

## BIBLIOGRAPHY OF FRENCH ASTROPHYSICS IN 2012

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**Abstract.** This is the second paper of a series analyzing the production of French astronomical research units. We have used the ADS information system to collect a complete database of refereed publications from French Astrophysics (i.e. with at least one of author with affiliation in a French institution). We find 2400 publications for the year 2012 —an increase of about 6% with respect to 2011. We present some statistics to characterize this scientific production.

Keywords: bibliography

### 1 Introduction

Following the analysis done for year 2011 (Egret 2012, hereafter Paper I) we have collected in the SAO/NASA Astrophysics Data System (ADS ; see e.g. Kurtz et al. 2000) 2400 refereed publications in 2012 for which at least one author is affiliated in a French institution. This constitutes a complete database of the bibliographic production of French astrophysics in 2012. These 2400 papers represent about 10% of the world publication in the domain.

We present also, in a last section, the distribution of papers per thematic categories — this analysis has been performed on the data collection of papers from 2011.

### 2 Selection criteria

We have used the following selection criteria:

- Refereed articles: We have used the filter for “refereed articles” as available from the SAO/NASA ADS interface.
- Astrophysics domain: We have restricted the data collection to articles from the ADS ASTROPHYSICS database, which roughly corresponds to the Astronomy-Astrophysics (hereafter AA) domain of the French *Institut National des Sciences de l’Univers* (INSU).
- Affiliation in a French institution: an article is retained in the list if and only if one of the authors provides an affiliation with a French institution.

### 3 Query modes

In order to be approximately complete we used two complementary approaches, and merged their results.

One is the *Affiliation search* mode of ADS. In the present context, it proved to be quite efficient, as least for recent years, although the address information is missing from the database for a few journals.

The other query mode is the classical *search by author names*: for that, lists of permanent staff have been extracted from the CNRS directory of laboratories and research units. About thirty research units or “UMR” are relevant to the AA domain. These units are generally located in *observatoires des sciences de l’Univers* (with the notable exception of AIM-Sap —a department of the French nuclear research center CEA) and they actually constitute the core of French professional astrophysics.

By using this double query approach we are rather confident that we are more than 95% complete (see Egret 2012).

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#### 4 Result: a collection of 2400 refereed articles for the year 2012

We have compiled through the method described above a data collection of 2400 refereed articles constituting the bibliography of French Astrophysics for the year 2012. This database is managed as a *private library* within the ADS system, and is available from the author on request.

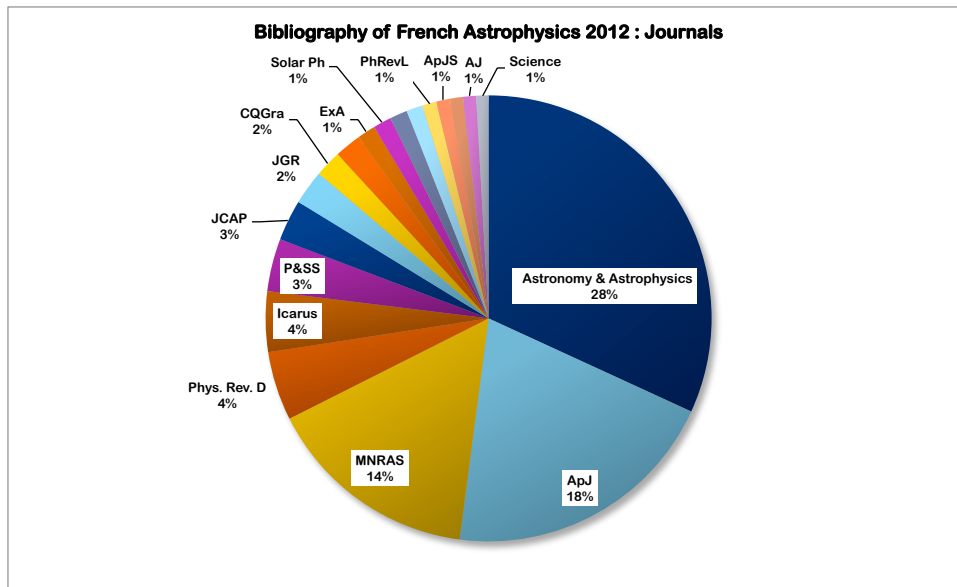
This collection is about 10% of the world production in the domain that we estimate to be about 25,000 papers per year. Of course, because of very frequent wide international co-authorship, this does not mean that French contribution accounts for 10% of the total world production in the Astrophysics domain: a better estimation is 6% (see Paper I).

If we restrict ourselves to the twelve principal astronomy and astrophysics journals, 1610 articles out of a total of 10,250 papers (i.e. 16%) have at least one author affiliated to a French institution.

##### *In which journals do French authors publish ?*

Figure 1 provides the distribution of published articles by journals: 28% are published in the European journal *Astronomy & Astrophysics* (A&A)—this is 35% of the articles published in 2012 in this journal— 18% in the *Astrophysical Journal*, and 14% in the *Monthly Notices of the Royal Astronomical Society*.

67% of the articles are published in one of the twelve major journals of the astrophysics domain.



**Fig. 1.** Left : Bibliography French Astrophysics 2012 : Distribution of Journals and Reviews in which the articles have been published.

#### 5 The production of French astrophysics research units

As a reference, we gave in Fig. 2 of Paper I a histogram of the French research units according to their number of permanent research staff. This list of 2011 can also be used as a reference for 2012.

Figure 2 provides the statistics of the refereed articles issued from the main astrophysics research units for the year 2012. Data for the year 2011 are also displayed for comparison. Note that the total number of entries is larger than the number of articles because of the multiple authorship.

For research units dealing with several domains (e.g. astrophysics and geophysics, or astrophysics and astroparticle physics), this does not reflect the total number of publications of the unit, because only astrophysics publications are counted here.

Comparison between 2011 and 2012 shows a slight global progression of the number of publications including authors with a French affiliation. We estimate the increase to be about 6%, which is larger than the overall increase of the world production of the domain (less than 4%).

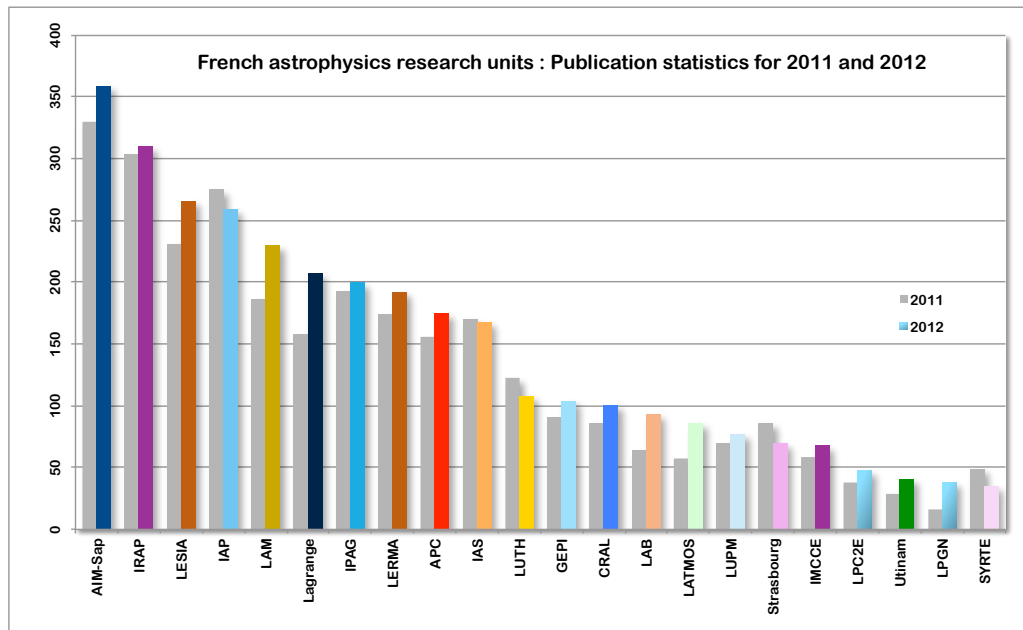


Fig. 2. Astro France 2012: research units sorted by their number of refereed publications

## 6 The rapid growth of the number of authors appears to stabilize

In 2012, 50% of the papers have more than 6 authors, 11% have more than 30 authors. Average is 30. This is very similar to what has been observed in 2011 after a very rapid growth observed e.g. with respect to year 2006 (see paper I, Egret 2012).

## 7 Scientific topics

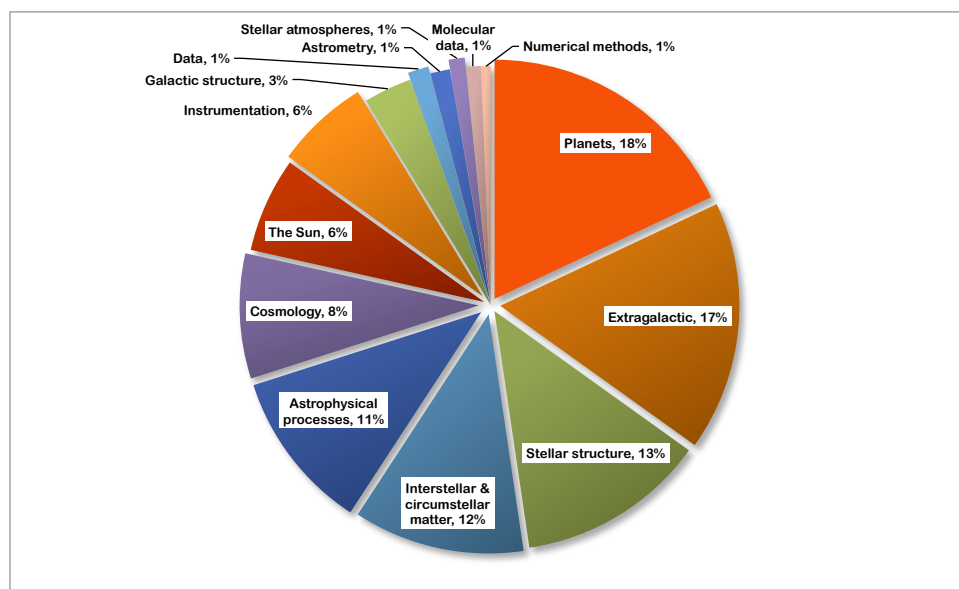


Fig. 3. French Astrophysics 2011: Distribution of the articles according to scientific categories

Figures 3 and 4 are based on an analysis of the scientific production of French astrophysics in 2011 (2150 articles; see Paper I) which has been performed with the help of Claude Bertout by assigning a keyword to each

article, according to the categories used for the European Journal *Astronomy & Astrophysics*.

Figure 3 presents the global distribution of articles per scientific topics.

Figure 4 shows how the growth of number of authors affects in a very inhomogeneous way the different categories, from astrometry (average number of authors : 6) to instrumentation (average number : 58).

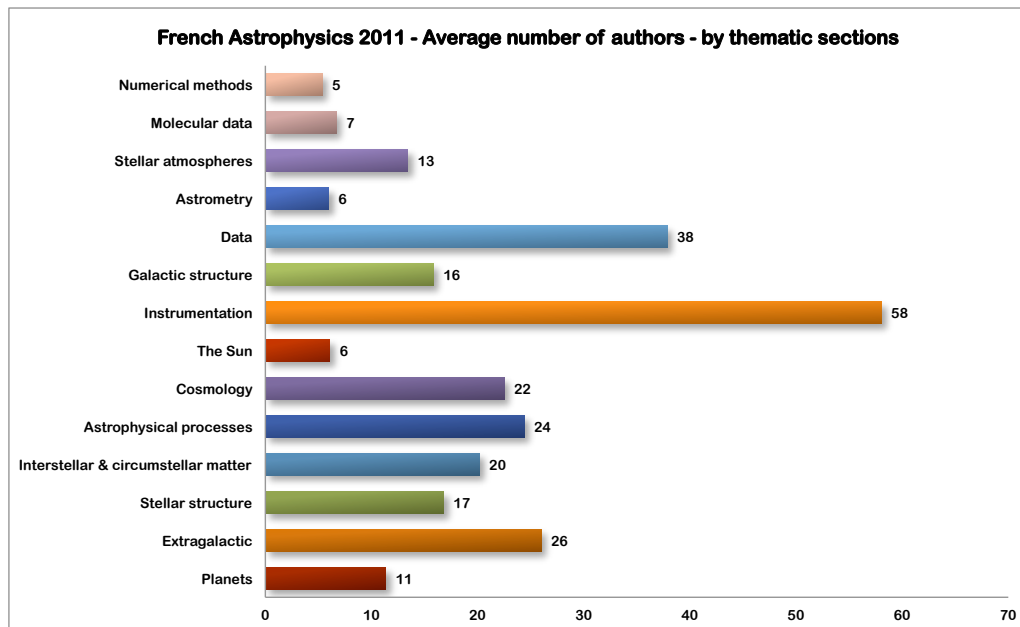


Fig. 4. French Astrophysics 2011: Histogram of the number of authors according to categories

## 8 Conclusion

This paper is the second of a series to characterize the current production of French Astrophysics, and analyze the trends. It shows a continued increase of the number of publications with respect to 2011 (6%) and a stabilization of the number of authors par paper.

This research has made use of SAO/NASA's *Astrophysics Data System*. I thank Claude Bertout and Piercarlo Bonifacio for useful discussions.

## References

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