



## 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 Aryabhata, 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<sup>1</sup> (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<sup>2</sup>. 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<sup>3</sup>.

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<sup>4</sup>. 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<sup>5</sup>. As reported by Sen<sup>6</sup>, 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

Indian contributions during both the pre-and post-independence era have been outstanding. It is borne out by the fact that one physicist from pre-independent India received the Nobel Prize, and scientists like J.C. Bose, M.N. Saha, S.N. Bose, and K.S. Krishnan missed it narrowly. Several physicists were elected as FRS from colonial India, to mention a few, J.C Bose (FRS- 1920), C.V Raman (FRS- 1924), M.N. Saha (FRS- 1927) and K.S. Krishnan (FRS- 1940).

The subject of physics, or broadly speaking, natural philosophy, gradually reshaped the Indian academic map since the last part of the nineteenth century with the establishment of the Indian Association for the Cultivation of Science, a purely native association established through the initiative of Dr Mahendra Lal Sircar in 1876. The first periodical on physics from India, entitled *Bhoutika Kalanidhi* or *The Treasury of the Physical Sciences*, came out in 1911 from Chennai.

The Indian Renaissance of the nineteenth century, which coincided with our freedom movement, at the dawn of the 1900s witnessed great strides made by Indian scientists, who have left an inefaceable trail on the global S&T scenario. The history of the Indian journal dates back to the year 1788 CE that marked the inception of the research periodical, i.e. *Asiatick Researches*, which published articles on almost every branch of science. The first articles on physics and astrophysics that were published in this journal are listed below:

#### **Astronomy, Geodesy, etc<sup>7</sup>.**

- Burrow, Reuben: A method of calculating the Moon's parallaxes in latitude and longitude. 1, 320-6 1788.
- Burrow, Reuben: Remarks on the artificial horizons. 1, 327-9, 1788
- Burrow, Reuben: Correction of the lunar method of finding the longitude. 1, 433-5, 1788.
- Pearse, Thomas D: Astronomical observations in Fort William, and between Madras and Calcutta. 1,57-121, 1788.

#### **Physics<sup>8</sup>**

- Burrow, Reuben: Hints relating to friction in mechanics. 1, 171-95. 1788.

*Asiatick Researches* was continued till 1839, while its predominance virtually came to an end with the appearance of several scientific periodicals like *Transactions of the Medical and Physical Society of Calcutta*, *Transactions of the Agricultural and Horticultural Society of India* and *Gleanings in Science*

in the 1820s. Reuben Burrow's twelve articles covered diverse fields as mathematics, astronomy, geology, physics, building and architecture. The articles by Lambton, the noted surveyor, covered the areas like geodetic astronomy, physics and the theory of structures. Hunter contributed four articles on astronomy. Four of the five papers of Warren belonged to astronomy, and the remaining one to geology.

#### **Review of literature**

Vlachy<sup>9</sup> studied the *Czechoslovak Journal of Physics* in terms of size, multiple authorship, author's productivity and citation structure. The selected features of this journal were compared with Czechoslovak mathematical and chemical journals over 18 years and 50 physics journals from 20 countries. King<sup>10</sup> analysed the interests/preferences of readers, authors, publishers and libraries for physics journals, and surprisingly the results then, in the year 1982, indicated the future possibility of 'electronic journal'. Singleton<sup>11</sup> reviewed different ranking techniques on the basis of citations used as aids to a selection of physics journals. Bennion<sup>12</sup> estimated the size and analysed the scattering phenomenon of global physics literature over journals by applying Bradford's law. The result showed 'Groos droop' deviations from linearity at the upper end of the Bradford curve, which indicated the incompleteness of the bibliographic data.

Barschall<sup>13</sup> analysed the escalating cost of physics journals and showed that the science libraries all over the then United States faced serious financial problems associated with the escalating journal costs. Keenan<sup>14</sup> studied the coverage of physics articles by physics abstracts in 1965. This paper included a listing of journals covered by *Physics Abstracts* in 1965, arranged alphabetically with subject breakdown and also ranked by subject heading. Bennion<sup>15</sup> estimated the usefulness of the physics journal by the dependent variable used in constructing the models, which was obtained from a survey of 167 physicists in the US and Canada. The multivariate regression model was used.

Caon<sup>16</sup> studied the growth and proliferation of medical physics journals, and he pointed out that there may be many 'unscientific' science journals in this domain. Mryglod<sup>17</sup> and Kumar<sup>18</sup> et al. carried out a scientometric analysis of *Condensed Matter Physics* journal and *Pramana-Journal of Physics*, respectively. The former carried out authorship and collaboration analysis, while the latter focused on

publishing trend, impact factor, authorship pattern, institutional collaboration and affiliations of authors, countries of contributing authors, keyword analysis and referencing patterns of the published papers. The genesis, historical development and characteristics of science and technological periodicals, covering major science domains like physics, astronomy, chemistry, earth science, biological science etc., in general, were studied by Houghton<sup>19</sup>, Kronick<sup>20</sup> and Gascoigne<sup>21</sup>.

The first part of Houghton's<sup>19</sup> book presented a brief survey of the history and growth of scientific periodicals followed by a list of bibliographic tools for the identification of the journals. It also discussed the significance of citation indexing in evaluating old literature. Kronick's<sup>20</sup> work examined the origin and development of science journalism along with a statistical analysis of periodical literature between the years 1665 and 1790. Gascoigne's<sup>21</sup> book listed 900 science periodicals arranged chronologically by subject areas from 1665 to 1900.

The origin and development of scientific periodicals from 1665 CE to 1798 CE were carried out by Barnes<sup>22</sup> and Mckie<sup>23</sup>. The growth of European scientific journals before 1850 was studied by Manten<sup>24</sup>. Kumar<sup>25</sup> provided a detailed listing of research periodicals in all major subject domains of colonial India from 1780 to 1947. Rajan<sup>26</sup> and Rao & Mohan<sup>27</sup> chalked out the post-independence scenario of Indian science research periodicals. These works included all major scientific disciplines. The studies so long executed covered genesis, growth and systematic listing of major science periodicals. Only a few works included some specific aspects of physics journals from outside India.

This study focuses on the specific subject of physics and has studied the genesis and development of physics journals published in India since 1902. As there is no domain-specific study on journals included Indian physics and astronomy to date, this study attempts to bridge the said research gap.

### Research Questions

- 1) How have Indian physics and astronomy journals developed since 1902?
- 2) What is the present state of subject coverage, publication status and indexing status of these journals?

### Objectives of the study

- To prepare a comprehensive list of Indian physics journals with the respective years of inception;

- To trace the ceased journals and the last years of their publication;
- To prepare statistics of different parameters of the journals, i.e. mode of publication, mode of access, place of publication, indexing status in various citation databases, frequency of publication, etc.; and
- To examine the publishers and ISSNs of the periodicals.

### Methodology and scope

The physics journals published in the country during the last one hundred and twenty years shaped the scholarly space for this subject in different ways. To search the list of periodicals, various secondary sources on this subject were consulted, e.g. *Physics Abstracts*, *Web of Science*, *Directory of Open Access Journals*, *Scopus*, *Indian Citation Index* and *Indian Science Abstracts*. ISSN database maintained at the ISSN National Centre of India at the CSIR-National Institute of Science Communication and Policy Research (CSIR-NISCPR) was also checked. This source helped locate quite a few new journals, including e-journals. In all, the bibliographic details of 122 journals were collected. The chance of missing out on any journal is thus very low but not improbable. The websites of different professional associations and commercial publishing houses have also been browsed.

### Results and Analysis

#### Early Stage (1902-1947)

The history of Indian astronomy journal dates back to the year 1902 that was marked with the beginning of the periodical published by the Maharaja Takhtasingji Observatory at Pune, which is the first periodical on astronomy published from India, followed by the starting of the periodical *Jyotirvid* (Bengali) published from Kolkata in the next year, i.e. 1903. In 1888 CE, the Maharaja Takhtasingji Observatory was built at Pune (erstwhile Poona) under the supervision of K. D. Naegamvala, with the grant from Maharaja of Bhavnagar<sup>28</sup>. The Kodaikanal Observatory started its periodical publications in 1905, followed by the *Journal of the Astronomical Society of India*, which started publication in 1910 from Kolkata. The Kodaikanal Observatory plays a very much significant role in the history of Indian astronomy.

The first periodical on physics was started in 1911 from Chennai (erstwhile Madras), which ceased

publication in 1919. The seven periodicals (S. No. 1-7; Annexure) were ceased. The dates of cessation of the first two periodicals are not known. The *Bulletin of the Kodaikanal Observatory* ceased publication in 1988, and the *Memoirs of the Kodaikanal Observatory* stopped in 1917, though a single volume was published in 1967, fifty years later.

The three journals *Bulletin of the Indian Association for the Cultivation of Science*, *Journal of the Astronomical Society of India* and *Bhoutika Kalanidhi* ceased publication in 1918, 1920 and 1919, respectively. The seven (five astronomy and two physics) early-age periodicals were thus very short-lived (except The *Bulletin of the Kodaikanal Observatory*, which continued for 83 years). The Indian journal that started in the second decade of the last century and that is continuing till date is the *Journal of the Indian Institute of Science*, but it belongs to the discipline of science as a whole. Strictly speaking, it is not a physics or astronomy journal but publishes research papers on physics and astronomy regularly along with other major science disciplines like chemistry, biology and others.

The journal *Jyotirvijñan* (in Bengali) and *Monthly Notices of the Astronomical Society of India* were started in 1915 and 1916 respectively from Kolkata that ceased publication in 1919 and 1920, only four years later<sup>29</sup>. These two journals belonged to astronomy. It is interesting to note that eleven astronomy journals were started in Colonial India, of which ten journals have ceased publication. Only one astronomy journal started in 1934, entitled *Proceedings of the Indian Academy of Sciences, Earth and Planetary Sciences*, is still being published as *Journal of Earth System Science*. The subject domain of this journal, however, is extended beyond astronomy and space science today. It covers research output from the fields like geography, geology, meteorology, oceanography, climatology and so on.

The inception of the *Indian Association for the Cultivation of Science* in 1876 at Kolkata (erstwhile Calcutta, the capital of Colonial India) marked a new epoch in the voyage of Indian science research. This Institution, existing to date, has been one of the foremost scientific associations in the country, with which were attached such famous scientific luminaries of the country as C. V. Raman, Meghnad Saha, K. S. Krishnan and S.N. Bose.

The Annual Report of the Association since inception (1876 CE) entitled *Report of the Indian*

*Association for the Cultivation of Science* was continued till 1916. Then it was continued as *Report and Proceedings of Science Convention, Indian Association for the Cultivation of Science* till 1921, followed by *Proceedings of the Indian Association for the Cultivation of Science* up to 1925. This publication was split into two parts in 1926, entitled the *Indian Journal of Physics* and *Proceedings of the Indian Association for the Cultivation of Science*. The stalwart figure behind the foundation of the *Indian Journal of Physics* was none other but the physics Laureate Sir C V Raman. Even today, it is a pioneering physics journal and perhaps the most significant Colonial Indian physics journal existing to date. It is devoted to the publication of significant, original and current scientific research results.

Sir C. V. Raman was the first editor. The second volume of the journal published his famous article "A New Radiation", reporting the discovery of the Raman Effect. It is published monthly, containing 12 regular issues in a year, from January to December. Starting from January 2009, it is being co-published with Springer, which also distributes a print version of the journal worldwide. According to the Journal Citation Report, the impact factor of the journal for the year 2019 is 1.407. The other significant physics journals of colonial India existing to date are *Proceedings of the National Academy of Sciences-India: Sec A- Physical Sciences* and *Transactions of the Indian Ceramic Society*. There are some other significant journals belonging to science discipline which started in colonial India existing till date and that publish articles on physics and astronomy frequently, to mention a few, *Current Science*, *Science and Culture*, *Journal of the Institution of Engineers (India): Series D - Metallurgical and Materials and Mining Engineering* and *Journal of Scientific and Industrial Research*. Three universities (The University of Bombay, University of Madras and University of Mysore) also started their journals on broad science discipline before independence, which published physics and astronomy papers at times<sup>30</sup>.

In all, 32 periodicals on physics, astronomy and broad science discipline were started before independence, of which ten periodicals/ journals are still continuing while the remaining 22 periodicals have ceased. The date of cessation for six journals are not known (Table 3).

Astronomy was the most dominating discipline in colonial India as more than one-third of astronomy

journals, eleven in number, were started then (Table 5). Also, 12 colonial journals belonged to a broad science discipline, and the remaining eight journals were devoted to physics. Out of the still continuing ten journals, three are indexed by Scopus, WoS and ICI, while five journals are indexed by Scopus and ICI. The other two journals are indexed by Scopus and WoS (Table 6).

The majority of journals (12) in colonial India were published from Kolkata, the former capital of colonial India, followed by Bengaluru (4 journals), Chennai (4 journals) and New Delhi (2 journals) (Table 7). But this scenario changed after independence when the hub of scholarly publication of physics and astronomy shifted from Kolkata to Delhi. The majority of journal publishers in colonial India were learned societies or professional associations (Table 9). Of the 31 colonial journals, 17 journals had no ISSN (Table 10). The ISSN or International Standard Serial Number was initiated in 1975. Hence, the journals that ceased before 1975 do not have ISSN. Of the continuing journals, two journals are online, and 9 are hybrid journals (Table 11).

### Phase I (1948-1999)

The journals entitled *Journal of Aerospace Sciences and Technologies* and *Defence Science Journal* were started in 1948 and 1949, respectively, just after independence and still continuing. The latter is indexed by Scopus, WoS and ICI. These two journals publish articles on specific facets of science in the context of physics. Some significant physics journals started during this period are *Indian Journal of Theoretical Physics*, *Indian Journal of Pure and Applied Physics*, *Indian Journal of Biochemistry and Biophysics*, *Indian Journal of Radio and Space Physics*, *Bulletin of the Astronomical Society of India*, *Pramana - Journal of Physics*, *Journal of Astrophysics and Astronomy* and others. *Indian Journal of Theoretical Physics* was brought out by the relentless effort of Prof. K. C. Kar of Presidency College of Kolkata, the renowned theoretical physicist and an expert particularly in the field of sound and acoustics. *Indian Journal of Pure and Applied Physics*, *Indian Journal of Biochemistry and Biophysics*, *Indian Journal of Radio and Space Physics* was started by erstwhile Publication and Information Directorate, CSIR, which is CSIR-NISCP now. Except for the *Indian Journal of Theoretical Physics*, the other six journals are indexed

by Scopus, WoS and ICI. In all, 56 journals were started during this period, of which 13 journals have ceased, and 43 journals are still continuing (Table 3).

Mainly, journals on broad science disciplines were started in this phase, followed by journals on specific facets of physics (Table 5). Out of the still continuing 43 journals, seven are indexed by Scopus, WoS and ICI, while six journals are indexed by Scopus and ICI. There are 26 journals indexed by ICI only. In all, 17 journals that started during this phase are not yet indexed, of which 13 journals have ceased publication (Table 6). The majority of journals during this phase (11) were published from Delhi, followed by Bengaluru (7 journals) and Prayagraj (5 journals) (Table 7). The majority of the publishers of this phase were learned societies or professional associations that published 26 journals (Table 9), followed by university departments that published 15 journals. It is observed that universities took initiatives for journal publications after independence. Of the 56 journals, only two journals had no ISSN, while 34 journals had only print ISSN, and 17 journals had (print + online) ISSN (Table 10). In this phase, 24, 23 and 9 came out in print, hybrid and online modes, respectively (Table 11).

### Phase II (2000-2020)

Thirty-four journals were started during the period 2000-2020, of which one journal has ceased publication (Table 3). The thirty-three journals of this period are indexed by ICI, and only one journal is indexed by Scopus, WoS and ICI (Table 6). The learned society and R & D publications (only six and one) were significantly dropped during this period, but the private and corporate publications have been drastically enhanced to 24 (Table 9). Fourteen multidisciplinary science journals dominate in this phase, followed by science journals with a focus on physics (Table 5). The majority of journals are published from Delhi (9), followed by Noida (8), showing 50% of all publications of this phase from the National Capital Region (Table 7). All journals of this phase have ISSN (Table 10). In this phase, 17, 10, and 7 journals came out in print, online and hybrid modes, respectively (Table 11).

### INSA, IAS and CSIR-NISCP: The Forerunners

The role of the *National Institute of Science Communication and Policy Research (CSIR-NISCP, formerly CSIR-NISCAIR)*, *Indian Academy of Science*

and *Indian National Science Academy* are to be recognised as these bodies have rendered a yeoman service to the scientific community by bringing out important journals. Three core physics and astronomy journals published by CSIR-NISCPR include the *Indian Journal of Pure and Applied Physics*, the *Indian Journal of Biochemistry and Biophysics* and the *Indian Journal of Radio and Space Physics*.

Founded in 1934 by Sir C V Raman, the Indian Academy of Sciences, Bengaluru, is still promoting progress and upholding the cause of science in both pure and applied branches. The two core physics and astronomy journals published by IAS are *Pramana-Journal of Physics* and the *Journal of Astrophysics and Astronomy*. The Indian National Science

Academy (INSA) was established in January 1935 with the fundamental aim to promote science in the country and harnessing scientific knowledge for the cause of humanity and national welfare. The *Proceedings* of INSA started in 1935, is continuing till date that publishes core physics articles regularly. Besides, the *Indian Journal of History of Science*, published by INSA, contains articles regularly in both astronomy and physics along with their historical aspects.

### 120 years' timeline

The timeline of the number of journals published in the area of astronomy and physics from 1902 CE to 2016 CE is presented in Table 1, along with the

Table 1 — Timeline of Indian physics and astronomy journals

Sl. no.	Year	No. of journals	Cumulative no. of journals	Sl. no.	Year	No. of journals	Cumulative no. of journals
1	1902	1	1	36	1966	1	59
2	1903	1	2	37	1970	1	60
3	1905	1	3	38	1972	2	62
4	1907	1	4	39	1973	2	64
5	1909	1	5	40	1975	1	65
6	1910	1	6	41	1976	1	66
7	1911	1	7	42	1978	2	68
8	1914	1	8	43	1979	1	69
9	1915	2	10	44	1980	3	72
10	1916	1	11	45	1982	1	73
11	1918	2	13	46	1984	2	75
12	1920	1	14	47	1986	1	76
13	1926	1	15	48	1987	1	77
14	1927	1	16	49	1988	1	78
15	1930	2	18	50	1989	1	79
16	1932	2	20	51	1990	1	80
17	1934	2	22	52	1992	2	82
18	1935	3	25	53	1995	1	83
19	1938	1	26	54	1996	1	84
20	1940	2	28	55	1997	3	87
21	1941	2	30	56	1999	1	88
22	1942	1	31	57	2002	1	89
23	1947	1	32	58	2004	1	90
24	1948	1	33	59	2005	1	91
25	1949	2	35	60	2006	1	92
26	1950	4	39	61	2007	2	94
27	1951	3	42	62	2008	1	95
28	1952	4	46	63	2009	2	97
29	1953	1	47	64	2010	4	101
30	1954	3	50	65	2011	4	105
31	1956	1	51	66	2012	7	112
32	1957	2	53	67	2013	2	114
33	1958	2	55	68	2014	5	119
34	1963	2	57	69	2015	1	120
35	1964	1	58	70	2016	2	122

respective cumulative numbers. The most number of new journals were published in the year 2012 (7 journals), followed by five journals published in 2014. Four journals were started in the years 1950, 1952, 2010 and 2011 each. The variation of a cumulative number of journals over time is graphically presented in Figure 1, which shows a linear graph with the equation,  $y = 1.705x - 4.175$ . The decade-wise analysis of the number of journals is presented in Table 2, which shows the largest number of journals (21) started in the present decade (2011-2020), followed by 20 journals started during 1950-'59 and 13 journals started during 2000-'09. In two consecutive decades (1970-'79 and 1980-'89), ten journals were started each. The decade-wise analysis of the life span of the journals is presented in Table 2. There are 12 decades starting from 1900 to 2020, indicated by D<sub>1</sub>, D<sub>2</sub>, D<sub>3</sub>,.....D<sub>12</sub>. The age of individual journals can be calculated by subtracting the

starting year of the journal (Y<sub>s</sub>) from the cessation year (Y<sub>c</sub>, in case of ceased journals) or current year (2020, in case of continuing journals) (Annexure I).

The decade-wise statistics of the number of journals started and their total age is calculated. The division of the said total age by a number of journals yields decade-wise Average Life Span (L<sub>A</sub>) of journals, which varies widely with time. For instance, the range of L<sub>A</sub> is found 7.4 to 97. The Time-Normalised Life Span (L<sub>AN</sub>) is hereby introduced to eliminate age-wise variation, i.e.  $L_{AN} = L_A / (2020 - Y_M)$ , where Y<sub>M</sub> is the median year of each decade. The range of time-Normalised Life Span (L<sub>AN</sub>) varies from 0.29 (1910-'19) to 1.48 (2010-'20). An increasing trend of L<sub>AN</sub> over time indicates the decreasing trend of cessation of journals over decades, which is also clear from Table 3 and Table 4. From 1902 to 1947, i.e. in colonial India, 32 journals were started and 22

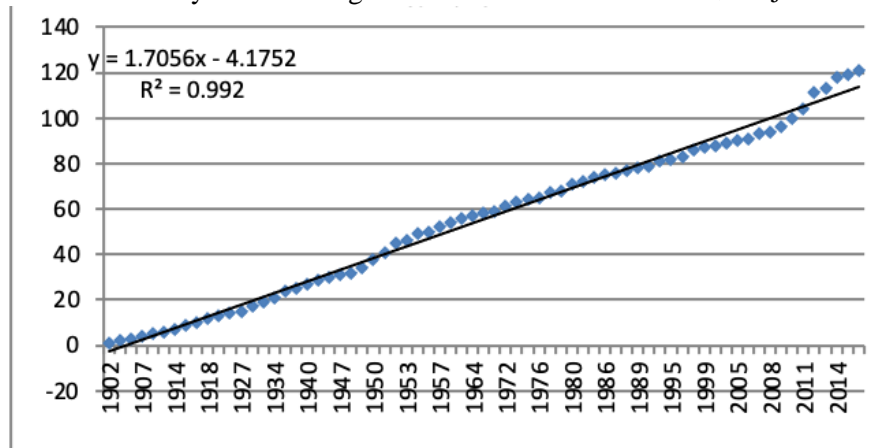


Fig. 1 — Variation of cumulative no. journals since 1902-2016

Table 2 — The life span of journals

Sl. no.	Decades from 1900 to 2020	Median year of the decade (Y <sub>M</sub> )	No. of journals started	Average life span in years (L <sub>A</sub> )	Time-Normalized Life Span [L <sub>AN</sub> = L <sub>A</sub> / (2020 - Y <sub>M</sub> )]
1	1900-'09 (D <sub>1</sub> )	1905	5	34	0.30
2	1910-'19 (D <sub>2</sub> )	1915	8	30.8	0.29
3	1920-'29 (D <sub>3</sub> )	1925	3	97	1.02
4	1930-'39 (D <sub>4</sub> )	1935	10	60.3	0.71
5	1940-'49 (D <sub>5</sub> )	1945	9	62.7	0.84
6	1950-'59 (D <sub>6</sub> )	1955	20	46.4	0.71
7	1960-'69 (D <sub>7</sub> )	1965	4	44.8	0.81
8	1970-'79 (D <sub>8</sub> )	1975	10	43.7	0.97
9	1980-'89 (D <sub>9</sub> )	1985	10	36	1.03
10	1990-'99 (D <sub>10</sub> )	1995	9	24.1	0.96
11	2000-'09 (D <sub>11</sub> )	2005	13	13.7	0.91
12	2010-'20 (D <sub>12</sub> )	2015	21	7.4	1.48

Table 3 — Cessation of journals

Cessation Year (Range)	1902-1947	1948-1999	2000-2020	1902-2020
1903-25	7	---	---	7
1926-47	2	---	---	2
1948-75	3	6	---	9
1976-99	4	4	---	8
After 2000	---	3	1	4
No Data Available	6	---	---	6
Still Continuing	10	43	33	86

Table 4 — Journal cessation matrix (Decade-wise)

Ceasing Decades	Starting Decades											
	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>	D <sub>12</sub>
D <sub>1</sub>		1										
D <sub>2</sub>	1	2										
D <sub>3</sub>		3										
D <sub>4</sub>				1								
D <sub>5</sub>		1										
D <sub>6</sub>				1								
D <sub>7</sub>				1	1	4						
D <sub>8</sub>				1		2	1					
D <sub>9</sub>	1				1	2						
D <sub>10</sub>		1				1						
D <sub>11</sub>								1				
D <sub>12</sub>								1		1		1
Still Continuing		1	2	5	5	11	3	8	10	8	13	20
No Data Available	2		1	1	2							
No. of Journals Started during Decades D <sub>1</sub> to D <sub>12</sub>	5	8	3	10	9	20	4	10	10	9	13	21

ceased publication, while only ten journals are still continuing. Also, from 1948 to 1999, 56 journals were started, of which 13 journals ceased publication. But the 34 journals that started after 2000 are still continuing, except only one journal that has ceased publication. Out of the total of 122 journals, 86 are still continuing. The remaining 35 journals have already ceased publication (Table 3). The tendency of journal cessation is thus decreasing with time. The Journal Cessation Matrix (Table 4) also shows the higher cessation trends during the colonial period and earlier decades. The cessation trends have been notably reduced after 1960. i.e. after the decade 1950-'59.

### Subject analysis

The period-wise distribution of specific subject domains over journals is presented in Table 5. The overall status shows that 69 (55%) journals belong to broad science discipline but publish articles

on physics and astronomy regularly along with other major science disciplines, followed by 42 (34%) and 14 (11%) journals strictly belong to the subject areas physics and astronomy respectively (Table 5). The variation of subject-domain over three epochs is clear from Table 5, which shows the dominance of astronomy journals in the colonial period while broad science journals outnumbered after independence. The journal strictly belonging to physics was maximum during the second epoch, i.e., 1948 to 1999.

### Indexing status

The indexing status of the journals over the three periods is presented in Table 6. Out of 121 journals, it is observed that 84 (70%) journals are indexed by either of one or more citation databases like Scopus, Web of Science (WoS) and Indian Citation Index (ICI), while 37(30%) journals are not indexed. It is interesting to note that 60 (50%) journals are indexed



Table 5 — Subject domains of journals

Subjects	1902-1947	1948-1999	2000-2020	1902-2020
Astronomy (A)	11	2	1	14
Science with Physics in Focus (C)	1	12	10	23
Specific Facet of Physics (F)	2	14	3	19
Physics as a whole/ Broad (P)	7	11	6	24
Science as a whole/ Broad (S)	12	19	14	45
Overall status	33	58	34	125

Table 6 — Indexing status of journals

Indexing Sources	1902-1947	1948-1999	2000-2020	1902-2020
Only ICI	1	26	33	60 (49.6%)
Only WoS	1	---	---	1 (0.8%)
ICI & Scopus	5	6	---	11 (9.1%)
Scopus & WoS	1	---	---	1 (0.8%)
ICI, Scopus & WoS	3	7	1	11 (9.1%)
Not Indexed	21	17	---	37 (30.6%)
Overall Status				
Indexed	11	39	34	84
Not Indexed	21	17	---	38

by ICI alone, followed by 24 journals indexed by ICI, Scopus and WoS. Here, 11 journals are indexed by ICI and Scopus, while another 11 journals are indexed by ICI, Scopus and WoS. Only one journal is indexed by WoS, and one journal is indexed by Scopus & WoS. Most of the journals are covered by ICI, but few journals are covered by Scopus and WoS. The prestigious journals like *Indian Journal of Physics*, *Indian Journal of Pure and Applied Physics*, *Pramana- Journal of Physics*, *Indian Journal of Biochemistry and Biophysics*, *Journal of Astrophysics and Astronomy* etc., are all indexed by Scopus, WoS and ICI.

### Place of publication

The variations of places of publications of journals over the years are presented in Table 7, which shows four metro cities viz., Delhi, Kolkata, Bengaluru and Chennai as the hub of journal publication accounting for more than 50% of total journal outcome. The overall scenario (Table 7) shows 25% of publications from NCR, followed by Kolkata (13%) and Bengaluru (11%). The two cities, Chennai and Prayagraj, together account for 10% of total publications. Also, the four cities, viz., Hyderabad, Pune, Mumbai and Kanpur together account for 14% of total journal publications. One-fourth of total publications (25%) came from 27 other cities and towns of India.

### Frequency

The analysis of the frequency of journal publications is presented in Table 8, which shows one-fourth (25.6%) of all journals published quarterly, followed by half-yearly journals (22.3%) and subsequently bi-monthly, monthly and irregularly published journals that account for 10.7% each.

### Type of publishers

The analysis of the frequency of publishers' categories is presented in Table 9. There are five different categories of publishers (Table 9). One-third of all journals (35.5%) are published by learned societies or professional associations. Subsequently, 28.1% of journals came from private or corporate publishers, followed by 18.2% and 11.6% journals published by university departments and R & D organisations, respectively.

### ISSN analysis

The status of ISSN is presented in Table 10, which shows 38% of journals with print ISSN only, followed by 34.7% journals with (print + online) ISSN. There are 15.7% (19) journals with no ISSN, though the majority of journals without ISSN ceased publication before 1976, the year of inception of ISSN. Fourteen journals (11.6%) have online ISSN only.

Table 7 — Variation of the place of publication

Sl. no.	Rank	Place of Publication (With State)	1902-1947	1948-1999	2000-2020	Total
1	1	New Delhi/ Delhi	2	11	9	22 (18%)
2	2	Kolkata (West Bengal)	13	4		16 (13%)
3	3	Bengaluru (Karnataka)	4	7	2	13 (11%)
4	4	Noida (Uttar Pradesh)			8	8 (7%)
5	5	Chennai (Tamil Nadu)	4	1	1	6 (5%)
6	5	Prayagraj (Uttar Pradesh)	1	5		6 (5%)
7	6	Hyderabad (Andhra Pradesh and Telangana)	2	3		5 (4%)
8	6	Mumbai (Maharashtra)	1	3	1	5 (4%)
9	7	Pune (Maharashtra)	2	2		4 (3%)
10	8	Kanpur (Uttar Pradesh)		2	1	3
11	9	Ghaziabad (Uttar Pradesh)		1	1	2
12	9	Jaipur (Rajasthan)			2	2
13	9	Mysuru (Karnataka)	2			2
14	9	Sagar (Madhya Pradesh)		2		2
15	9	Varanasi (Uttar Pradesh)		2		2
16	10	Agra (Uttar Pradesh)		1		1
17	10	Baroda (Gujarat)		1		1
18	10	Bhopal (Madhya Pradesh)		1		1
19	10	Bulandshahr (Uttar Pradesh)			1	1
20	10	Chandigarh (Punjab)		1		1
21	10	Dhaka (Erstwhile Bengal, Now in Bangladesh)	1			1
22	10	Dharwad (Karnataka)		1		1
23	10	Gandhinagar (Gujarat)			1	1
24	10	Guwahati (Assam)		1		1
25	10	Indore (Madhya Pradesh)			1	1
26	10	Jalandhar (Punjab)			1	1
27	10	Jamshedpur (Jharkhand)		1		1
28	10	Kharagpur (West Bengal)		1		1
29	10	Latur (Maharashtra)			1	1
30	10	Lucknow (Uttar Pradesh)			1	1
31	10	Madhubani (Bihar)			1	1
32	10	Malpura (Rajasthan)			1	1
33	10	Pilani (Rajasthan)		1		1
34	10	Raipur (Chattisgarh)		1		1
35	10	Thiruvananthapuram (Kerala)		1		1
36	10	Ujjain (Madhya Pradesh)		1		1
37	10	Vallabh Vidyanagar (Gujarat)		1		1
38	10	Yamunanagar (Haryana)			1	1
			32	56	34	122

Table 8 — Frequency of journals

Frequency	1902-1947	1948-1999	2000-2020	1902-2020
Annual	1	5	1	7 (5.8%)
Bi-Monthly	2	7	4	13 (10.7%)
Fortnightly	1	---	---	1 (0.8%)
Half-Yearly	3	9	15	27 (22.3%)
Irregular	3	9	1	13 (10.7%)
Monthly	5	6	2	13 (10.7%)
Quarterly	5	20	6	31 (25.6%)
Tri-Annual	1	---	4	5 (4.1%)
Weekly	---	---	1	1 (0.8%)
No Data	11	---	---	11 (8.3%)
	31	56	34	122

Table 9 — Publishers' categories

Publishers' Category	1902-1947	1948-1999	2000-2020	1902-2020
R & D	5	8	1	14 (11.6%)
Organization				
Govt. Organisation	2	1		3 (2.5%)
Learned Society/ Professional association	12	26	6	43 (35.5%)
Private/ Personal/ Corporate Publication	4	6	24	34 (28.1%)
University Department	4	15	3	22 (18.2%)
No Data available	5			5 (4.1%)
	32	56	34	122

Table 10 — ISSNs of journals

ISSN Status	1902-1947	1948-1999	2000-2020	1902-2020
Print only	5	34	7	46 (38%)
Online only	1	3	10	14 (11.6%)
Print + Online	8	17	17	42 (34.7%)
No ISSN	18	2		19 (15.7%)
	32	56	34	122

Table 11 — Publication mode

Year	1902-1947	1948-1999	2000-2020	1902-2020
Print	21	24	17	61 (50.4%)
Online	2	9	10	21 (17.4%)
Hybrid	9	23	7	39 (32.2%)
	32	56	34	122

### Publication mode analysis

The analysis of modes of publication is presented in Table 11, which shows 61 (50.4%) journals are published through print-only mode, while 39 (32.2%) and 21 (17.4%) journals are published through hybrid mode and online-only modes, respectively. The print only mode publications

are still dominating for physics and astronomy journals.

### Conclusion

During the last one hundred and twenty years, physics and astronomy journals in India maintained their slow but steady growth despite the cessation of few journals. Possibly there was no period in the last century when no Indian physics or astronomy journal existed. The rapid proliferation of journals after 2010 may not be a good sign. Launching a journal is not that difficult nowadays. Initially, articles can be obtained from professional friends and colleagues who are not reputed authors, and the first issue can be published paying from one's own pocket. Usually, reputed authors are reluctant to contribute to new journals because initially, the journal's circulation is low, and the article will not be visible to a wider audience. Even if they contribute, the article, in general, will not be of good quality. Similar factors cause degradation of the quality of journals. *Indian Journal of Physics*, which is almost a century old along with *Indian Journal of Pure and Applied Physics*, *Pramana- Journal of Physics*, *Indian Journal of Radio and Space Physics* and INSA Journals, still maintaining their standards. However, Indian physics and astronomy journals need more circulation for increasing their visibilities that will enable them to escalate quality indicator values like Impact Factor, h Index etc.

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### Annexure Indian physics and astronomy journals (1902-2020)

Sl. no	Journal and subject area	Starting year (Y <sub>s</sub> )	Indexed in...	Whether Continuing, if 'No', Year of Cessation (Y <sub>c</sub> )	Age in Years (Y <sub>s</sub> - Y <sub>c</sub> )/ (Y <sub>s</sub> -2020)	Place and State of Pub.	Frequency (Latest)	ISSN (Print & Online)	Publisher' Name and Type	Publication Model
1	Publications of the Maharaja Takhtasingji Observatory (First periodical on astronomy from India) [A]	1902	No	No, ---	ND	Pune (Maharashtra)	---	---	Maharaja Takhtasingji Observatory [R]	P
2	Jyotirvid (Bengali) [A]	1903	No	No, ---	ND	Kolkata (West Bengal)	M	---	Eds. K Datta, Bimala Prasad Saraswati [R]	P
3	Bulletin of the Kodaikanal Observatory [A]	1905	No	No, 1988	83	Chennai (Tamil Nadu), Bengaluru (Karnataka)	I	---	The Observatory, Indian Institute of Astrophysics [G]	P
4	Memoirs of the Kodaikanal Observatory [A]	1907 (1909?)	No	No, 1917, 1967 (Vol. 2)	10	Chennai (Tamil Nadu)	I	---	The Observatory [G]	P
5	Bulletin of the Indian Association for the Cultivation of Science [P]	1909	No	No, 1918	9	Kolkata (West Bengal)	---	---	Indian Association for the Cultivation of Science [D]	P
6	Journal of the Astronomical Society of India [A]	1910	No	No, 1920	10	Kolkata (West Bengal)	Q	---	The Society [L]	P
7	Bhoutika Kalanidhi or The Treasury of the Physical Sciences (First periodical on physics from India) [P]	1911	No	No, 1919	8	Chennai (Tamil Nadu)	---	---	---	P
8	Journal of the Indian Institute of Science [S]	1914	S, W, I	Yes	106	Bengaluru (Karnataka)	Q	0019-4964 (O); 0970-4140 (P)	Indian Institute of Science [D]	Hy
9	Jyotirvijnan (Bengali) [A]	1915	No	No, 1919	4	Kolkata (West Bengal)	---	---	---	P
10	Proceedings of the Indian Association for the Cultivation of Science (contd. as <i>Indian Journal of Physics</i> and <i>Proceedings of the Indian Association for the Cultivation of Science</i> ) [S]	1915	No	No, 1925	10	Kolkata (West Bengal)	---	---	Indian Association for the Cultivation of Science [D]	P
11	Monthly Notices of the Astronomical Society of India [A]	1916	No	No, 1920	4	Kolkata (West Bengal)	---	---	The Society [L]	P
12	Publications of the Nizamiah Observatory = Astrographic Catalogue [A]	1918	No	No, 1946	28	Hyderabad (Andhra Pradesh and Telengana)	---	---	Nizamiah Observatory (Under the direction of T. P. Bhaskaran) [R]	P
13	Transactions of the Bose Research Institute [S]	1918	No	No, 1994	76	Kolkata (West Bengal)	A	0006-7903 (P)	Bose Institute [D]	P

14	Journal of the Institution of Engineers (India): Series D - Metallurgical and Materials and Mining Engineering [C]	1920	I	Yes	100	Kolkata (West Bengal)	H	2250-2122 (P); 2250-2130 (O)	The Institution of Engineers (India) [L]	Hy
15	Indian Journal of Physics [P]	1926	S, W, I	Yes	94	Kolkata (West Bengal)	M	0973-1458 (P); 0974-9845 (O)	Indian Association for the Cultivation of Science [D]	Hy
16	Arya Jyotis (Bengali) [A]	1927	No	No, ---	ND	Kolkata (West Bengal)	M	---	All India Astrological and Astronomical Society [R]; (Basanta Kumar Bhattacharyya)	P
17	Indian Physico-Mathematical Journal [P]	1930	No	No, 1937	7	Dhaka (Bengal, Now in Bangladesh)	---	---	---	P
18	Proceedings of the National Academy of Sciences-India: Sec A- Physical Sciences [P]	1930	S, I	Yes	90	Prayagraj (Uttar Pradesh)	Q	0369-8203 (P); 2250-1762 (O)	The National Academy of Sciences [L]	Hy
19	Current Science [S]	1932	S, W, I	Yes	88	Bengaluru (Karnataka)	F	0011-3891 (O)	Indian Academy of Sciences [L]	O
20	Journal of the University of Bombay. Science [S]	1932	No	No, 1968	36	Mumbai (Maharashtra)	H	0368-4644 (P)	Univ. of Bombay [U]	P
21	Proceedings of the Indian Academy of Sciences. Sec A (Contd. as <i>Proceedings - Mathematical Sciences</i> since 1978) [S]	1934	S, I	No, 1977	43	Bengaluru (Karnataka)	M	0370-0097 (P)	Indian Academy of Sciences [L]	Hy
22	Proceedings of the Indian Academy of Sciences, Earth and Planetary Sciences (Contd. as <i>Proceedings - Earth and Planetary Sciences</i> since 1978 and contd. as <i>Journal of Earth System Science</i> since 2005) [P, A]	1934	S, I	Yes	86	Bengaluru (Karnataka)	Q	0370-0089 (P); 0253-4126 (O)	Indian Academy of Sciences [L]	Hy
23	Proceedings of the Indian National Science Academy ( <i>Proceedings of the National Institute of Sciences of India, 1935-1970</i> ) [S]	1935	S, I	Yes	85	New Delhi	B	0370-0046 (P); 2454-9983 (O)	Indian National Science Academy [L]	Hy
24	Science and Culture [S]	1935	W	Yes	85	Kolkata (West Bengal)	B	0036-8156 (P)	Indian Science News Association [L]	Hy
25	Transactions of the National Institute of Sciences in India [S]	1935	No	No, 1958	23	Kolkata (West Bengal)	I	---	National Institute of Sciences in India [L]	P
26	Lectures on Quantum Mechanics [F]	1938	No	No, ---	ND	Hyderabad (Andhra Pradesh and Telengana)	---	---	---	P

27	Journal of the Madras University – Section B, Mathematical, Physical and Biological Sciences [S]	1940	No	No, 1984	44	Chennai (Tamil Nadu)	T	0368-3184 (P)	Univ. of Madras [U]	P
28	The Half-Yearly Journal of the Mysore University. Section B – Science [S]	1940	No	No, 1964	24	Mysuru (Karnataka)	H	---	Univ. of Mysore [U]	P
29	Contributions in Physics [P]	1941	No	No, ---	ND	Mysuru (Karnataka)	---	---	Univ. of Mysore [U]	P
30	Transactions of the Indian Ceramic Society (F)	1941	S, W	Yes	79	Kolkata (West Bengal)	Q	0371-750X (P); 2165-5459 (O)	Indian Ceramic Society [L]	Hy
31	Journal of Scientific and Industrial Research [S]	1942	S, I	Yes	78	New Delhi	M	0022-4456 (P); 0975-1084 (O)	Council of Scientific and Industrial Research [D]	O
32	Jyotirvidyan (Gujarati) [A]	1947	No	No, ---	ND	Pune (Maharashtra)	---	---	---	P
33	Journal of Aerospace Sciences and Technologies [C]	1948	I	Yes	72	Bengaluru (Karnataka)	Q	1270-9638 (P)	Aeronautical Society [L]	Hy
34	Defence Science Journal [C]	1949	S, W, I	Yes	71	New Delhi	B	0011-748X (P); 0976-464X (O)	Defence Research and Development Organisation [D]	Hy
35	Research Bulletin of the Punjab University – Science Continued as Panjab University Research Journal (Science) [S]	1949	No	Yes	71	Chandigarh (Punjab)	I	0555-7631 (P)	Panjab University [U]	Hy
36	Bulletin of the Central Research Institute, University of Kerala, Series C – Natural Sciences [S]	1950	No	No, 1961	11	Thiruvananthapuram (Kerala)	I	0496-280X (P)	Univ. of Kerala [U]	P
37	Journal of Scientific Research of the Banaras Hindu University [S]	1950	No	Yes	70	Varanasi (Uttar Pradesh)	H	0447-9483 (P)	Institute of Science, Banaras Hindu Univ. [U]	P
38	Journal of the University of Gauhati – Science [S]	1950	No	No, 1978	28	Guwahati (Assam)	A	0435-1428 (P)	Gauhati Univ. [U]	P
39	Mausam: Journal of Meteorology, Hydrology & Geophysics [F, C]	1950	W, S, I	Yes	70	New Delhi	Q	0252-9416 (P)	India Meteorological Department [G]	O
40	Agra University Journal of Research – Science [S]	1951	No	No, 1982	31	Agra (Uttar Pradesh)	T, H	0002-1032 (P)	Dr. Bhim Rao Ambedkar Univ. [U]	P
41	Journal of the Maharaja Sayajirao University of Baroda [S]	1951	No	Yes	69	Baroda (Gujarat)	M	0025-0422 (P)	MS Univ. of Baroda [U]	Hy
42	Proceedings of the Rajasthan Academy of Sciences [S]	1951	No	No, 1963	12	Pilani (Rajasthan)	I	---	Rajasthan Academy of Sciences [L]	P

43	Bulletin of the National Institute of Science in India [S]	1952	No	Yes, Contd. as <i>Bulletin of the Indian National Science Academy</i> since 1969	68	New Delhi	I	0027-9528 (P)	National Institute of Science in India (INSA) [L]	P
44	Journal of the University of Poona – Science and Technology [S]	1952	No	No, 1990	38	Pune (Maharashtra)	H	0551-4932 (P)	Univ. of Pune [U]	P
45	Madhya Bharati – Journal of the University of Sagar. Pt IIA Physical Sciences [P]	1952	No	Yes, Continued as <i>Madhya Bharti Research Journal-Physical and Natural Sciences</i>	68	Sagar (Madhya Pradesh)	H	0972-7434 (P)	Dr. Harisingh Gour Vishwavidyalaya [U]	Hy
46	Madhya Bharati – Journal of the University of Sagar. Pt IIB Natural Sciences [S]	1952	No	Yes, Continued as <i>Madhya Bharti Research Journal-Physical and Natural Sciences</i>	68	Sagar (Madhya Pradesh)	H	0972-7434 (P)	Dr. Harisingh Gour Vishwavidyalaya [U]	Hy
47	Indian Journal of Theoretical Physics [F]	1953	I	Yes	67	Kolkata (West Bengal)	Q	0019-5693 (P)	Institute of Theoretical Physics [L]	P
48	Applied Physics Quarterly [F]	1954	No	No, 1969	15	Kolkata (West Bengal)	Q	0470-488X (P)	Association of Applied Physicists [L]	P
49	Geo - horizon [C]	1954	I	Yes	66	Bengaluru (Karnataka)	H	0970-6666 (P); 2582-5348 (O)	Indian Society of Aerospace Medicine [L] + Scientific Scholar	Hy
50	Indian Journal of Aerospace Medicine [C]	1954	I	Yes	66	Mumbai (Maharashtra)	H	0970-6666 (P); 2582-5348 (O)	Scientific Scholar on behalf of Indian Society of Aerospace Medicine [L]	Hy
51	Journal of the Karnataka University – Science [S]	1956	No	Yes	64	Dharwad (Karnataka)	A	0075-5168 (P)	Karnataka Univ. [U]	P
52	Journal of Science and Engineering Research [S]	1957	No	No, 1970	13	Kharagpur (West Bengal)	I	---	Indian Institute of Technology-Kharagpur [U]	P
53	Vikram – Journal of the Vikram University. Science [S]	1957	No	No, 1967	10	Ujjain (Madhya Pradesh)	I	0042-6121 (P)	Vikram Univ. [U]	P
54	Journal of Metallurgy and Materials Science [C]	1958	I	Yes	62	Jamshedpur (Jharkhand)	Q	0972-4257 (P); 0974-1267 (O)	National Metallurgical Laboratory [D]	Hy
55	Vijnana Parishad Anusandhan Patrika. [Hindi] [S]	1958	No	No, 1989	31	Prayagraj (Uttar Pradesh)	I	0505-5806 (P)	The Hindi Science Academy [L]	P
56	Indian Journal of Pure and Applied Physics [P]	1963	S, W, I	Yes	57	New Delhi	M	0019-5596 (P); 0975-1041 (O)	NISCAIR (CSIR) [D]	O
57	LABDEV – Journal of Science and Technology-Part A-Physical Sciences [P]	1963	No	No, 1975	12	Kanpur (Uttar Pradesh)	I	0368-7430 (P)	Defence Research Laboratory [D]	P



58	Indian Journal of Biochemistry and Biophysics [F, C]	1964	S, W, I	Yes	56	New Delhi	B	0301-1208 (P); 0975-0959 (O)	NISCAIR (CSIR) [D]	O
59	Indian Journal of History of Science [C]	1966	I	Yes	54	New Delhi	Q	0019-5235 (P); 2454-9991 (O)	Indian National Science Academy [L]	Hy
60	Physics News [P]	1970	I	Yes	50	Mumbai (Maharashtra)	Q	0253-7583 (P)	Indian Physics Association [L]	O
61	Journal of Optics [F]	1972	I	Yes	48	Kolkata (West Bengal)	Q	0972-8821 (P); 0974-6900 (O)	Optical Society of India [L]	Hy
62	Indian Journal of Radio and Space Physics [F]	1972	S, I	Yes	48	New Delhi	Q	0367-8393 (P); 0975-105X (O)	NISCAIR (CSIR) [D]	O
63	Bulletin of the Astronomical Society of India [A]	1973	S, I	No, 2014	41	Bengaluru (Karnataka)	Q	0304-9523 (P); 2249-9601 (O)	Astronomical Society of India [L]	Hy
64	Pramana - Journal of Physics [P]	1973	W, S, I	Yes	47	Bengaluru (Karnataka)	B	0304-4289 (P); 0973-7111 (O)	Indian Academy of Sciences [L]	H
65	Indian Journal of Cryogenics [F]	1975	I	Yes	45	New Delhi	A	0379-0479 (P); 2349-2120 (O)	Indian Cryogenics Council [L]	H
66	Journal of Medical Physics [F]	1976	S, I	Yes	44	Mumbai (Maharashtra)	Q	0971-6203 (P); 1998-3913 (O)	Association of Medical Physicists of India [L]	Hy
67	Journal of Pure and Applied Ultrasonics [F]	1978	I	Yes	42	New Delhi	Q	0256-4637 (P)	Ultrasonics Society of India [L]	O
68	National Academy Science Letters [S]	1978	I	Yes	42	Prayagraj (Uttar Pradesh)	B	0250-541X (P); 2250-1754 (O)	National Academy of Sciences [L]	Hy
69	Journal of Energy Heat and Mass Transfer [F]	1979	I	No, 2009	30	Chennai (Tamil Nadu)	Q	0970-9991 (P)	Regional Centre for Energy, Heat and Mass Transfer for Asia and The Pacific [D]	P
70	Journal of Geophysics [F]	1980	I	Yes	40	Hyderabad (AP & Telengana)	Q	2230-9497 (P)	Association of Exploration Geophysicists [L]	P
71	Journal of Information and Optimization Sciences [C]	1980	I	Yes	40	New Delhi	8 Issues/Year	0252-2667 (P); 2169-0103 (O)	Taru Pub. + Taylor & Francis [R]	Hy
72	Journal of Astrophysics and Astronomy [A]	1980	W, S, I	Yes	40	Bengaluru, Hyderabad (Karnataka, AP & Telengana)	B	0250-6335 (P); 0973-7758 (O)	Indian Academy of Sciences + Astronomical Society of India [L]	O
73	Bulletin of Pure and Applied Sciences Sec. D - Physics [P]	1982	I	Yes	38	Delhi	H	0970-6569 (P); 2320-3218 (O)	BPAS Pub. [R]	Hy

74	The Bulletin of Indian Association of Physics Teachers [P]	1984	I	Yes	36	Kanpur (Uttar Pradesh)	M	2277-8950 (P)	Indian Association of Physics Teachers [R]	Hy
75	Physics Education [P]	1984	I	Yes	36	Pune (Maharashtra)	Q	0970-5953 (P)	Dept. of Physics, Savitribhai Phule Univ. of Pune [U]	O
76	Mapan - Journal of Metrology Society of India [C]	1986	W, S, I	Yes	34	New Delhi	Q	0970-3950 (P) 0974-9853 (O)	Metrology Society of India [L]	Hy
77	Indian Science Cruiser [S]	1987	I	Yes	33	Kolkata (West Bengal)	B	0970-4256 (P)	Institute of Science, Education and Culture [L]	P
78	Journal of Ravishankar University-Part B-Science [S]	1988	I	Yes	32	Raipur, Chattisgarh	A	0970-5910 (P)	Pt. Ravishankar Shukla University [U]	Hy
79	Journal of Ultra Scientist of Physical Sciences [P]	1989	I	Yes	31	Bhopal, Madhya Pradesh	M	2231-346X (P); 2319-8044 (O)	Ansari Education And Research Society [L]	Hy
80	Journal of Spacecraft Technology [C]	1990	S, I	Yes	30	Bengaluru (Karnataka)	H	0971-1600 (P)	ISRO Satellite Centre [D]	P
81	Asian Journal of Physics [P]	1992	I	Yes	28	Ghaziabad (Uttar Pradesh)	Q	0971-3093 (P)	Anita Pub. [R]	P
82	Prajna - Journal of Pure and Applied Sciences [S]	1992	I	Yes	28	Vallabh Vidyanagar (Gujarat)	A	0975-2595 (P)	Sardar Patel Univ. [U]	P
83	Bulletin of Laser and Spectroscopy Society of India [F]	1995	I	Yes	25	Varanasi (Uttar Pradesh)	I	2229-3752 (P)	Laser and Spectroscopy Society of India [L]	P
84	Resonance [S]	1996	S, I	Yes	24	Bengaluru (Karnataka)	M	0971-8044 (P); 0973-712X (O)	Indian Academy of Sciences [L]	Hy
85	Asian Journal of Spectroscopy [F]	1997	S, I	No, 2012	15	---	Q	0971-9237 (P)	Spectral-Force Pub. [R]	P
86	Journal of Indian Geophysical Union [F]	1997	I	Yes	23	Hyderabad (AP & Telengana)	Q	0971-9709 (P)	Indian Geophysical Union [L]	P
87	Journal of International Academy of Physical Sciences [P]	1997	I	Yes	23	Prayagraj (Uttar Pradesh)	Q	0974-9373 (P)	International Academy of Physical Sciences [L]	P
88	Far East Journal of Mathematical Sciences [C]	1999	I	Yes	21	Prayagraj (Uttar Pradesh)	M	0972-0871 (P)	Pushpa Pub. House [R]	O
89	Journal of Rajasthan Academy of Physical Sciences [P]	2002	I	Yes	18	Jaipur (Rajasthan)	Q	0972-6306 (P)	The Rajasthan Academy of Physical Sciences [L]	P
90	Journal of Resources, Energy and Development [C]	2004	I	Yes	16	New Delhi	H	0975-7554 (P); 0974-0929 (O)	The Energy and Resources Institute [D]	Hy
91	International Journal of Pure and Applied Physics [P]	2005	I	Yes	15	Delhi	T, I	0973-1776 (P)	Research India Pub. [R]	P

92	International Journal on Physical Sciences [P]	2006	I	Yes	14	New Delhi	I	1992-1950 (O) 2230-9683 (O)	National Environmental Science Academy [L]	O
93	Indian Journal of Science and Technology [S]	2007	I	Yes	13	Chennai (Tamil Nadu)	W	0974-6846 (P); 0974-5645 (O)	Indian Society for Education and Environment [L]	Hy
94	International Journal of Essential Sciences [S]	2007	I	Yes	13	Kanpur (Uttar Pradesh)	H	0973-8436 (P); 2347-1840 (O)	Aroma Foundation [R]	Hy
95	International Journal of Manufacturing Technology and Research [S]	2008	I	Yes	12	Noida (Uttar Pradesh)	H	0975-7139 (P); 2394-9309 (O)	The Aryan Research and Education Trust [R]	Hy
96	Arya Bhatta Journal of Mathematics and Informatics [C]	2009	I	Yes	11	Yamunanagar (Haryana)	H	0975-7139 (P); 2394-9309 (O)	The Aryan Research and Education Trust [R]	Hy
97	International Journal of Theoretical and Applied Sciences [S]	2009	I	Yes	11	New Delhi	H	0975-1718 (P); 2249-3247 (O)	Research Trend [R]	Hy
98	Indian Journal of Scientific Research [S]	2010	I	Yes	10	Lucknow (Uttar Pradesh)	H	0976-2876 (P); 2250-0138 (O)	Global Academic Society [R]	Hy
99	International Journal of Geomatics and Geosciences [C]	2010	I	Yes	10	New Delhi	Q	0976-4380 (P)	Integrated Publishing Association [R]	P
100	International Review of Atomic and Molecular Physics [F]	2010	I	Yes	10	New Delhi	H	2229-3159 (P)	Serials Publications [R]	P
101	Journal of Energy, Environment & Carbon Credits [C]	2010	I	Yes	10	Noida (Uttar Pradesh)	Q	2249-8621 (O)	STM Journals [R]	O
102	Journal of Aerospace Engineering & Technology [C]	2011	I	Yes	9	Noida (Uttar Pradesh)	Q	2348-7887 (P); 2231-038X (O)	STM Journals [R]	Hy
103	Journal of Pure and Applied Science & Technology [S]	2011	I	Yes	9	Bulandshahr (Uttar Pradesh)	H	2231-4202 (P); 2249-9970 (O)	Nathan Lal Sevarth Samiti [L]	Hy
104	Trends in Opto-electro- & Optical Communication [C]	2011	I	Yes	9	Noida (Uttar Pradesh)	T	2347-9957 (P); 2231-0401 (O)	STM Journals [R]	Hy
105	Journal of Nano Science, Nano Engineering & Applications [C]	2011	I	No, 2017	6	Noida (Uttar Pradesh)	T	2231-1777 (P)	STM Journals [R]	Hy
106	Current Trends in Technology and Science [S]	2012	I	Yes	8	Noida (Uttar Pradesh)	H	2279-0535 (O)	Revista Info Solutions [R]	O
107	International Journal of Advance Research in Science & Engineering [S]	2012	I	Yes	8	Ghaziabad (Uttar Pradesh)	M	2319-8346 (P); 2319-8354 (O)	AR Research Publication [R]	Hy
108	International Journal of Scientific Research in Physics and Applied Sciences [P]	2012	I	Yes	8	Indore (Madhya Pradesh)	B	2348-3423 (O)	International Scientific Research Organization for Science, Engineering & Technology [L]	O

109	Research & Reviews: Journal of Physics [P]	2012	I	Yes	8	Noida (Uttar Pradesh)	H	2347- 9973 (P); 2278- 2265 (O)	STM Journals [R]	Hy
110	Research & Reviews: Journal of Space Science & Technology [A]	2012	I	Yes	8	Noida (Uttar Pradesh)	T	2321- 6506 (P); 2321- 2837 (O)	STM Journals [R]	Hy
111	Journal of Vibrational Engineering and Technologies [F]	2012	S, W, I	Yes	8	Bengaluru (Karnataka)	B	2523- 3920 (P); 2523- 3939 (O)	The Vibration Institute of India and Krishtel eMaging Solutions Pvt. Ltd. [L] & [R]	Hy
112	Journal of Science & Technology [S]	2012	I	Yes	8	Jaipur (Rajasthan)	A	2319- 2607 (P)	IIS Univ. [U]	P
113	International Journal of Surface Engineering and Materials Technology [C]	2013	I	Yes	7	Malpura (Rajasthan)	Q	2582- 1474 (O)	Indian Thermal Spray Society [L]	O
114	Physical and Environmental Science Bulletin [C]	2013	I	Yes	7	Madhubani (Bihar)	B	2347- 4866 (O)	The Editor [R]	O
115	International Journal of Basic and Applied Research [S]	2014	I	Yes	6	Gandhinagar (Gujarat)	M	2394- 384X (P); 2394- 2401 (O)	Softlink Pub. Network [R]	Hy
116	International Journal of Innovation in Engineering Research & Management [S]	2014	I	Yes	6	Jalandhar (Punjab)	B	2348:49 18 (O)	Innovative Research Pub. [R]	O
117	Journal of Atomic, Molecular, Condensate and Nano Physics [F]	2014	I	Yes	6	New Delhi	Q	2349- 6088 (P); 2349- 2716 (O)	RGN Pub. [R]	Hy
118	Journal of Foundation and Applications in Physics [P]	2014	I	Yes	6	Navi Mumbai (Maharashtra)	H	2394- 3688 (O)	Science Front Pub. [R]	O
119	The Delhi University Journal of Undergraduate Research and Innovation [S]	2014	I	Yes	6	Delhi	H	2395- 2334 (O)	Univ. of Delhi [U]	O
120	Current Global Reviewer [S]	2015	I	Yes	5	Latur (Maharashtra)	H	2319- 8648 (P)	Shaurya Pub. [R]	P
121	International Journal of Yogic, Human Movement and Sports Sciences [C]	2016	I	Yes	4	Delhi	H	2456- 4419 (O)	AkiNik Pub. [R]	O
122	Vignabharthi- The Science Journal [S]	2016	I	Yes	4	Bengaluru (Karnataka)	H	0971- 6882 (P)	Bangalore Univ. [U]	P

(Column 2: Astronomy and Astrophysics = [A]; Specific facet(s) of physics = [F]; Physics as an entirety = [P]; Science in general = [S]; Specific facet(s) of science contextual to physics = [C])

(Column 4: S = Scopus; W = Web of Science; I = Indian Citation Index)

(Column 8: A = Annual; B = Bi-Monthly; F = Fortnightly; H = Half Yearly or Bi-Annual; I = Irregular; M = Monthly; Q = Quarterly; T = Tri-Annual; W = Weekly)

(Column 10: Govt. Organization = [G]; R & D Sector = [D]; Learned Society/ Professional Association = [L]; Private/ Personal/ Corporate Publication = [R]; University Department = [U])

(Column 11: P = Print; O = Online; Hy = Hybrid)