# A publication database for optical long baseline interferometry

Fabien Malbet*ᵃ, Guillaume Mellaᵃ, Peter Lawsonᵇ, Esther Taillifetᵃ, Sylvain Lafrasseᵃ

ᵃ Université Joseph Fourier - Grenoble 1 / CNRS, Laboratoire d'Astrophysique de Grenoble (LAOG) UMR 5571, BP 53, 38041 Grenoble Cedex 09, France
ᵇ Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, 91109 USA

## Abstract

Optical long baseline interferometry is a technique that has generated almost 850 refereed papers to date. The targets span a large variety of objects from planetary systems to extragalactic studies and all branches of stellar physics. We have created a database hosted by the JMMC and connected to the Optical Long Baseline Interferometry Newsletter (OLBIN) web site using MySQL and a collection of XML or PHP scripts in order to store and classify these publications. Each entry is defined by its ADS bibcode, includes basic ADS informations and metadata. The metadata are specified by tags sorted in categories: interferometric facilities, instrumentation, wavelength of operation, spectral resolution, type of measurement, target type, and paper category, for example. The whole OLBIN publication list has been processed and we present how the database is organized and can be accessed. We use this tool to generate statistical plots of interest.

## Rationale

Optical interferometry is a technique which requires a high level of critical subsystems illustrated by the fact that one needs to control at the nanometer level optical path difference which can several hundred meters, or, to operate several telescopes with some level of adaptive optics. Furthermore, even for the common professional astronomer the link between the measurements and the astrophysical consequences consists in numerous mathematical operations which are not straightforward to understand. Therefore, despite important financial and human investment, it seemed that the astrophysical return was first limited and then restrained to a few specialized areas eventhough the gain in spatial resolution is a real breakthrough.

This distance between firstly the efforts and the necessary support from the astronomical community and secondly the results contained in the peer-reviewed literature both in instrumentation but also for the astrophysical advances have led the community to get organized and to publicize iits results. This was achieved first by establishing a common point of reference, the web site OLBIN (Optical Long Baseline Interferometry Newsletter edited by P. Lawson, see presentation 7734-97 on Friday afternoon in this conference), by forming the IAU commission #54 and by tracking the publication record in the field.

In 2000, the rate of refereed papers published in interferometry was around 30 papers/year was still handable by hand but ten years later this rate reached around 100 papers/year and is still growing. The need to record any new reference in the field is even stronger but it can no longer be done by hand. Therefore we have built a database based on today software capability which in addition allows us to track the evolution of the field using new information that add extra value for the service to the community.


Total number of refereed papers published in interferometry


Cumulative number of papers in optical and radio interferometry
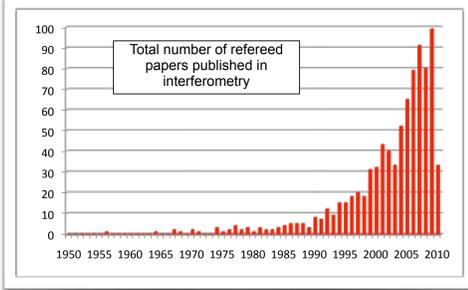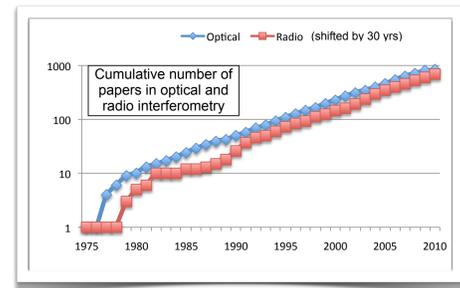
## A bibliographic database directly linked to ADS

The OLBIN publication database has been designed to be connected with the ADS bibliographic database (http://adsabs.harvard.edu). A paper in ADS is identified by its bibcode which consists in 19 characters. Our idea was to keep a list of bibcodes and the link to the ADS pages of this papers. However, in order to search into the OLBIN database, one needs to retrieve at least the title, the list of authors and affiliation, the reference (journal, volume and pages), the year of publication and the publication date. With this information we were already able to build automatically the list as it was done before and manage it.

However in order to add extra-values to the database, we added «tags» in order to better define the different entries. Any paper can be labeled by any number of tags. In order to sort out the database, we also created «categories» of tags which are lists of tags of same nature: type of papers, facilities, intruments, astrophysical topics, technique,…. We then added the capability to search the papers by tags and to return a list classified. Finally, generating automatic pie charts and histograms was relatively simple.

Since we are using ADS, the fisrt to do when entering a paper is to check that it is in ADS and if not request it to be registered. Similarly, if mistakes are found then they should be corrected in ADS since it is the most used publication database in astronomy.



| Bibcodes | 856 |
| Tags | 77 |
| Categories | 8 |
| Authors | 1782 |

## Facility / Astrophysics
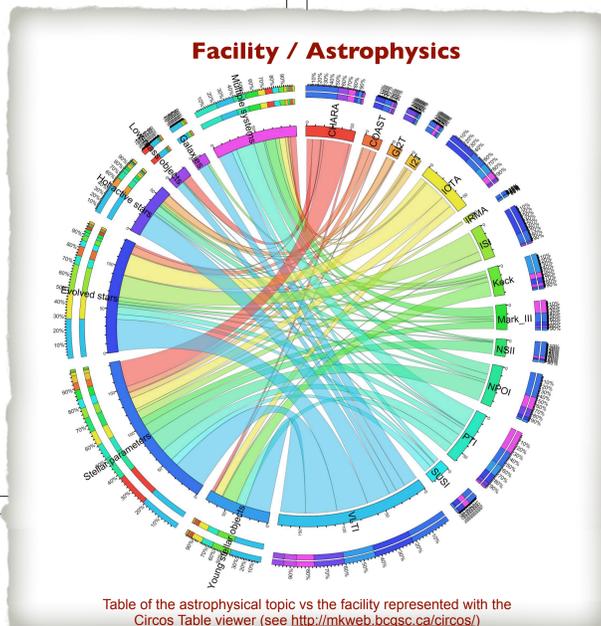

Table of the astrophysical topic vs the facility represented with the Circos Table viewer (see http://mkweb.bcgsc.ca/circos/)

## The web pages



## General results

### Type of publications



- Astrophysical results 53 %
- Review papers 3 %
- Catalogs 2 %
- Instrumentation 35 %
- Theory and predictions 7 %
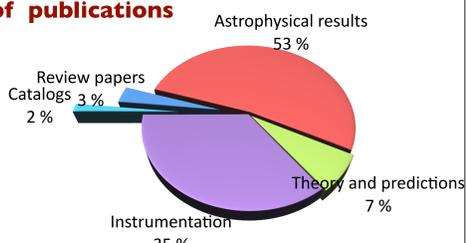
### Evolution of type of publication
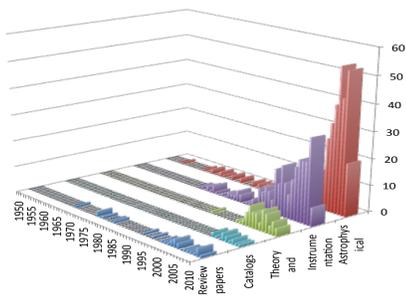


## Astrophysical topics and objects

| | Stellar parameters | Evolved stars | | Hot active stars | Young stellar objects | Low-mass objects | Galaxies | Multiple stars |
|---|---|---|---|---|---|---|---|---|
| **Tags of Astrophysical topics** | Supergiants | R CrB stars | Mira variables | Massive stars | T Tauri Stars, FU Orionis | Low-mass stars | Galactic Center | |
| | Giant stars | Wolf-Rayet stars | Cepheid variables | Luminous Blue Variables | Herbig Ae/Be stars | Exoplanets | Active Galactic Nuclei | |
| | Subgiant stars | Novae | Carbon stars | B[e] stars | Young massive stars | Debris disks | | |
| | Dwarf stars | Dust shells of late type stars | AGB and Post-AGB | Be stars | | | | |
| | Rapidly rotating stars | | | | | | | |




- Stellar parameters 31 %
- Young stellar objects 13 %
- Binary and multiple stars 17 %
- Galaxies 3 %
- Low-mass objects and planetary systems 4 %
- Hot active stars 10 %
- Evolved stars 23 %

## Evolution of the publications

### For the different facilities
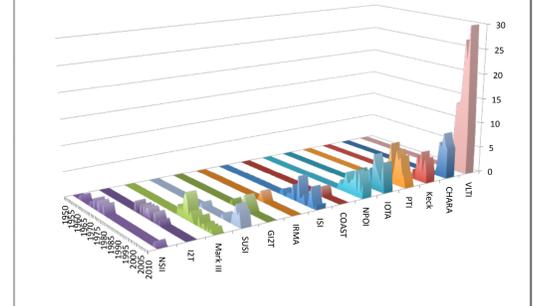


### For the different main topics
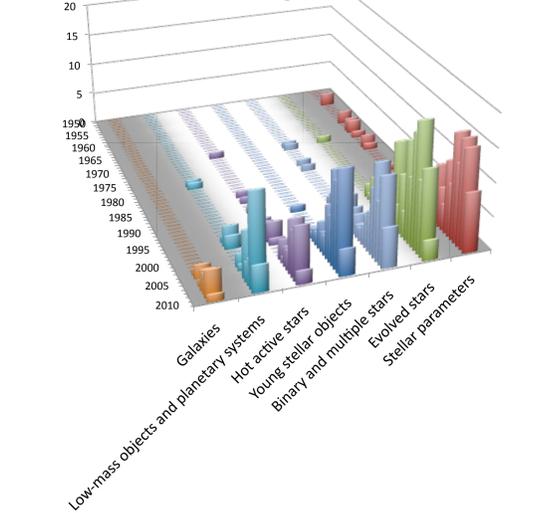


## Perspectives

The first important point is that we need the feedback of the users to correct the citations, the tags and be aware of all papers.
This tool could also be the reference for the different groups to list their publications. We may need then to develop specific pages (instruments, interferometers, science,..). These pages might also be used by our agencies to evaluate the outcome of interferometry. We could also contemplate to get the citations rate from ADS, but since it changes everyday basically, it would require to update the database on a daily basis. Another important perspective is to link the publications to the actual data.

**Do not forget:** http://olbin.jpl.nasa.gov and http://www.jmmc.fr/bibdb