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# Ibn Labbān, Kūshyār: Kiyā Abū al-Ḥasan Kūshyār ibn Labbān Bāshahrī al-Jīlī (Gīlānī)

Mohammad Bagheri

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## Alternate name

Kūshyār

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*Born* **Gīlān, (Iran)**

*Flourished* **second half 10th/early 11th century**

Kūshyār ibn Labbān was an eminent Iranian astronomer known for his work on astronomical handbooks (*zīj*es) in addition to his work in mathematics and astrology. All of his scientific legacy is in Arabic. The title Kiyā (literally, “king/ruler”) was used in his time for the names of authorities and scholars. His given name, “Kūshyār,” is the arabicized form of the ancient Persian name Gūshyār, which literally means “a gift of Gūsh” or “aided by Gūsh,” Gūsh being the name of an angel in the Zoroastrianism religion that had prevailed in Iran before Islam. There remains very little information about his life. He was from Gīlān province and later moved to Rayy (near present-day Tehran) where he met [Abū Rayḥān al-Bīrūnī](#). He then moved to Jurjān in Ṭabaristān, a province adjacent to Gīlān, where he worked as the astronomer at the court of the Ziyārid dynasty. We know from al-Bīrūnī that Kūshyār learned of the Sine Theorem from the work of his contemporary [Abū Maḥmūd al-Khujandī](#) and referred to it as *al-shakl al-mughnī* (literally, “The theorem that makes the [Menelaus Theorem] expendable”).

Kūshyār's major work in astronomy, the *Jāmi' Zīj* (Universal/Comprehensive astronomical handbook with tables) was influenced by [Ptolemy's](#) *Almagest* and [al-Battānī's](#) *zīj*. It contains many tables concerning trigonometry, astronomical functions, star catalogs, and geographical coordinates of cities. It comprises four books (*maqāla*'s): calculations, tables, cosmology, (containing a chapter on “Distances and sizes” of the celestial bodies and the Earth), and proofs. [Al-Nasawī](#) (10th/11th centuries), who was supposed to have been Kūshyār's disciple, wrote a commentary on Book I. Book I was translated into Persian about one century after Kūshyār. The entire *Zīj* was transliterated into Hebrew characters, which may be pieced together from fragments dispersed in several Hebrew manuscripts.

Kūshyār's *Bāligh Zīj* (The extensive astronomical handbook with tables), to which he refers in the introduction to his astrological treatise, is not extant. Only a short chapter entitled “On the use of planets' cycles according to the Indian method” remains in a Bombay manuscript.

Kūshyār's *Risāla fī al-aṣṭurlāb* (Treatise on the astrolabe) is extant in several manuscripts. It consists of four sections: necessary elements, other materials rarely needed, checking the astrolabe, its circles and lines, and making astrolabes. An edition of the Arabic text, prepared by Taro Mimura in Kyoto, has not yet been published, but an edition of an old Persian translation, prepared by M. Bagheri, was published in 2004.

*Al-mudkhal fī šināʿat aḥkām al-nujūm* (Introduction to astrology), also named *Mujmal al-uṣūl fī aḥkām al-nujūm* (Compendium of principles in astrology), is Kūshyār's famous treatise on astrology, composed around 990. Extant in numerous manuscripts, it comprises four books: an introduction and principles, prediction of world affairs, judgments on nativities and their year transfers, and choices (of suitable times). There are old Persian and Chinese translations of this work, the latter having been printed three times. There is also a Turkish commentary extant in Istanbul (Hamidiye MS 835).

As for his mathematical work, Kūshyār is noted for his *Uṣūl ḥisāb al-hind* (Principles of Hindu reckoning), which is extant and deals with algorithms for arithmetic operations in decimal and sexagesimal bases. It was translated into Hebrew by Shalom ben Joseph ʿAnābī in the 15th century (Oxford, Bodleian library, MS Oppenheim 211); in modern times it has been translated into English, French, Persian, and Russian.

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