

Astrophysics Production in INSU until 2000: What Image is Conveyed by the Los Alamos and ADS Databases?

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Abstract. First, we defined a list of astrophysics laboratories from INSU, the French Institut des Sciences de l'Univers, and a corpus of 793 researchers who worked at these laboratories. We then compared their publications with both the LANL and ADS databases. This paper provides bibliometric results about the researchers. One notes a strong concentration of publications present in the LANL database, but less so in the ADS database due to its recording of a larger number of reviews and conference proceedings.

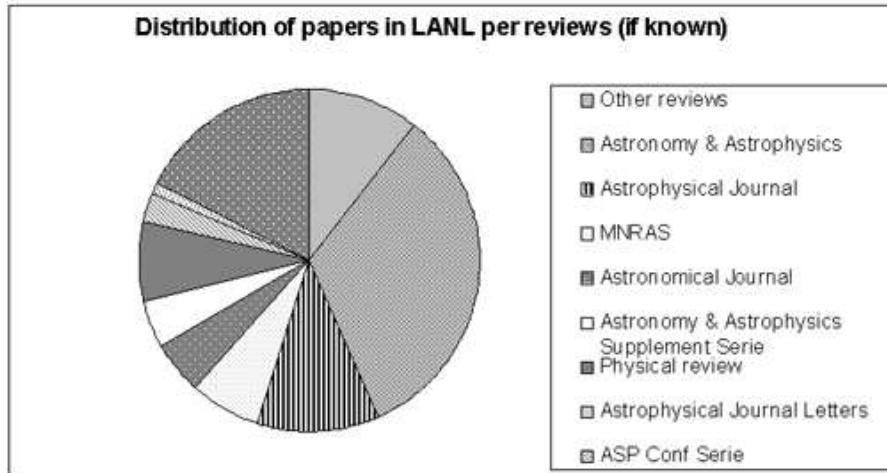
1. Introduction

The Los Alamos preprint database and NASA's ADS (Astrophysics Data System) are tools that have changed the information practices of researchers. French scientists use both databases and the questions we seek to understand is : What is the visibility of astrophysics research conducted by France researchers and what image do they project to the scientific community?

2. Methods

First, from accessing the INSU (French Institut des Sciences de l'Univers <http://www.insu.cnrs-dir.fr/>) web server we determined 11 important research centers¹ that fell under Section 14, "Solar system and remote universe". Next, we accessed their web sites and contacted the member scientists who were listed in the online directories. Starting with a list of 793 researchers, we began an interrogation of the LANL and ADS databases. All of the bibliographical data collected was processed with Infotrans software, and then exported to a spreadsheet. This data represents more than 21,880 bibliographical references for ADS, and 3,059 for LANL. This study began in January 1991 and ended in December 2000.

¹The centers are : Groupe de recherche en astronomie et astrophysique du Languedoc, Laboratoire d'astrophysique de l'observatoire des Sciences de l'Univers de Grenoble, Laboratoire d'astrophysique de l'observatoire Midi-Pyrnes, Centre de recherche astronomique de Lyon, Laboratoire d'astrodynamique, d'astrophysique et d'aronomie de Bordeaux, Laboratoire d'astrophysique de l'observatoire de Besanon, Laboratoire d'astrophysique de Marseille, labor-



3. Results

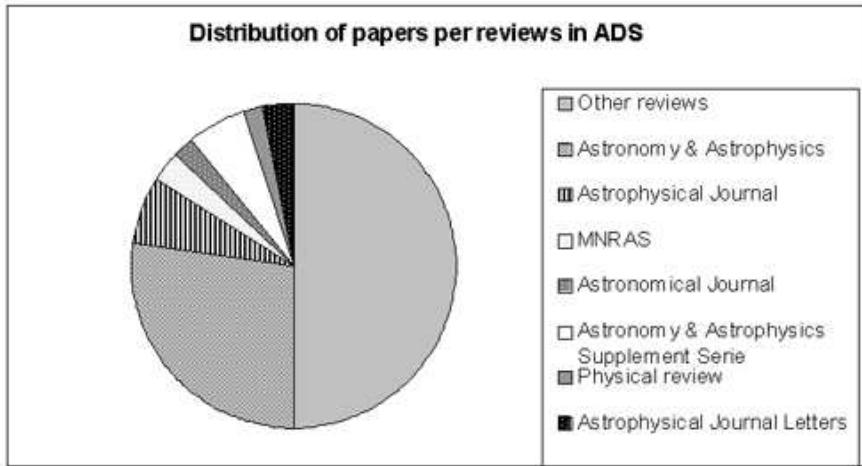
The Los Alamos preprint database records the life cycle of many research publications. Some of the significant data regarding preprints is indicated in the following commentaries by the authors:

- Forty-three percent of the preprints mentioned were “Accepted”. A large portion of the preprints were marked accordingly; therefore, the author added this remark after the referees’ comments, but before the publication actually took place. In addition, the researchers put their articles online due to the prolonged period between acceptance and journal publication.
- Six point three percent of the preprints mention “to be published” and 14% of the preprints mentioned “to appear in”.
- Four point four percent of the preprints mention “in press”. We interpret this to mean that the preprint was not only accepted, but also to be published in the near future.

In addition, 67% of the preprints were labelled “accepted” in spite of the fact that the referees had not completed their comments. The astronomers’ rationale for this was because they wanted to expose their research results to the scientific community as soon as possible.

Still, 83% of French researchers have never even submitted a single article for publication in 2000! However, 25 researchers have submitted more than 40 preprints to LANL.

The question remains: Who are these 25 “major researchers”? In addition to providing a significant number of publications to ADS, they also have the following characteristics in common:



- Seven are Directors of research or its equivalent (28%)
- Seven are “permanent researchers” with the higher levels of stature in the scientific community (two are professors)
- Seven are of unknown stature (28%)

Other significant results from the study include: The European review of *Astronomy and Astrophysics* accounts for 33% of the articles in the LANL base (when the description of the preprints indicates a review), and 67% of these articles are contained in six reviews (*Astrophysical Journal* 11%, *MNRAS* 7%, *Physical Review* 6%, *Astronomical Journal* 5%, *Astronomy and Astrophysics Supplement Series* to 5%). [See the graph below].

The LANL preprint database is a voluntary process by which researchers can submit their preprints. ADS is significantly different from LANL because it systematically scans papers published in specific journals and conferences proceedings. Consequently, researchers who publish in targeted journals or conferences proceedings, will automatically be added to the database. Indeed, there are more than 300 reviews currently being tracked by ADS (see http://adsabs.harvard.edu/abs_doc/journals.html). In fact, the first seven reviews represent 52% of ADS’s production list, there are more than 40 reviews not covered. This statistic is significant because French astronomers tend to publish in European journals and conference proceedings.

4. Discussion

The French researchers who participated in this study were chosen from their institution’s web directory. However, many tracking problems were encountered due to renaming variations and other misleading information. In addition, when an article had several authors, it was not always possible to trace the authenticity of the study.

Table 1

	Number of references in the LANL (1991-2000)	Number of references in the ADS (1991-2000)
25 "major" researchers	3,414	3,086
Total of corpus	5,999	34,235
% of preprints submitted by the "major" researchers	57%	9%

Comparative competitive analysis of the publications of the "enquiring majors" with those of the whole of the corpus

5. Conclusion

The ADS database is more complete than the LANL database and therefore more capable of analysing a researcher's publication activities. It is an essential bibliographical research tool. ADS is primarily used for bibliographic searches, and LANL provides information about new papers, that have the potential to be published. However, it remains to be seen if LANL will continue to be popular with disciplines other than astronomy.

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