was held in Tashkent[42]. In 1988, a new International Service for determining the parameters of the Earth's rotation around its axis was established based on new observation methods such as the precession laser-satellite range finder and satellite-geodetic systems. The institute joined this international system in 1991[43].

In 1991, in connection with the 600th anniversary of the great scientist, thinker and statesman Ulug'bek, which will be in 1994, the Institute of Astronomy of the Academy of Sciences of the USSR Academy of Sciences with the Order of the Labor Red Banner was named after Ulug'bek[44] and became known as the Institute of Astronomy named after Mirzo Ulug'bek.

In October 2007, a new minor planet 2007 TN2 was discovered at the Maidanak Observatory, which was registered in the international catalog in 2009 with the permanent number 210271. In 2010, at the suggestion of the first President of Uzbekistan, I.A. Karimov, the Harvard Center named the Little Planet “Samarkand”[45].

In 1966, the Institute of Seismology was established[46]. Its basis was the Central Seismic Station “Tashkent”, which has been operating since 1901, and the Department of Seismic Observations of the Institute of Geology and Geophysics of the Academy of Sciences of the Uzbek SSR.

Since 1964, the Tashkent seismological observatory has been considered the center of seismic observations in Central Asia and Kazakhstan. In 1966, the nature of the catastrophic earthquake in Tashkent and the seismic micro-zoning of its territory were studied [47].

In the geodynamic range created in Tashkent in 1967, for the first time, it was possible to show the importance of hydrogeismological observations for the study of modern tectonic processes, to determine the changes of many hydrogeismological indicators of water in the previous and subsequent periods[48].

In 1981, the institute's research on the creation of a set of general seismic zoning and seismic microzoning maps of the territory of Uzbekistan was awarded with the State Prize named after Beruni [49].

In 2017, the Decision of the President of the Republic of Uzbekistan was adopted in order to strengthen the material and technical base of the Institute of Seismology[50]. According to the decision, it was decided to modernize the experimental base of the institute at the level of modern requirements.

The Institute of Seismic Stability of Mechanics and Structures was established in 1967[51]. The Institute of Seismic Strength of Mechanics and Structures was established on the basis of the Institute of Structures of the Academy of Sciences of the Uzbek SSR, which has been operating since 1947[52]. The organizer and director of the general institute was M. T. Orazboev, an academician of the Academy of Sciences of the Uzbek SSR. In 1958, with the establishment of a branch of the USSR Academy of Architecture and Construction in Tashkent, all construction departments were transferred from the Institute of Buildings to the branch. In 1959, the institute functioned as the Institute of Mechanics of the Academy of Sciences of the Uzbek SSR,

and in 1963 as the Institute of Mechanics with the Computing Center of the Academy of Sciences of the Uzbek SSR.

In 1971, the organizer and first director of the Institute of Structures, academician of the Academy of Sciences of the Uzbek SSR M. T. Orazboev was given the name. Since 1974, a new scientific direction - mathematical problems of continuum mechanics - began to develop at the institute [53]. Another laboratory with a general profile was established in 1975 and was associated with the construction of the Tashkent metro[54]. In 1976, the Department of Agrochemistry was transferred to the system of branch institutes[55]. Activity of the institute K. Bobomurodov, A. D. Glushchenko, A. A. Ilyushin, O. V. Lebedev, R. Mukhitdinova, V. T. Rasskazovsky, H. Rakhmatullin, T. Rashidov, A. A. Rizaev, H. Usmonkhojaev, M. Orozboev, J. Faizullaev, V. It is connected with the name of Qabulov and other scientists [56].

In 2014, the Research Center of Network Mechanical Engineering Problems was established at the Tashkent State Technical University, as well as the Institute of Seismic Stability of Structures of the Academy of Sciences of the Republic of Uzbekistan on the basis of the Block of Seismic Stability of Structures[57]. In 2017, the Academy of Sciences of the Republic of Uzbekistan was reorganized under the name M.T. Orozboev Institute of Seismic Strength of Mechanics and Structures[58] on the basis of the Institute of Seismic Strength of Structures and the Scientific Research Center of Network Engineering Problems under the Tashkent State Technical University.

In 1992, the State Space Research Agency of Uzbekistan (RT-70 Radio Astronomy Observatory) was established[59]. In 2002, the Decree of the President of the Republic of Uzbekistan was adopted in order to ensure the comprehensive and effective use of the existing potential in the field of space research and astronomy, and the introduction of modern advances in space research and technology into the priority sectors and sectors of the country's economy. According to the decree[60], the State Agency for Space Research of Uzbekistan under the Cabinet of Ministers of the Republic of Uzbekistan ("Uzbekkosmos") was terminated.

The Space Research Center was established in the system of the Academy of Sciences of the Republic of Uzbekistan, and the Institute of Astronomy of the Academy of Sciences, the Tashkent Research Institute of Space Instrumentation, the Chirchik "Composite" experimental plant, and the RT-70 Radio Astronomical Observatory were included in it.

The history of the Institute of Ion Plasma and Laser Technologies is related to the Institute of Electronics, which was established in 1967 on the basis of the Electronics Department of the Academy of Sciences of the Uzbek SSR. He is an academician of the Academy of Sciences of the Uzbek SSR, a doctor of physics and mathematics. A. Arifov organized and managed [61]. In 1964-1980, the institute achieved important scientific results in the study of the structure and properties of the surface of a solid body and the development of theoretical foundations based on the angular and energetic laws of the scattering of low and medium energy ions [62].

On February 7, 2012, as a result of reorganization on the basis of the Institute of Electronics of the Academy of Sciences of the Republic of Uzbekistan and the Department of Thermal Physics of the Academy of Sciences of the Republic of Uzbekistan, the Academy of Sciences of the Republic of Uzbekistan was changed to the Institute of Ion-Plasma and Laser Technologies named after U.A. Arifov[63]. In 2016, the Institute of Ion-Plasma and Laser Technologies

named after U.A. Arifov was terminated[64]. In 2017, the Institute of Ion-Plasma and Laser Technologies named after U.A. Orifov was newly established[65].

4. CONCLUSIONS

It is appropriate to note the following in the form of a conclusion to the issue:

The Department of Physics, Mathematics and Technical Sciences of the Academy of Sciences of the Republic of Uzbekistan made a special contribution to the formation of fields such as geology, geophysics, water problems, mineral raw materials, geography, oil and gas fields, hydrogeology, cybernetics, algorithm-engineering, solar energy. Scientific-research institutions in these areas operated for a certain time within the Academy of Sciences.

Since its establishment, the Academy of Sciences of the Republic of Uzbekistan has been the largest, most prestigious and important scientific organization of the country during its scientific activity. The Academy of Sciences carries out large-scale fundamental and applied research, priority scientific and technical programs and innovative projects for the republic, training of highly qualified scientific personnel, implementation of research results and innovative technologies.

V. P. Reorganization of the Romanovsky Institute of Mathematics, Institute of Energy Problems, Institute of Nuclear Physics, Design Bureau and Scientific and Technical Center of Experimental Production and Ion-Plasma and Laser Technology Institutes within the Academy of Sciences of the Republic of Uzbekistan (2017, 2021) in the process of further optimization of the field of science done

As a result of the reforms to further optimize the structure of the scientific institutions of the Academy of Sciences of the Republic of Uzbekistan and improve their activities, the Department of Physics, Mathematics and Technical Sciences has six research institutions: Institute of Physics and Technology, Institute of Astronomy, Institute of Seismic Stability of Mechanics and Structures, Institute of Seismology, RT-70 The radio astronomy observatory, the Institute of Materials Science remained part of the academy.

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