

# Author compliance with publisher open access embargoes: a study of the journal *Nature Physics*

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Until early 2005 the Nature Publishing Group (NPG) had a fully 'green' policy on author self-archiving; that is, authors were allowed to deposit their own versions of their articles in a digital repository immediately they were peer-reviewed or published. Then the NPG revised that policy, introducing an embargo period of 6 months after publication during which authors were not permitted to make their work openly accessible.

Physicists working in the areas of high energy physics, condensed matter physics and astrophysics have long used the digital repository, arXiv, hosted at Cornell University, as a place where they deposit their articles. More than half of the articles in the arXiv are postprints, that is, they have been peer-reviewed, but frequently (but not mostly) articles are deposited at the preprint stage (i.e. before peer review). By doing this, physicists in these disciplines make their articles openly available to their whole peer community, indeed to everyone with internet access. The arXiv was established in 1991 and now contains around half a million items. It is part of the daily life of physicists in the relevant disciplines and a tool that they consider to be an indispensable part of their communications kit.

In October 2005, the NPG launched a new journal called *Nature Physics*. The journal's scope is broad and covers all sub-disciplines of physics. Although the use of the arXiv is not a habit for all sub-disciplines in physics, the question of how physicists who do work in the sub-disciplines that habitually self-archive in the arXiv would respond to the NPG's 6-month embargo period was of interest.

As soon as the first issue of *Nature Physics* was published and it was possible to see the table of contents I carried out an exercise to investigate this, carrying out a webwide search for the articles published in that first issue. I searched for the papers classified as **Letters** (because in *Nature* these are actually primary research papers) and **Articles** (longer research papers) only. Items in the other sections of the journal, such as those in the **News and Views** section, were excluded; I focused solely on the primary research papers.

Since I do not know enough about physics to be certain if an article is in the arXiv-areas, and anyway it was of interest to see whether these authors were also making their work open access via other web outlets, I approached the exercise in a belt-and-braces way. First, I looked in the arXiv to see if each article was there. Then I Googled on each article to see if it was elsewhere on the web, instead or as well. Finally, I checked the authors' websites in case the articles were there and Google had not indexed them. Incidentally, this exercise was carried out in pre-Google Scholar days. I looked for:

- postprints (peer-reviewed versions of the articles, identified as such because they had page numbers or had a tag that explicitly said they were to appear in *Nature Physics*, thus indicating that they had been accepted for publication by the journal)
- and preprints (before peer review)

The results are as follows, for Day One after publication.

## **Letters to Nature Physics (6 in total):**

- 2 had the postprint version in arXiv
- 2 had the preprint version in arXiv (one of these also had the publisher's own PDF on the author's home page, something explicitly forbidden by the journal)

- 2 were not in arXiv, though one of these appeared as the publisher's PDF on the author's home page. I was not expert enough to know whether these two articles were not in the arXiv because the authors were obeying the embargo (though this was clearly not in the case where the publisher's PDF was posted on the author's website) or because they were about areas of physics that the arXiv does not usually encompass.

#### **Articles (2 in total):**

- both had postprints in arXiv

In total, then, only one article out of 8 was not freely available on the web somewhere immediately upon publication, so seven articles had been posted in contravention of the NPG's 6-month embargo policy. In fact, of course, they were all there *before* publication but I could not search for them beforehand because I had to wait for the Issue 1 table of contents to see what articles were published in that issue before I could carry out the exercise. Nevertheless, because the arXiv date-stamps deposits, it was possible to examine how long before publication these items had been openly accessible. The dates of depositing the four postprints that resided in the arXiv were 11 March, 27 June, 26 July, 26 September. Note that the journal's publication date was October.

The citation analysis software tool Citebase ([www.citebase.org](http://www.citebase.org)) works on the UK mirror site of the arXiv hosted at Southampton University. Citebase enables the assessment of the impact of individual articles: it measures the number of times an article is downloaded from the repository and it measures citations to articles in the repository by other articles in the repository. I used Citebase to examine the patterns of usage of the four postprints in arXiv by the time the published version appeared in the journal. The table below identifies each postprint by the date it was deposited in arXiv and shows the number of full-text downloads and the number of times it had been cited by the time of official publication.

<b>Postprint deposited on:</b>	<b>Full-text downloads</b>	<b>Citations</b>
11 March	10	1
27 June	11	5
26 July	3	0
2 September	20	3

The patterns for the two preprints that were also in arXiv were:

<b>Preprints</b>	<b>Full-text downloads</b>	<b>Citations</b>
Preprint 1	24	3
Preprint 2	2	0

## **Summary**

Despite NPG's recently-introduced embargo on self-archiving, physicists publishing in the first issue of *Nature Physics* made their work open access as usual. Seven of eight articles were self-archived as author final-version postprints and two of them were self-archived in the publisher's PDF format in contravention of the publisher's policy.

Of the six articles self-archived in the arXiv, all had been downloaded by readers and four had already been cited by other authors by the time of publication in the journal.

The publisher's views on which outcome aligns best with the interests of science – this author-generated activity or its own preference for a 6-month period where the content of the journal is hidden to all but those who have access via a subscription – are unknown.