

# Nīsābūrī: al-Ḥasan ibn Muḥammad ibn al-Ḥusayn Niẓām al-Dīn al-A'raj al-Nīsābūrī

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**Born Nīshāpūr, (Iran)**

**Died (Iran), 1329/1330**

Niẓām al-Dīn al-A'raj al-Nīsābūrī composed several widely studied astronomy texts in the 14th century, which indicate the integration of astronomy within a tradition of religious scholarship in Islamic civilization. He was born into a Shī'a family with roots in Qum.

The sources say little about Nīsābūrī's early life and education. By mid-1303, Nīsābūrī had begun to write *Sharḥ Tahrīr al-Majisṭī* (Commentary on the recension of the *Almagest*), a commentary on [Naṣīr al-Dīn al-Ṭūsī's Tahrīr al-Majisṭī](#) (Recension of the *Almagest*) of [Ptolemy](#). As was true for many commentaries in Islamic science, Nīsābūrī did not simply explain the meanings of the original text but included the results of his own work as well. In the *Sharḥ*, Nīsābūrī devoted much space to observations of the obliquity of the ecliptic and to ['Urdī's](#) work on instrument construction. Nīsābūrī also investigated whether Venus and Mercury had been observed to transit the Sun, an observation that would determine the position of the Sun with respect to Mercury and Venus. In 1304, Nīsābūrī arrived in Azerbaijan; by 1306 he was in Tabrīz, the largest city in Azerbaijan, where he completed the *Sharḥ*. In Tabrīz, Nīsābūrī also began to study with the astronomer [Qutb al-Dīn al-Shīrāzī](#).

Nīsābūrī completed his second major text, *Kashf-i ḥaqā'iq-i Zīj-i Īlkhānī* (Uncovering of the truths of the Īlkhānid astronomical handbook), in 1308/1309. The *Kashf*, a commentary on Ṭūsī's astronomical handbook entitled *Zīj-i Īlkhānī*, refers to the *Sharḥ*. Nīsābūrī wrote the *Kashf* right after the *Sharḥ* inasmuch as the *Kashf* focused on topics that were closely connected to the *Sharḥ*, such as the observation and prediction of planetary positions.

The *Tawḍīḥ al-Tadhkira* (Elucidation of the *Tadhkira*), a commentary on Ṭūsī's *al-Tadhkira fī 'ilm al-hay'a* (Memento on astronomy), was Nīsābūrī's third and final text on astronomy. A cross-reference to a *Tadhkira* commentary in the *Sharḥ* shows that Nīsābūrī had begun to compose the *Tawḍīḥ* before he finished the *Sharḥ*.

In the *Tawḍīḥ*, Nīsābūrī investigated theoretical topics, such as non-Ptolemaic models for planetary motions, and topics that combined theory and observations, such as physical hypotheses that accounted for the observed variations in the obliquity of the ecliptic. Although the *Sharḥ* and the *Tawḍīḥ* evinced a mastery of the technical innovations of Islamic astronomy, Nīsābūrī did not make significant advances with the most difficult questions. Shīrāzī, however, did, and the weight of Shīrāzī's reputation may explain the coincidence of the date of the appearance of the *Tawḍīḥ* with the date of Shīrāzī's death in 1311.

Īlkhānid ministers patronized Nīsābūrī's scientific work. The Īlkhānids were the descendents of Hülegü Khān (died: 1265), who had patronized the construction of the famous observatory at Marāgha, Azerbaijan, where both Ṭūsī and Shīrāzī worked. Nīsābūrī dedicated the *Sharḥ* to Khwāja Sa'd al-Dīn Muḥammad ibn 'Alī al-Sāwajī. Sāwajī was chief minister (along with Rashīd al-Dīn) under Īlkhānid Sultan Ghāzān (reigned: 1295–1304) and continued in that post until 1312 when Rashīd al-Dīn had him executed. Shīrāzī's acquaintance with Sāwajī would have provided a

way for Nīsābūrī to gain Sāwajī's patronage. There is a 1309 copy of the *Kashf* dedicated to al-Sāwajī. Nīsābūrī dedicated the *Tawḍīḥ* to a certain 'Alī ibn Maḥmūd al-Yazdī.

Because the *Sharḥ* and the *Tawḍīḥ* were clearly written and intended for nonexpert astronomers, they became important components of a tradition of religious scholarship that included astronomy. Many manuscripts of the *Sharḥ* and *Tawḍīḥ* have ownership statements from the libraries of *madrasas* (colleges of religious studies). Two reports attest to how the *Tawḍīḥ* was the most important text at [Ulugh Beg](#)'s *madrasa* in Samarqand for the study of the *Tadhkira*. Later works on Islamic astronomy, also with *madrasa* library ownership statements, refer to Nīsābūrī as *al-shāriḥ* (the commentator).

Nīsābūrī's best-known text, his Quran commentary entitled *Gharā'ib al-Qur'ān wa-raqhā'ib al-furqān* (The curiosities of the Quran and the *desiderata* of the demonstration), demonstrates the importance of science for religious scholars. Nīsābūrī in general relied heavily on Fakhr al-Dīn al-Rāzī's (died: 1209) *al-Tafsīr al-kabīr* (The great commentary), but frequently disagreed with Rāzī about the use of science and philosophy (*falsafa*) to portray nature. The *Gharā'ib* reflected Nīsābūrī's scientific education and privileged the views of the natural philosophers (*falāsifa*), while Rāzī had favored the positions of the theologians (*mutakallimūn*). Through subtle rewordings and emendations of scientific detail, Nīsābūrī rebutted Rāzī's critique of science and *falsafa* in his portrayal of nature. Nīsābūrī completed *Gharā'ib* in 1329/1330, a date which the bio-bibliographers consider to be the date of his death.

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## [Corrections/Additions](#)