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Exploring 120 years of Indian physics and astronomy journals

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This paper traces one hundred and twenty years journey of Indian physics and astronomy journals. Of the 122 journals that have been published since 1902, 36 journals have ceased publication. The oldest physics related article was published in 1788 in *Asiatick Researches*, the first Indian research periodical. The oldest Indian astronomy journal *Publications of the Maharaja Takhtasingji Observatory* came into being in 1902 from Pune and ceased in 1912. The oldest Indian physics journal *Bhoutika Kalanidhi* or *The Treasury of the Physical Sciences* started in the year 1911 from Madras (present-day Chennai) and ceased in 1919. In all, 53% of journals belong to broad science discipline but publish articles on physics and astronomy regularly along with other major science disciplines followed by 35% and 12% journals strictly belong to the subject areas, physics, and astronomy respectively. It is observed that nearly 50% of journals are indexed by the Indian Citation Index, while 20% of journals are indexed by the Indian Citation Index, Scopus, and Web of Science. Also, 30% of journals are not indexed by any citation database. In the 120 year period, the highest number of seven journals came into being in the year 2012.

Keywords: Indian Physics Journal; Indian Astronomy Journal; Physics Journal- India; Astronomy Journal- India; Physics and Astronomy Journal; Growth of Literature- Physics; Growth of Literature- Astronomy

Introduction

The fundamental scheme of all branches of science essentially involves the concept of law in nature to view the natural phenomena as an ordered sequence of events linked together by a chain of causation. Of all science disciplines, astronomy is the first stepping stone towards the scientific mission of systematic observations introducing the concept of linking the movement of celestial objects and seasons on the earth. India has a rich legacy in astronomy dating back more than two millennia. The remarkable contributions by Aryabhatta, Varahamihira, Brahmagupta, Bhaskara I and Bhaskara II glorify India's astronomy heritage.

The earliest recorded use of the telescope in India was by Jeremiah Shakerley (1626-1655), who viewed the transit of Mercury in 1651 from Surat in western India. In 1689, Jesuit priest Father Jean Richaud[1] (1633-1693) discovered from Pondicherry that the bright star Alpha Centauri is a double star. In 1764, Major James Renell (1742-1830) was appointed as the East India Company surveyor, and astronomy was hitherto used in the process of surveying. This particular application of astronomy paved the way towards the institutionalisation of modern astronomy in India[2]. In 1787, Madras Observatory was initiated by William Petrie, an officer of the East India Company, with the use of two 3" achromatic telescopes, two astronomical clocks and a transit instrument[3].

Around a hundred and ten years later, in 1899, the astronomical activity of the observatory was shifted to Kodaikanal, and Madras observatory became a purely meteorological observatory[4]. The systematic solar observations commenced at Kodaikanal Observatory in early 1901. Apart from the study of the sun to which the observatory was primarily devoted, magnetic, meteorological and seismological observations were also carried out there since inception[5]. As reported by Sen[6], there were 103 observatories in India in 1878, which was increased to 128 in 1885. All observations carried out were brought out as periodic publications, although any periodical or journal solely devoted to astronomy did not appear in India before the year 1902.

The subject astronomy is in close proximity with both mathematics and physics. Physics is the field where