

# Nur al-Din Abu Ishaq al Bitruji Biography

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# Biography

The Moslem astronomer Nur al-Din Abu Ishaq al-Bitruji (ca. 1150-1200), also known as Alpetragius, expounded an astronomical system which revived the Eudoxan explanation and denied the Ptolemaic explanation of the anomalous motions of the planets.

Of the life of al-Bitruji virtually nothing is known, though at one point in his work he ascribes the genesis of his theory to the instruction of Ibn Tufayl. The problem faced by al-Bitruji was that faced by all Aristotelians who read Ptolemy's *Almagest*. Aristotle clearly stated that the planets must move with circular motions and implied that the center of these motions must be identical with the center of the earth; he further desired a mechanism to transfer the motion of the prime mover to the planetary spheres. Ptolemy, on the other hand, while preserving the principle of circular motions (on eccentrics and epicycles), placed the centers of these motions elsewhere than at the center of the earth; for Saturn, Jupiter, Mars, Venus, and Mercury he placed the centers of their uniform motions not at the centers of their respective eccentric deferents but at points called equants.

Eudoxus of Cnidus had already shown that it is theoretically possible to explain the two most obvious anomalies in planetary motion--retrogression and latitude--by means of homocentric spheres. Aristotle, by adding more spheres, converted this system to a mechanical model of the universe (though technical details make it impossible for such a model to yield correct predictions of the retrogressions and latitudes of Mars and Venus). Al-Bitruji followed the suggestion of Ibn Tufayl, as did the latter's other pupil Averroës, and attempted to adjust the Aristotelian solution in such a way that it would correspond to observed reality. The attempt failed owing to the inherent inadequacy of the homocentric system to describe the phenomena.