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## Ibn Abī al-Faṭḥ al-Ṣūfī: Shams al-Dīn Abū ‘Abd Allāh Muḥammad ibn Abī al-Faṭḥ al-Ṣūfī

Ihsan Fazlıođlu

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### Alternate name

Abī al-Faṭḥ al-Ṣūfī

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*Flourished* **Cairo, (Egypt), late 15th century/early 16th century**

Ibn Abī al-Faṭḥ al-Ṣūfī was an important Egyptian astronomer who wrote some 26 works on astronomy. These works include astronomical instruments, tables for timekeeping and other purposes, and important studies on **Ulugh Beg's Zīj**. His name and death date have been variously reported by both historical and modern sources. He has sometimes been confused with his father who pursued similar studies and had a similar name.

Although little is known about his life, we can surmise that Ibn Abī al-Faṭḥ al-Ṣūfī was probably first educated by his father. He informs us in his *Nihāyat al-rutba fī al-‘amal bi-jadwal al-nisba* that his education was guided by the famous Egyptian astronomer **Sibṭ al-Māridīnī**. Indeed, his approach to astronomy, relying on mathematics and arithmetic and avoiding philosophical content, does place him within the tradition of the “Egyptian school” that began with **Ibn al-Hā’im** in 13th-century Egypt, was further developed in the 14th-century Maghrib with **Ibn al-Bannā’**, continued with **Ibn al-Majdī**, and matured with Sibṭ al-Māridīnī.

There are 26 works attributed to **Ibn Abī al-Faṭḥ al-Ṣūfī** that are currently extant; some of these may, though, be actually by his father. These works include astronomical and timekeeping tables, treatises dealing with astronomical instruments, and reworkings of **Ulugh Beg's Zīj**. In his *Tashīl zīj Ulugh Beg* (or *Mukhtaṣar zīj Ulugh Beg*), Ibn Abī al-Faṭḥ al-Ṣūfī recalculated Ulugh Beg's tables, originally prepared for Samarqand, for Egypt. Similarly, Abū al-Faṭḥ al-Ṣūfī wrote another work consisting only of tables called *Bahjat al-fikr fī ḥall al-shams wa-’l-qamar*. Undoubtedly, his most important astronomical study is *Zīj Muḥammad ibn Abī al-Faṭḥ al-Ṣūfī*, which purports to be an emendation of *Zīj-i Ulugh Beg*. His student, **Taqī al-Dīn**, mentions in his *Sidrat muntahā al-afkār* that Abū al-Faṭḥ al-Ṣūfī improved the arithmetic of the *zīj*, as well as made new observations (although he provides little detailed information about their details).

Ibn Abī al-Faṭḥ al-Ṣūfī wrote several books on astronomical instruments based on the work of **Ibn**

**al-Shāṭir** and Ibn al-Sarrāj. He wrote on a quadrant called *al-rub‘ al-mujannaḥ* and on a timekeeping device called *ṣandūq al-yawāqīt* that was invented by Ibn al-Shāṭir. In other works he describes two little-known instruments called the “Goose Chest” and the “Crow Wing” and how to use sand clocks.

Ibn Abī al-Faḥ al-Ṣūfī's influence was widespread and enduring as indicated by a commentary on his *Nubdhat al-is‘āf fī ma‘rifat qaws al-khilāf* by the Egyptian astronomer Ramaḍān ibn Ṣāliḥ al-Khwānakī (died: 1745). He also trained a number of students. He encouraged his student Yaḥyā ibn ‘Alī al-Rifā‘ī to translate Ulugh Beg's *Zīj* from Persian into Arabic. This translation made this *Zīj* more widely accessible in Ottoman lands; there are currently more than 20 extant copies. Ibn Abī al-Faḥ al-Ṣūfī's most important student, though, was the great astronomer Taqī al-Dīn, who corrected and completed Ulugh Beg's *Zīj* and would become the founder of the Istanbul Observatory.

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