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IMPACTS OF THE ASTROLABE: A DISCUSSION OF SCIENTIFIC DISCOVERIES SUPPORTED BY
THE ASTROLABE AND THE ASTRONOMERS THAT USED THEM DURING THE ISLAMIC
GOLDEN AGE

Abstract

First conceptualized in Classical Antiquity (ca. 220 BCE), the astrolabe came into prominence during the Islamic Golden Age (700 CE – 1300 CE). It is an ancient analog computer, which uses stereographic projection to replicate the celestial sphere onto a flat plate; traditionally used for timekeeping, navigation, and astronomy. The astrolabe was a key mathematical instrument which had a significant cultural impact on the Islamic World, as it allowed users to accurately predict time and direction for prayer. In his work, “Book of the Fixed Stars,” the prominent astronomer Abd al-Rahman al-Sufi famously describes 1000 uses for the astrolabe. The impacts of research supported by the astrolabe can still be seen in contemporary astronomy. Many of the stars discovered or quantified during the Islamic Golden Age are still referred to by their Arabic names in western astronomy; and terms such as alidade, azimuth, zenith, and nadir, which also have Arabic etymological roots, can be further attributed to the advancements from this period. This paper describes the advances in astronomy supported by the astrolabe during the Islamic Golden Age, and the impacts which these have had on both historical and contemporary astronomy. A literary review of primary and secondary sources is used to investigate the origins, uses, and impacts of the astrolabe during this period highlighting the influence, which the astrolabe has had on astronomical discoveries and understanding throughout history. This paper also includes a discussion around the influential astronomers from the Islamic Golden Age, whose research, supported by the astrolabe, has had a global impact on the understanding of astronomy.