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## JOURNAL OF ASTROPHYSICS AND ASTRONOMY : A BIBLIOMETRIC STUDY

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### Abstract :

*The International Journal of 'Astrophysics and Astronomy' is an Springer journal provides rapid publication (monthly) or articles in all areas of subject in Physics. All articles published in this journal are peer-reviewed. The data collected from this printed journal volumes 28 to 33 in the year of (2007-2012). Totally 238 articles published in this study period. From analyse this study 2011 exhibited the maximum number of contributions and highest numbers of articles published from India 31.51 % in the International Journal of Astrophysics and Astronomy.*

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### KEYWORDS :

Astronomy, Astrophysics, Bibliometrics.

### INTRODUCTION

The word 'Bibliometrics' is coined by two words 'biblio' and 'metrics'. The word 'biblio' is derived from combination of a Latin and Greek word 'biblion', which means book, paper. On the other hand, the word 'metrics' indicates the science of meter i.e. measurement. The terms bibliometrics and Scientometrics were almost simultaneously introduced by Pritchard and by Nalimov and Mulchenko in 1969. While Pritchard explained the term bibliometric as "the application of mathematical and statistical methods to books and other media of communication". Nalimov and Mulchenko defined Scientometrics as "the application of those quantitative methods which are dealing with the analysis of science viewed as an information process". According to these interpretations the specialty Scientometrics is restricted to the measurement of science communication, whereas bibliometrics is designed to deal with more general information processes.

### OBJECTIVES

To our knowledge no bibliometric study has been conducted so far with an international Journal of Astrophysics and Astronomy. Hence, this study has been undertaken to examine the following:

Year-wise distribution of the articles  
Authorship pattern of the articles  
Average length of the articles in terms of pages  
Average number of references per articles  
Institution-wise distribution of the articles  
Geographical distribution of the articles

### Source Journal

International journal of Astrophysics and Astronomy is an International well indexed scientific journal dedicated to publish high quality original research in the field of Physics. Scope of the journal includes: Astronomy, Nuclear, Magnetic Field, Infrared, Energy, Fluid Mechanics, Dynamics, Radiation, Solids, Waves, Relativity, Quantum, Thermodynamics, and Space and Stellar physics.

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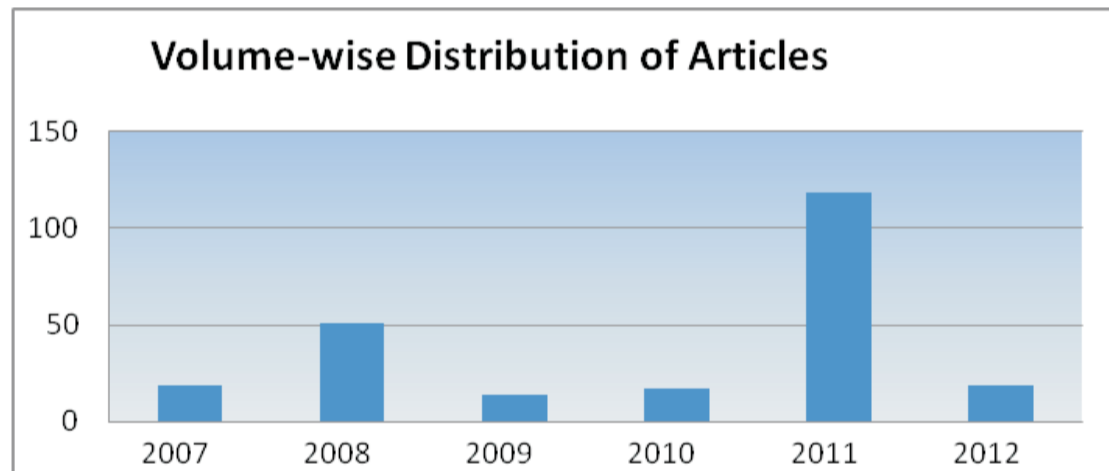
**METHODOLOGY**

All the articles of volumes 28-33 (2007-2012) of the journal were scanned manually and data relating to subject, author, author affiliation, geographic distribution, number of references and the number of pages were recorded and tabulated. Finally, the collected data was analysed for generating information. The subjects of the articles and their facets have been classified with the help of experts. Short communications and book reviews have been excluded.

**Table I: Volume-wise Distribution of Articles**

| Year  | Vol. No | Issue No. | Contribution | Percentage |
|-------|---------|-----------|--------------|------------|
| 2007  | 28      | 3         | 19           | 8.0        |
| 2008  | 29      | 2         | 51           | 21.4       |
| 2009  | 30      | 3         | 14           | 5.9        |
| 2010  | 31      | 4         | 17           | 7.1        |
| 2011  | 32      | 3         | 118          | 49.6       |
| 2012  | 33      | 4         | 19           | 8.0        |
| Total |         |           | 238          | 100        |

Table I reveals that the number of research publications on International Journal of Astrophysics and Astronomy for the period 2007-2012 has been given year wise in the above table. The journal published 238 research papers during the time. The journal on an average has published around 40 research papers per year. The maximum number of articles 118 (49.6%) were published in the year 2011.



**Fig:1 Volume wise distribution of Article**

**Table II: Authorship Pattern of Astrophysics Research Output**

| No. of Authors | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total | %     |
|----------------|------|------|------|------|------|------|-------|-------|
| Single Author  | 3    | 18   | 5    | 6    | 24   | 9    | 65    | 27.32 |
| Two Authors    | 5    | 12   | 3    | 6    | 21   | 5    | 52    | 21.85 |
| Three Authors  | 7    | 5    | 5    | 4    | 22   | 1    | 44    | 18.49 |
| Four Authors   | 1    | -    | 1    | -    | 26   | 1    | 29    | 12.18 |
| Five Authors   | 2    | 5    | -    | 1    | 15   | 2    | 25    | 10.50 |
| Above Five     | 1    | 7    | -    | -    | 14   | 1    | 23    | 9.66  |
| Total          | 19   | 47   | 14   | 17   | 122  | 19   | 238   | 100   |

It is observed from the table II that the highest number (72.68%) of articles was contributed by multiple authors. The highest number of papers was contributed by single authors 65 (18.03%) followed by double authored articles 52 (21.85%),

three authors contributed 44(18.49%), four authors contributed 29 (12.18%) and five authors contributed 25(10.50%). Only 9.66% of articles were published by more than five authors. Single author contributions are dominating the field.

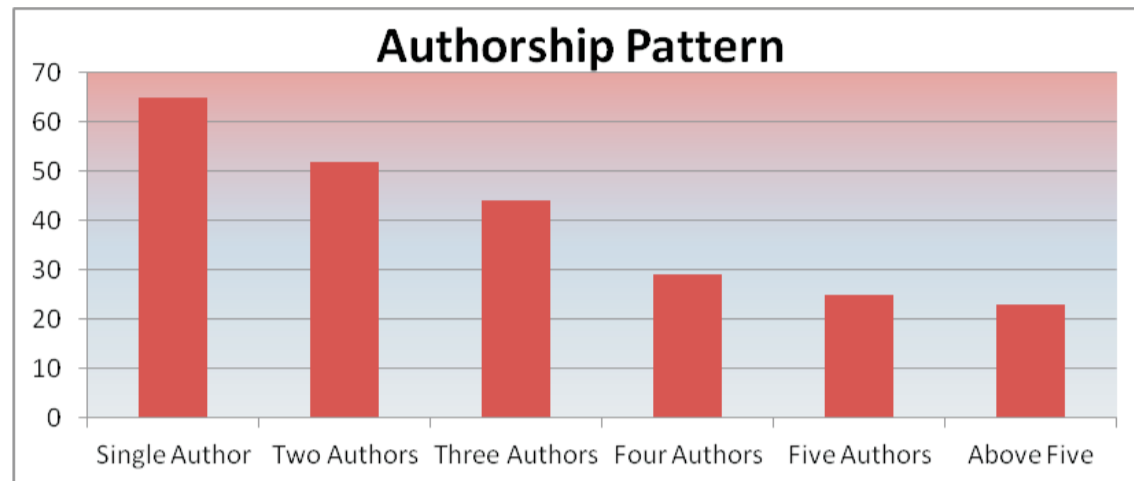


Fig :2 Authorship pattern

Table III : Distribution of Articles according to Pages

| No. of Pages | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total | %     |
|--------------|------|------|------|------|------|------|-------|-------|
| 1-5          | -    | 21   | 1    | -    | 78   | 2    | 102   | 42.86 |
| 6-10         | 9    | 22   | 4    | 9    | 37   | 4    | 85    | 35.71 |
| 11-15        | 7    | 5    | 7    | 6    | 03   | 6    | 34    | 14.29 |
| 16-20        | 2    | 2    | 1    | 1    | -    | 4    | 10    | 4.20  |
| 21-25        | -    | 1    | -    | -    | -    | -    | 1     | 0.42  |
| Above 25     | 1    | -    | 1    | 1    | -    | 3    | 6     | 2.52  |
| Total        | 19   | 51   | 14   | 17   | 118  | 19   | 238   | 100   |

Table III reveals that majority of the articles 102 (42.86%) comes under the pages between 1 and 5 followed by 85 (35.71%) articles with 6-10 pages, 34 (14.29%) articles with 11-15 pages, 10 (4.20%) articles with 16-20 pages and 6 (2.52%) articles with above 25 pages. It is quite interesting note that only one article (0.42%) comes with 21-25 pages.

Table IV: Distribution of Articles according to References

| No. of References | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total | %     |
|-------------------|------|------|------|------|------|------|-------|-------|
| 0-10              | 1    | 25   | 2    | 1    | 66   | 2    | 97    | 40.76 |
| 11-20             | 7    | 12   | 5    | 8    | 27   | 3    | 62    | 26.05 |
| 21-30             | 5    | 7    | 2    | 4    | 9    | 6    | 33    | 13.87 |
| 31-40             | 1    | 5    | 2    | 2    | 7    | 2    | 19    | 7.98  |
| 41-50             | 2    | 1    | 2    | 1    | 6    | 3    | 15    | 6.30  |
| Above 50          | 3    | 1    | 1    | 1    | 3    | 3    | 12    | 5.04  |
| Total             | 19   | 51   | 14   | 17   | 118  | 19   | 238   | 100   |

Table IV shows that majority of the articles 97 (40.76%) have the 0-10 references followed by 62 (26.05%) articles with 11-20 references, 33 (13.87%) articles with 21-30 references, 19 (7.98%) articles with 31-40 references, 15 (6.30%) articles with 41-50 references and 12 (5.04%) articles with more than 50 references.

**Table V: Country wise distribution of Articles**

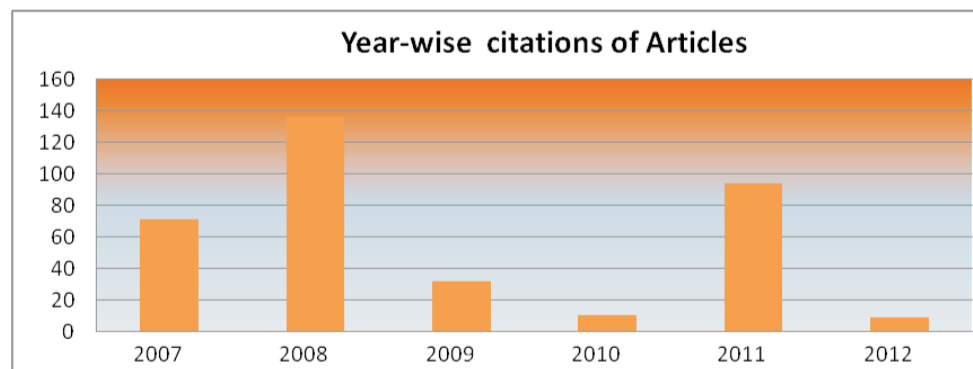
| S. No | Country      | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total | %     |
|-------|--------------|------|------|------|------|------|------|-------|-------|
| 1     | India        | 8    | 29   | 6    | 6    | 21   | 5    | 75    | 31.51 |
| 2     | China        | 4    | 2    | 1    | 2    | 59   | 4    | 72    | 30.26 |
| 3     | USA          | 2    | 11   | -    | 2    | 11   | 2    | 28    | 11.76 |
| 4     | England      | -    | -    | 2    | 2    | 1    | 3    | 8     | 3.36  |
| 5     | Australia    | -    | -    | -    | -    | 8    | -    | 8     | 3.36  |
| 6     | Saudi Arabia | 1    | -    | -    | 1    | 2    | 1    | 5     | 2.10  |
| 7     | Italy        | -    | -    | -    | 4    | 1    | -    | 5     | 2.10  |
| 9     | Germany      | -    | -    | -    | -    | 5    | -    | 5     | 2.10  |
| 10    | Iran         | 1    | -    | 1    | -    | 1    | 1    | 4     | 1.68  |
| 11    | New Zealand  | -    | -    | -    | -    | 3    | -    | 3     | 1.26  |
| 12    | Ukraine      | -    | 2    | -    | -    | -    | -    | 2     | 0.84  |
| 13    | Canada       | -    | -    | 2    | -    | -    | -    | 2     | 0.84  |
| 14    | Japan        | -    | -    | 1    | -    | -    | 1    | 2     | 0.84  |
| 15    | Egypt        | -    | -    | 1    | -    | -    | 1    | 2     | 0.84  |

Table V reveals that the articles have originated 28 countries. The geographical distribution of articles has been decided basing the address of the first author. From the analysis it is observed that the highest numbers of articles are from India 75 (31.51 %). Next comes China with 72 (30.26 %) articles followed by USA 28 (11.76 %). It may be noted that the first five countries are responsible for 82.35 Percent of the articles, the first ten countries for 88.23 Percent, the first 15 countries for 92.85 Percent of the articles.

**Table VI: Year-wise distribution of citations of Articles**

| Year  | No. of Citations | Percentage |
|-------|------------------|------------|
| 2007  | 71               | 20.17      |
| 2008  | 136              | 38.64      |
| 2009  | 32               | 9.09       |
| 2010  | 10               | 2.84       |
| 2011  | 94               | 26.70      |
| 2012  | 9                | 2.56       |
| Total | 352              | 100.00     |

The above table shows that maximum number of citations 136 (38.64 %) produced in the year 2008 followed by 94 (26.70 %) citations in 2011, 32 (9.09 %) citations in 2009, 10 (2.84 %) citations in 2010 and 9 (2.56%) citations in the year 2012.

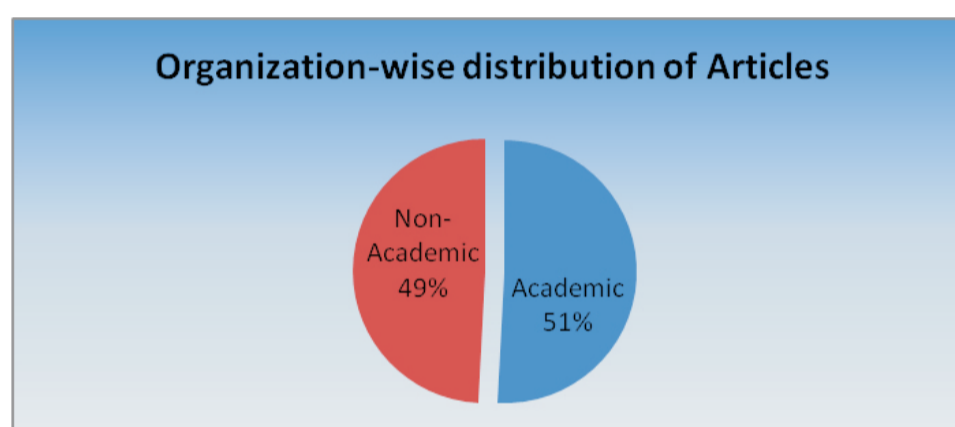


**Fig:3 Year wise citation of Articles**

**Table VII: Organization-wise distribution of Articles**

| Organization | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total | %     |
|--------------|------|------|------|------|------|------|-------|-------|
| Academic     | 13   | 32   | 8    | 13   | 48   | 7    | 121   | 50.84 |
| Non-Academic | 6    | 19   | 6    | 4    | 70   | 12   | 117   | 49.16 |
| Total        | 19   | 51   | 14   | 17   | 118  | 19   | 238   | 100   |

Table VII depicts that highest number of articles 121 (50.84%) published by academic organizations and 117 (49.16%) of articles published by non-academic organizations. Academic organizations are dominated in the contribution of research publications.

**Fig 4: Organization wise distribution of Articles**

## CONCLUSION

The publishing trend totally depends on the output of contributors, patterns of contributions and the quality of research. The year 2011 exhibited the maximum number of contributions to International Journal of Astrophysics and Astronomy. The study reveals that the categories of article distributions are remarkable in this research journal. The majority of the articles contributed by single author and most authors were affiliated with academic research institutions. India has contributed more articles than any other countries, such as China, USA, England and Australia. This journal is notably a scholarly journal that stipulates or induces fruitful research for the Physics.

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