

**BLUE PAGES OF HEAVEN: ULUGBEK MIRZO AND THE SCIENCE OF
ASTRONOMY THAT STRETCHES BACK CENTURIES***Khabibullaeva Mukhlisa**Gulistan State Pedagogical Institute**Mathematics course 1st year student*

Annotation: This article covers the life, scientific activity and historical heritage of the great scientist and statesman of the medieval East Mirzo Ulugbek. As a major statesman of the Timurid state, he not only elevated science and culture in Samarkand, but also made important discoveries in the fields of astronomy and mathematics. The "Ziji Koragon" catalog he created in his observatory had a great influence on astronomy around the world, and his monument is still remembered with honor today.

Keywords: Mirzo Ulugbek, Timurians, astronomy Samarkand Observatory, Ziji jadidi Koragani, mathematics, trigonometric tables, medieval, scientific heritage night sky storyteller: Mirzo Ulugbek and his scientific heritage. Content of the article:

Ulugbek Mirzo from an early age had a great interest in astronomy and mathematics. He built a huge observatory in Samarkand, where he made astronomical observations with people of science such as Ghiyosiddin al-Koshiy, Rumi in Kazizo, and Ali Qushchi. The Observatory consisted of a quadrant in a 40-meter radius of the time, a three-story structure equipped with other measuring instruments. The star chart that Ulugbek created, "Ziji jadidi Koragani", with the accuracy in it, was an unparalleled work of the time and is also widely recognized in modern scientific observations. His astronomical calculations have very close results with the present, as evidenced by the deep scientific knowledge of the great scientist. The article may also highlight Ulugbek's love of Science and the educational approach given to young people. He founded the school of scientists, which turned Samarkand into a center of Science and had a huge impact on Eastern culture on a global scale. One of Ulugbek's greatest legacies in his scientific career is his observatory in Samarkand. The observatory, built in the 1420s, was unparalleled for its time and was equipped with all the equipment necessary to make astronomical observations. The Observatory provided observations of the position of stars, the motion of the sun, moon, and other celestial bodies. The Observatory allowed Ulugbek and his team to collect the most accurate astronomical data of the world. "Ziji jadidi Koragani" – creation of a catalog of stars Mirzo Ulugbek's largest work is the "Ziji jadidi Koragani" (new table of Koragani), a catalogue of 1,018 stars whose positions, luminosity, and other characteristics are reflected. This catalogue is the most accurate astronomical work of its time and has not lost its significance in the following centuries. "Ziji jadidi Koragani" is considered the peak of 15th-century astronomy, and through it a new stage has been reached in the history of Oriental astronomy. The work reached Europe in the 16th century and influenced European astronomy as well.

Achievements in mathematics and trigonometry Mirzo Ulugbek was not limited to astronomy, but also did important work in the fields of mathematics and trigonometry. He created trigonometric tables and achieved great relevance in calculating the values of SYN and cosine with high accuracy. It is especially famous for its very accurate calculation of the sine of an arc of 1 degree. These trigonometric tables formed the basis for further developments in astronomy and mathematics, and were also widely used by other scientists. With the migration of Ulugbek Mirza's father Shohrukh to Samarkand, Ulugbek grew up in this scientific and Cultural Center. From an early age, he was interested in Science, sought to gain deep knowledge in various disciplines, and took a keen interest in mathematics, astronomy. He also had extensive knowledge of fiqh, history, literature and art. Mirzo Ulugbek's life devoted to science and works such as "Ziji Jadidi Koragani" occupy an important place in the history of modern science. The scientific heritage of this great scientist clearly expresses the height of medieval eastern astronomy and the influence it exerted on Western scientists. Through his scientific research, Ulugbek expanded not only the movement of stars, but also the human understanding of the universe.

Ulugbek had the most accurate astronomical measurements of his time. He was responsible for determining the motion of planets and the position of stars through the astronomical table "Ziji Koragani", created at the Observatory in Samarkand. Ulughbek's tables are consistent, even with some of the accuracy requirements of the present era. Updating the "Almagest" in his time: Ulughbek studied Ptolemy's Almagest, a popular work of the time, from which he produced his "Ziji The Seagull" with many new clarifications. This table included the coordinates and directions of motion of 1,018 stars, making it the largest dataset of stars at the time. Ulugbek paid great attention not only to astronomy, but also to mathematics and geography. He created a system of education at a high scientific level in his madrasa, and many famous scholars of that time were active in this madrasa, such as Rumi and Ali Qushchi in Kazizo. Some historians call Ulugbek a target of the Central Asian renaissance because not only did he develop science, but he also had a tremendous impact on the culture and art of his time. In creating the Samarkand Observatory, Ulugbek suffered tremendous hardship. Although the walls of this observatory were demolished after his death, its remains on earth were rediscovered in the 20th century. Unfortunately, Ulughbek was killed by his own son Abdullatif due to internal conflicts in his family. Nevertheless, his scientific legacy continues to the present day, making a huge contribution to the development of Science and science. Of course, you can also share other rare and less well-known information about Mirzo Ulugbek:

1. Innovative devices developed to achieve astronomical achievements: Ulugbek used a huge quadrant device specially designed for himself at the Samarkand Observatory. This quadrant was 40 meters in diameter and used it to measure the movements of the sun and stars at the highest resolution. This device was very different from other observatories of its time and was a scientific method based on precise measurements.
2. The inherent balance between religion and science: Ulughbek believed that in his time Islam should be reconciled with science. Although he was well versed in the Qur'an and Hadith, he sought to explore the world from a scientific point of view. It is considered a vivid example of maintaining the delicate balance between religion and science at the time.
3. Navqiran was a teacher and teacher from an early age: Ulughbek was interested in science since childhood, educated under the best scholars of the time, and by the age of 16 had

established his famous madrasas and scientific institutions in Samarkand. He was known as a mentor from an early age and had a great influence on the scholars of the time.

4. The Samarkand madrasa had introduced new curricula: the Madrasa of Ulugbek in Samarkand had an in-depth study of mathematics, astronomy, logic and other scientific disciplines. He enriched the curriculum with a system that was new at the time, and the site remained a center of scientific knowledge.

5. The most subtle discoveries in Ziji's Koragonian: Ziji shows that Koragonian's instructions on the position of certain stars are so accurate that this table was also studied by European astronomers in later centuries and used in their research. His research is considered the first steps in the discovery of some star systems.

6. Contributed to the development of mathematical methods: Ulugbek is known for his research in the field of trigonometry. He calculated sin, cosine, and tangent functions with very high precision. These techniques were common in later periods and played a major role in the development of mathematics.

7. Political talent and state leadership: although he was more interested in science than state affairs, he also took on the responsibility of managing Samarkand and its surrounding areas. Conducted state affairs through educated, experienced statesmen and, together with scientific activities, siyos. Scientific debate with Islamic scholars: in Ulughbek's time, the debate between science and religion was of serious importance. Ulughbek often held open discussions and debates with Islamic scholars on scientific issues. He sought to find open and logical answers to the most interesting scientific questions of the time, which made him unique among contemporaries. The title "scientist of the stars": in due course Ulugbek was known as the "scientist of the stars". The name was given to him not only because of his knowledge of the stars, but also because of his life's work devoted to determining the location of the stars. No one was known by this title in ulughbeck's time. Ulugbek's project to create a dynamic calendar: Ulugbek attempted to create a new calendar system by observing the movement of planets and stars. The calendar was close to modern calendars and was based on accurate astronomical data. This initiative in creating a calendar was later known as a unique work in history. Ulughbek, as the successor of the Timurid dynasty, held many political and spiritual responsibilities. But nevertheless, he chose scientific activity as his main focus and, despite many objections, continued scientific activity. This decision was considered unique in its time and was not very typical for other nobles.

Useful literature:

1. "Ulugh Beg: the Astronomer and Ruler" - A. M. Aksakov.
2. Mirzo Ulugbek: life and scientific activity " - M. S. Abdukodirov.
3. "History of Uzbekistan" - A. V. Ubaydullaeva.
4. "Cultural heritage of ancient Uzbekistan" - T. K. Abdullayeva.