



## STATUS OF OPEN ACCESS DIGITAL REPOSITORIES IN PHYSICS & ASTRONOMY

Dr. Ramneek

Student PGDLAN, Panjab University, Chandigarh.



### ABSTRACT:

The study highlights the status of Open Access repositories in the field of Physics & Astronomy. The repositories were identified from OpenDOAR. Data collected is systematically analyzed based on selected parameters viz. number & types of OA repositories, language used, contents, software used & country wise distribution of OA repositories in the field of Physics & Astronomy. The study reveals that OpenDOAR lists 112 repositories in the field of physics & astronomy.

**KEYWORDS :** Open Access, Open Access repositories, OpenDOAR, Physics & Astronomy.

### 1. INTRODUCTION:

Institutional repositories are a set of services that any institution offers to the members of its community for the management and dissemination of digital materials created by the institution or its community (Lynch, 2003). According to Wikipedia "A disciplinary repository (or subject repository) is an online archive containing works or data associated with works of scholars in a particular subject area. Disciplinary repositories can accept work from scholars from any institution. A disciplinary repository shares the role of collecting, disseminating and archiving work with other repositories but is focused on a particular subject area. These collections can include academics and research papers". Open Access repositories may be institutional-based, enhancing the visibility and impact of the institution or they may be centralised, subject-based collections like the economics repository RePEc (Research Papers in Economics) or Physics repository arXiv (Kumar & Siwach, 2013). Subject repositories bring together digital content from similar research or area of interest onto one platform, they are seen as a good way to present the results of research by collection as in OpenDOAR that collect and provide access to the literature of a single subject or a set of related subjects. Despite their purported success there is little literature on the work involved in developing and managing a subject repository.

Open Access emerged in response to the restrictive access to knowledge in scholarly & scientific journals imposed by commercial publishing houses via subscription fees, license fees or pay per view fees (Gideon, 2008). In the 21<sup>st</sup> century there is competition among organizations to make their organization's research output visible to the world of learning. There is no difference between organization; it may be small in size or it may be big; they are constantly trying to preserve their research output in digital form (Das & Singh, 2017). The principle of Open Access is supported by Institutional Repositories through self-archiving copies of already published research articles in the author's institutional archive which are made for free. In the early stages, the deployment of IR was predominantly observed at the research-intensive higher education institutions. It was mainly contribute to knowledge building within their field without the constraints of access and costs (Chan, 2004). The OpenDOAR service provides evidence that in recent years Open Access repositories have grown in numbers and volume around the world.

---

## 2. REVIEW OF LITERATURE

The following review of literature highlights some earlier papers on Open Access repositories.

Loan & Sheikh (2016) investigated Open Access in the field of Health and Medicine available in OpenDOAR. This study reveals that the OpenDOAR list 254 repositories in the field of Health and medicine contributed by the 62 countries of the world topped by the U.S.A (15.4%) followed by Japan (7.9%) and UK (7.5%). Bjork (2014) stated about subject repositories that "first repositories emerged in early 1990s & in some fields of science they have become an important channel for the dissemination of research results. With quite strict inclusion criteria, 56 subject repositories were identified from a much larger no. indexed in 2 repository indices". Pinfield et al (2014) reviews the worldwide growth of Open Access repositories for the period 2005-2012 using OpenDOAR as a data collection tool. The data analysis shows tremendous growth in the development of repositories worldwide with Europe in the lead. Institutional, multidisciplinary and English language repositories dominate disciplinary and subject-based repositories. Roy & Biswas et al (2012) discusses the worldwide growth & development of OARs registered with DOAR & ROAR database. It provides a detailed description of repositories in different continents & countries. Adamick and Reznik-Zellen (2010) state that "subject repositories are under-studied and under-represented in library science literature and in the scholarly communication and digital library fields" and further that "the lack of subject repository recognition within the literature may be attributed to the isolated development of the largest subject repositories and a general lack of awareness about small-scale subject repositories." Adamick and Reznik-Zellen collected papers written after the year 2000 on the 10 biggest subject repositories and found only six articles discussing subject repositories more broadly, in contrast to 31 articles discussing individual repositories in rather practical terms. Xia (2008) compared the self-archiving behaviour of physicists in both subject & Institutional repositories.

## 3. OBJECTIVES OF THE STUDY

The objectives of the study are as follows: -

- To identify the total number of Open Access repositories in the field of Physics & Astronomy worldwide.
- To explore the various types of Open Access repositories & no. of records available in the field of Physics & Astronomy throughout the world.
- To study the language & software preferred in the field of Physics & Astronomy throughout the world.
- To find out the contents covered in OARs in the field of Physics & Astronomy according to Open DOAR.
- To analyze the country wise distribution of Open Access repositories in the field of Physics & Astronomy.

## 4. SCOPE AND LIMITATIONS OF THE STUDY

The scope of the study is confined to Open Access repositories in the field of Physics & Astronomy worldwide in the OpenDOAR on April, 2018. OpenDOAR has opted to collect & provide information solely on sites that wholly embrace the concept of OA repositories to fall resources. Thus sites where any form of access control prevents immediate access are not included.

## 5. METHODOLOGY:

To justify above given objectives, researchers have selected OpenDOAR (<http://www.opendoar.org>) database for collecting of information to find out correct status of open access institutional repositories in the field of Physics & Astronomy worldwide acc. to the OpenDOAR, at present there are 112 Open Access repositories registered in field of Physics & Astronomy on April, 2018. Further, it analyses the type of repositories, number of records, content type, language preferred & country-wise distribution of Open Access repositories.

## 6. DATA ANALYSIS:

### 6.1 Type of Institutional Repositories and No. of Records

Table 1 indicates the type of IRs and no. of records deposited in the archive out of total 112 Open Access repositories we found Institutional repositories 93 (83.03%) and having total 1,635,585 followed by Disciplinary 13(11.60%) with records 2,515,412, Aggregating 4 (3.57%) with records 1,562,572 and Governmental 2(1.78%) with having 9000 records. It is clear from the table 1 that Institutional repositories have majority in the field of Physics and Astronomy but in no. of records disciplinary repositories 43.96% are in majority among all OARs registered in theOpenDOAR.

**Table 1: Types and no. of records of repositories**

S.No.	Types of IRs	No.	%age	No.of Records	%age
1	Institutional	93	83.04	1635585	28.58
2	Disciplinary	13	11.61	2515412	43.96
3	Aggregating	4	3.57	1562572	27.31
4	Governmental	2	1.79	9000	0.16
	Total	112	100.00	5722569	100.00

### 6.2 Country wise distribution of Repositories

OpenDOAR lists a total of 112 OA repositories in the field of Physics and Astronomy (P&A) worldwide. Table 2 shows that maximum no. of repositories by United States 17 (15.18%) followed by France 12(10.71%) than China 9 (8.04%), India 8 (7.14%) , United Kingdom 6 (5.36%) & Italy 6 (5.36%). An illustration is provided in Figure 2.

**Table 2: Country-wise distribution of repositories**

S.No.	Country	No. of IRs	%age
1	United States	17	15.18
2	France	12	10.71
3	China	9	8.04
4	India	8	7.14
5	United Kingdom	6	5.36
6	Italy	6	5.36
7	Germany	5	4.46
8	Poland	5	4.46
9	Belarus	4	3.57
10	Ukraine	3	2.68
11	Brazil	3	2.68
12	Croatia	3	2.68
13	Switzerland	2	1.79
14	Spain	2	1.79
15	Portugal	2	1.79
16	Austria	2	1.79
17	Zimbabwe	1	0.89
18	South Africa	1	0.89
19	Saudi Arabia	1	0.89

20	Namibia	1	0.89
21	Russian Federation	1	0.89
22	Pakistan	1	0.89
23	Peru	1	0.89
24	Nigeria	1	0.89
25	Finland	1	0.89
26	Malta	1	0.89
27	Kenya	1	0.89
28	Estonia	1	0.89
29	Kazakhstan	1	0.89
30	Ireland	1	0.89
31	Indonesia	1	0.89
32	Hungary	1	0.89
33	Greece	1	0.89
34	Ghana	1	0.89
35	Czech Republic	1	0.89
36	Australia	1	0.89
37	Algeria	1	0.89
38	Unknown	1	0.89
39	Ecuador	1	0.89
	Total	112	100

### 6.3 Software used to develop Open Access repositories

An analysis shows that the number and percentage of software used by Open Access repositories worldwide in the field of physics & Astronomy (P&A). Table 3 shows extensively used software is Dspace 49(43.75%). it was followed by others Eprints 16(14.29%), unknown 12(10.71%) , HAL 10(8.93%), Digital Commons 7(6.25%) , Invenio 5 (4.46%) dlibra&Islandora 2(1.79%) whereas OCS, HTML, CDS ware , Arxiv and others each one used by individual repositories.

**Table 3: Software used to develop repositories**

S. No.	Software	No. of IRs	%age
1	Dspace	49	43.75
2	Eprints	16	14.29
3	Unknown	12	10.71
4	HAL	10	8.93
5	Digital commons	7	6.25
6	Invenio	5	4.46
7	Dlibra	2	1.79
8	Islandora	2	1.79
9	UR Libservice	1	0.89
10	Polaris by Myscience work	1	0.89
11	OCS	1	0.89
12	Hyperwave	1	0.89

13	HTML	1	0.89
14	Fedora	1	0.89
15	Cocoon	1	0.89
16	CDSware	1	0.89
17	Arxiv	1	0.89
	Total	112	100.00

#### 6.4 Language wise distribution

Table 4 reveals that English is the most prominent language used by OA repositories in the field of Physics & Astronomy (P&A) worldwide. Out of total 112 repositories, 92 (59.74%) had English as one of the language of its content. It is followed by French 12(7.79%) Chinese 9(5.84%), Russian & German 6(3.90%) , Portuguese 5(3.25%), Polish & Italian 4(2.60%) , Croatia , Spanish & Ukrainian 3 repositories each, Czech, Estonian, Finnish, Hungarian, Indonesian, Kazakh & Welsh (1 Repositories each).

**Table 4: Language-wise distribution of repositories**

S.No.	Language	No.of IRs	%age
1	English	92	59.74
2	French	12	7.79
3	Chinese	9	5.84
4	Russian	6	3.90
5	German	6	3.90
6	Portuguese	5	3.25
7	Polish	4	2.60
8	Italian	4	2.60
9	Croatian	3	1.95
10	Spanish	3	1.95
11	Ukrainian	3	1.95
12	Czech	1	0.65
13	Estonian	1	0.65
14	Finnish	1	0.65
15	Hungarian	1	0.65
16	Indonesian	1	0.65
17	Kazakh	1	0.65
18	Welsh	1	0.65
	Total	154	100

#### 6.5 Contents wise distribution of OA repositories

Table 5 shows contents wise distribution of Open Access repositories in the field of Physics & Astronomy (P&A) throughout the world. It is observed from the table 5 more focus is giving to the archiving of articles 90 (21.18%), followed by these 75 (17.65%), conferences 56 (13.18%), Books 48 (11.29%) & an published work 42 (9.88%) on the other hand multimedia 27 (6.35%) & learning objects 25 (5.88%). Some repositories also contained references patents, special, datasets & software. An illustration is provided below in table 5 as listed in OpenDOAR.

**Table 5: Content-wise distribution of repositories**

S.No	Types of Content	No. of IRs	%age
1	Articles	90	21.18
2	Thesis	75	17.65
3	Conference	56	13.18
4	Books	48	11.29
5	Unpublished	42	9.88
6	Multimedia	27	6.35
7	Learning objects	25	5.88
8	References	18	4.24
9	Patents	18	4.24
10	Special	16	3.76
11	Datasets	8	1.88
12	Software	2	0.47
	Total	425	100.00

## 7. FINDINGS AND CONCLUSIONS

- From the above study of open access repositories in the field of Physics & astronomy worldwide on the basis of data collected from open DOAR. It shows that in the last few years no. of repositories has increasing constantly & the demand for subject repositories appears continuous to grow.
- The finding clearly revealed that OpenDOAR lists 112 open access repositories in the field of Physics & astronomy are gaining momentum worldwide.
- It was observed that in the field of Physics & Astronomy OARs there is majority of Institutional based repositories 93 (83.04%) worldwide but in no. of records Disciplinary repositories have maximum no. of records 43.96% in the field of Physics & Astronomy.
- All countries are maintaining open Access repositories (OARs) but major contributor is in United States 17 (15.18%) followed by France 12 (10.71%) in the field of Physics & Astronomy.
- Continent-wise Europe have majority of OARs i.e-53.6% followed by Asia continent 18.8% in the field of Physics & Astronomy listed in OpenDOAR.
- DSpace 49 (43.75%) was widely used software followed by Eprints 16 (14.29%) in OARs in field of physics & astronomy globally.
- The prominent language of contents in the repositories was found to be English 92 (59.74%) followed by others i.e. French 12 (7.79%), Chinese 9 (5.84%) and so on in the field of P & A globally.
- In this study it is perceived that more focus is given on archiving of articles 90 (21.18%) followed by theses 75 (17.65%) than other forms in the field of Physics & Astronomy OARs worldwide.

## 8. REFERENCES

1. Adamick, J., & Reznik-Zellen, R. (2010). Representation and recognition of subject repositories. *D-Lib Magazine*, 16(9/10).
2. Björk, B. C. (2014). Open access subject repositories: An overview. *Journal of the Association for Information Science and Technology*, 65(4), 698-706.
3. Chan, L. (2004). Supporting and enhancing scholarship in the digital age: the role of open access institutional repository. *Canadian Journal of Communication*, 29(3).
4. Das, K. C., & Singh, K. (2017). Current Status of Chinese Open Access Institutional Repositories: A Case Study. *Journal of Library & Information Science*, 7(1).

5. Gideon, E. C. (2008). Open access initiative and the developing world. *African Journal of Library, Archives and Information Science*, 18(2).
6. Kelly, J., &Letnes, L. (2005). Managing the grey literature of a discipline through collaboration: AgEcon search. *Resource sharing & information networks*, 18(1-2), 157-166.
7. Kumar, S. &Siwach, A. K. (2013). An Analysis of Indian Open Access Repositories in "OpenDOAR". *E-Library Science Research Journal*, 1 (11).
8. Loan, F. A., & Sheikh, S. (2016). Analytical study of open access health and medical repositories. *The Electronic Library*, 34(3), 419-434.
9. Lynch, C. A. (2003). Institutional repositories: essential infrastructure for scholarship in the digital age. *portal: Libraries and the Academy*, 3(2), 327-336.
10. OpenDOAR Homepage. Retrieved from <http://www.opendoar.org/>
11. Pinfield, S., Salter, J., Bath, P. A., Hubbard, B., Millington, P., Anders, J. H., &Hussain, A. (2014). Open-access repositories worldwide, 2005–2012: Past growth, current characteristics, and future possibilities. *Journal of the association for information science and technology*, 65(12), 2404-2421.
12. Roy, B. K., Biswas, S. C., &Mukhopadhyay, P. (2012). Study of open access repositories: a global perspective. In *Information-Innovation-Technology: Creating Seamless Linkages, 29 th Convention & Conference of Society of Information Science* (pp. 26-28).
13. Xia, J. (2008). A comparison of subject and institutional repositories in self-archiving practices. *The Journal of academic librarianship*, 34(6), 489-495.



**Dr. Ramneek**  
Student PGDLAN, Panjab University, Chandigarh.