ABU RAYHON BERUNI ASTRONOMY AND PHYSICS

Muslihiddinov Zuhuriddin Mastakovich
Physics teacher of the 9th school of Sariosia district – researcher of the Tajik State University named after Sadriddin Aini

Annotation: *In this article,The Great alloma Abu Rayh, on Beruni's life, his scientific research, his work at the Ma'mun Academy and Gazna, his huge contribution to science, his works written by Khaki's thoughts are outlined. Beruni in his work"the law of Mas'udiy" plays a huge role in astranomy, physics and history; a great influence on the further development of the spheres of Natural Sciences associated with it was shown. The cursati of influence on the development of the"law of Mösüdi" in astrophysics directly in Europe in the ȳrta centuries. The article has an interdisciplinary character, written at the intersection of astrophysics and historical science, taking into account historical and scientific analysis.*

Keywords: *Abu Rayhon Beruni ,"Mamun Academy" ,"India" , "Geodesy" , "cartography" , "Saydana" , "Law responsible" ,"monuments left by ancient peoples" , "Mineralogy" , quadrant ,methods of experience and practice , "Mamun Academy" , "India" , "cartography" , "responsible for the law", "al-Majistiy" by Potolemy , "book of evidence for the different distribution of observations", "levels kept in mind", –"East azimut" ," Barbachny", "expansion of the observation climate", "correspondence with Ibn Sina" , experimental and practical methods.*

The year 1050 separates us from the period in which Abu Rayhol Muhammad ibn Ahmad Beruniiy lived. Abu Rayhan Muhammad ibn Ahmad al-Beruni was born on September 4, 973 in the ancient city of Kot. In his pedigree, the word "berun" means "outer city", and "Beruni" means "the one who lives in the outer city." Such bright stars as representatives of Science and culture, great scientists with world names, illuminate the path of all mankind.They are the founders of world civilization and, therefore, they belong to all peoples and nationalities.

Beruni left a great scientific legacy to the last generations. It is known to us that Beruni has more than 160 translations, works of different volumes, correspondence related to various fields of science of his time.

Beruniy " Osor al-Baqiya an al-quru al-Khaliya "("monuments left from ancient peoples", "threat end alamoniyi Li tashidi Distat al-masokin" ("determination of the final boundaries of places to check the distance between settlements – -" Geodesy"), finished by writing in 1025, the work" elementary concepts from the art of astrology "is also written in the GAZ 1029 Gazna," MU li-l-Indian minuda Fi-L-MIND AV marzulaȝ? Written in 1030, "India," Mas'ud law, "Mineralogy", "Saidona," in addition to the large-scale works mentioned above, his book on medicinal plants made a number of treatises on astronomy, astrology, mathematics, Geodesy, geology, Mineralogy, geography, arithmetic, medicine,

Pharmacognosy, history, philology, and translated from sanskrit into Arabic and from Arabic into sanskrit, was also engaged in artistic creation wrote poems. "Introduction to astrology, "the key to astronomy, "the soul healing sun book, "about the need for two different movements, "the basics of reproduction, "Ptolemy" Almagest" translation into Sanskrit"," useful questions and correct answers", "Ferghani" elements" iga corrections"," caution by the Turks"," information about white clothes and carmats"," collection of poems"," translation of information about Al-Muqanna"," correspondence with Ibn Sina " are among these.

The works of Beruni are paid as follows: on astronomy - 70; on mathematics - 20; on geography-on Geodesy - 12; on cartography - 4; on climate and OB-x,on avo - 3; on mineralogy - 3; on philosophy - 4; on physics - 1; on dorishunoslik - 2; on history and Ethnography - 15; on literature-28.

Foreign policy Muslim figures of the East cultural and cultural attitude to the prosperity of Katta under the influence of cross-Kanti. Arab and Persian mining tillarida yezilgan Bayhaki, Shahrizut, Kifti, Rubin and Haft Haji consider education in Celtilade important. XIII century yashagan the Syrian tarikhchi and physician Christian John over Ebrey (1226-1286) Ariyga shundai appreciated Beradi: "Vaishha uaytgan yillarda Greece and the Hindu philosophy of kengizini kechiba bintgan Abu Wahani Abu Wahkhkhkhkhkhkhmad Al-Ejiya Al-Jantmish Al-al-olarda shuhratozondi.

The external "law of Masudi" trudida astronomy and physicada piklangan ekispermental methodlari and formulan kurib chikamiz.

Beyond the "law of Masudi " 6 articles I babida shaharlarning geographer uzunlamalarin accurately known astrophysicist, geodesist masalani ikadi IK Shahar oralaridag distance is known as the garden Shahar uzunamalarimalari airimazin from topisha rules and formulas can be blind.

$$\mathrm{Sin}\frac{(\theta b - \theta a)}{2} = \frac{1}{2}\sqrt{\frac{sin^2\left(\frac{\rho}{2R}\right) - sin\frac{\varphi b - \varphi a}{2}}{cos\varphi a \cdot cos\varphi b}}$$

In solving this issue,scientists who made observations in the Treasury in 1018-1020 with the help of the "Yaminiy ring" and benefitted from this method used observations from Abu-u-Husayn as Sȳfiy Sheroz in the "azudiy ring", Abu-l Fazl al-Hiravi-and Abu Mahmud Khȳjandi in Ray, Abdu-l-Aziz al-Hashimi and Muhammad ibn Jabir al-Battani, as well as the results in Potolemy's "al-Majistiy".

Beruni's "Law responsible" in Chapter VII is immersed in the question of the movement of the solar apogee.If we define the arc of the solar eccentric orbit between the spring equinox point and the summer solar standpoint as α and the arc between the summer solar stand and the autumn equinox nuyta as β, the rules for finding Beruni's extrinsentristet ε and apogean longitude λA can be described in the following forrmules kȳrining:

$$\varepsilon = \sqrt{cos^2\frac{\alpha+\beta}{2} + sin^2\frac{\alpha-\beta}{2}}$$

$$\lambda_A = \frac{sin\frac{\alpha-\beta}{2}}{\sqrt{cos^2\frac{\alpha+\beta}{2}+sin^2\frac{\alpha-\beta}{2}}}$$

Beruni wrote a work entitled" The method of the Ancients "and" the book of evidence that observations are divided differently", saying that he proved that this method was" preferred by current astronomers,and that these were preferred by the ancients "(215 pages).

Chapter X is devoted to determining the solar equation and ephemerides. Where Berunium cited the functional link between the solar equation θ and its eccentric length μ. It is defined as functional connectsnii

$$\mathbf{sin\theta} = \frac{\varepsilon.sin\mu}{\sqrt{(1+\varepsilon cos\mu)^2+(\varepsilon sin\mu)^2}} \quad \text{or} \quad \mathbf{tg\theta} = \frac{\varepsilon.sin\mu}{1+\varepsilon.cos\mu}$$ it is possible in kurinish, here

ε-ektsentristet.

In Chapter V of the Beruni lunar eclipse, the rule for determining the ecliptic longitudinal AK between the K and a node in the ecliptic can be expressed in the following k.

$$sinAK = \frac{\sqrt{cos^2\beta_{max}-cos^2\rho}}{\sqrt{1-cos^2\rho \cdot tg^2\beta_{max}}}$$ where ß_max is the maximum width of the moon,ρ is the distance from the center of the eclipse to the moment of its stay.

VII-VIII boblarda Ourium Potlemei the main theories of bu tekshirad theory, deferencing center Mir bilan ustma-ust tushmaidi center, but the center of Shuda bulgan ailana bahlab harkati, but Ozning epicyclic centering movement kuriga teskari yunalishladi. As well as ecliptiaga yukorida eslatilgan burchak ostida oggan Oh orbitasining tekisligida export.Outgoing aitishicha bu tenglamaning quantity kichik bulganligi causali ptolemy unga value bermagan

In this chapter of Beruni, the anomaly equation γ=γ₁+γ₂ with ȳrtacha elongasia $\eta = \lambda_L - \lambda_S$ represents the link between the rule of this

$$tg\gamma = \frac{4e.sin2\eta(ecos2\eta+\sqrt{1-e^2sin^2 2\eta})}{1+2ecos2\eta\sqrt{1-e^2sin^2 2\eta}-e^2sin^2 2\eta}$$ can be expressed in kȳrinish, which is

$\mathbf{e}$- Oh apogee orbitasing eccentricity and .

The rule of determining the tolik parallax of the distance to the Beruni moon and planets

$$Sin\ \pi = \frac{cos\ h}{\sqrt{(e-sinh)^2+cos^2h}}$$ can be expressed in the formula kȳrinishi, where $\mathbf{e}$- Distance from Moon to Earth h- The oidang helps to center the kuzatilganidid at a distance.If they are Yerdan bir khil mahada deb karals, then Holda hajj Havlik as uning parallax

$\mathbf{sin\ \pi=sin\ \pi_o\ cos\ h}$ dan topiladi formula, , π_o -Oh ufkda bilganidagi maximal parallax.

The XIV chapter describes the conditions of the Crescent development of the moon and planets, as well as the results of observations of eastern astronomers and Beruniyzzi of

the twentieth century.It is here that Beruni brought the rule of finding points where the sky can be seen as Hilal.   Beruni rule $\mathbf{Sin\ h_2 = cos\phi'\cdot cos\lambda\cdot Sin\beta - sin\phi'\cdot sin\lambda}$

$$\mathbf{Sin\ A_2} = \frac{sin\phi'\cdot cos\lambda\cdot Sin\beta + cos\phi'\cdot sin\lambda}{cos\ h2}$$ kurinchi can be represented.

In this chapter, Beruni describes Barbach, a device that identifies Hilal azimud.

In Chapter VIII, Beruni describes the way the stars go out and set in the light of the sun,and go out and set in the form of heliactic exits and sunsets.Here

$$\mathbf{\lambda_2 = \lambda1 \pm} = arc\ sin(sin\ h \cdot \frac{sin\lambda1}{sinh1})$$

of the $\mathbf{\Delta h = \Delta\lambda\cdot cos\phi'}$ and $\mathbf{\Delta\lambda = \lambda2 \pm \Delta\beta tg\phi'}$ functional links can be expressed in kȳrining bȳ, which cited the rules.

I bobda astrolist loves the equalizer method, i.e. an ancient method, a well-known method and an external approach, like the kulgan method of true expression. Bu yerda kollangana uylarna's outer circle, his equalizationist method of criticism, the bonds of the proposal are loved by deb topiladi. External keltirgan "yodda saklanuvchi darazhalar", James ecliptic uzunlama λ ni hamda "prestige darazhalari", Ya. Havlik h ni topisch rule

$$\mathbf{Sin\ \lambda} = \frac{cos\ \theta}{\sqrt{1 - cos^2\theta\cdot cos^2\phi'}} \quad \text{and} \quad \mathbf{Sin\ h} = \frac{sin\theta.cos\ \phi'}{\sqrt{1 - cos^2\theta\cdot cos^2\phi'}}$$

Formulas can be represented in kȳrinish, where θ - "East azimuth", $\phi' -$ "the expansion of the observation climate".

Beruniyzz devoted himself to his goal and attached greater importance to the astronomical,physical and mathematical aspects of astrology ,to the "methods of calculation" in it.One of the main characteristics characteristic of Beruni's work is that he looked with rasional skepticism,not believing in the knowledge of the unseen and superstitions.

Since the 19th century, interest in the Beronian heritage in European and Asian countries has become more widespread. His works began to be translated into Latin, French, Italian, German, English, Persian, Turkish. Books, translations of European scientists dedicated to the works of Beruni were published. These researchers gave a very high assessment of Beruni's work. American historian scientist J. While giving the highest assessment of Beruni's legacy, Sarton assesses him as the world's first sage of his time. Oriental scholar with a skirt V. R. Rosen, on the other hand, notes that his scientific views on him are surprisingly broad, characteristic of the spirit of real science in its current meaning.

In a word, he was not a scientist in his time, after and until now, among his colleagues, such a connoisseur in the sciences of astronomy and physics and a deep knowledge of the basis and subtleties of this science.

LITERATURE:

1. I.Yu.Krachkovsky, Izbrannie Sochineniya v 6 tomakh, M.- L., Izdatelstvo akademii nauk, 1957

2. S.A.Akhmedov, N.S.Akhmedova, Urta the history of arithmetic and its teaching in Asia, Tashkent, ukitici, 1991

3.Abu Rayhan Beruni "Legal Responsible" S.H.Sirajiddinav .Publishing House "Science", 1976

4. S.Frederick, the discovery of America, tarj. Turgunova Sh, Spiritual Life, №2, 2014

5. X, dasanov, Sayyakh scholars, Tashkent, Uzbekistan, 1981

6. Abu Raykhan Beruni, selected works, II tom, X, indistan, Tashkent, Uzbekistan SSR science publishing house, 1965

7. Abu Raykhan Beruni, Selected Works, V tom, Book II, ^Onuni Massifudi, Tashkent, Uzbekistan SSR science publishing house, 1973

8. Abu Rayhan Beruni. India. Per. A. B. Khalidov, Yu. N. Zavadovsky. // Selected Works, Tom II. Tashkent: Science, 1963. // Reissue: M.: Ladamir, 1995.

9. Beroni Abu Basil. Collection of information for the collection of monuments (Mineralogy). Per. A. M. Belenisky. L.: Nash. USSR FA, 1963.

10.Beroni Abu Basil. The star catalog of Al Beruni with the catalog application of Khayyam and at-Tusi. Historical-astronomical research. 8, 1962, P. 83-192 edition.
11.Beroni Abu Basil. A book about Indian rashiks. B. A. Razenfeld. From the book history of Science and technology in the countries of the East. 3, 1963, P. 148-170 edition.

12.Beroni Abu Basil. Correspondence. Yu. N. Zavadovsky. Tashkent: Science, 1973. Beruni's book on space to Oil ten questions and Ibn Sina's answers.