Biographical Encyclopedia of Astronomers

Bhaskara I

Flourished Valabhi, (Gujarat, India), 629

Bhaskara I was an Indian (Hindu) astronomer of the 7th century. The number "I" is added by modern historians in order to differentiate him from his namesake (Bhaskara II) of the 12th century. Bhaskara I probably belonged to the Ashmaka region but lived on the western shore of the Gulf of Khambhat (now in Gujarat). Bhaskara I was an ardent follower of Aryabhata I, the earliest astronomer of the Hindu classical period (from the late 5th to the 12th centuries). Bhaskara I composed three works: the *Mahabhaskariya* (Bhaskara's major work), the *Aryabhatiyabhāṣya* (629; a detailed commentary on Aryabhata I's *Aryabhatiya*), and the *Laghubhaskariya* (Bhaskara's minor work). Bhaskara I was a contemporary of another Indian astronomer, Brahmagupta, but it is not known whether they knew each other. The classical period produced several works that are still considered authoritative by traditional Hindu calendar makers.

Bhaskara I belonged to the Arya School, one of four principal schools of astronomy active during the classical period. The extant works of mathematical astronomy prior to Bhaskara I, namely the *Aryabhatiya* of Aryabhaṭa I and the *Pañcasiddhāntikā* of Varahamihira, are only small, versified compendiums. Thus, Bhaskara I's commentary on the *Aryabhatiya* is the earliest detailed prose exposition of mathematical astronomy in India.

The *Mahabhaskariya* is a systematic textbook of mathematical astronomy; it consists of eight chapters. In this work, planetary motion is explained by means of both epicyclic and eccentric models models, in which both manda correction (equation of center) and śīghra correction (annual parallax in the case of outer planets, and the planet's own revolution in the case of inner planets) must be applied. This is a special feature of the *Mahabhaskariya*. The peculiarity of this method shows that the Hindu model of planetary motion was not a purely geometrical model. Bhaskara I's contemporary, Brahmagupta, used another method, involving successive approximations, to calculate the longitudes of the planets.

The *Aryabhatiyabhāşya* is extant only up to the middle of the sixth verse of Chapter IV in the original Aryabhatiya. In an edition of this work printed by Kripa Shankar Shukla, the commentary of Someśvara (which summarizes Bhaskara I's commentary) is provided for the rest of the work

The *Laghubhaskariya* is a revised and abridged version of the larger *Mahābhāskariya* and consists of eight chapters.

The works of Bhaskara I were widely employed in India, particularly in South India, from the 7th to the 15th century or so.

Selected References

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